



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

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

Thursday, March 13, 2025
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ARSENAL RESOURCES LLC
6031 WALLACE RD EXT., SUITE 101
WEXFORD, PA 15090

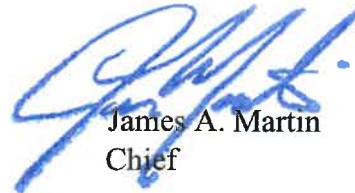
Re: Permit Modification Approval for D'ANNUNZIO 201
47-033-06044-00-00

Lateral Extension/ New Leases/ Forced Pooling

ARSENAL RESOURCES 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.

A blue ink signature of James A. Martin, written in a cursive style. Below the signature is the printed name and title.

James A. Martin
Chief

Operator's Well Number: D'ANNUNZIO 201
Farm Name: A&B MANAGEMENT LLC
U.S. WELL NUMBER: 47-033-06044-00-00
Horizontal 6A New Drill
Date Modification Issued: 03/13/2025

Promoting a healthy environment.

03/14/2025

4703306044

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

1) Well Operator: Arsenal Resources 494519412 Harrison Clark Clarksburg
Operator ID County District Quadrangle

2) Operator's Well Number: 201 Well Pad Name: D'Annunzio

3) Farm Name/Surface Owner: A&B Management LLC Public Road Access: State Route 98

4) Elevation, current ground: 1118 ft Elevation, proposed post-construction: 1118 ft

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

(b) If Gas Shallow Deep _____
Horizontal _____

6) Existing Pad: Yes or No Yes ✓

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale, Top - 7201 ft, Base - 7270 ft, Anticipated Thickness 69ft, Associated Pressure - 0.5 psi/ft

8) Proposed Total Vertical Depth: 7250 ft ✓

9) Formation at Total Vertical Depth: Marcellus Shale ✓

10) Proposed Total Measured Depth: 21,916 ft ✓

11) Proposed Horizontal Leg Length: 13,930 ft ✓

12) Approximate Fresh Water Strata Depths: 128', 190', 195', 264', 310', 445', 485'

13) Method to Determine Fresh Water Depths: Offsetting wells water depths (033-05563, 05564, 05565, 05566, 05914, 05915, 05918)

14) Approximate Saltwater Depths: 840', 2500'

15) Approximate Coal Seam Depths: None expected

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

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No None Known

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

CK #0000203489
\$ 7650 *
150 Credit

Kenny Willett 1/9/25

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18)

CASING AND TUBING PROGRAM

4703306044

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	H-40	102.7	120	120 ✓	CTS
Fresh Water	13.375	New	J-55	54.5	575	575 ✓	CTS
Coal							
Intermediate	9.625	New	J-55	40	2550	2550	CTS ✓
Production	5.5	New	P-110	20	21916	21916 ✓	TOC @ 2400 ✓
Tubing							
Liners							

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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	36			0	Class A/L, 3% CaCl2	1.2
Fresh Water	13.375	17.5	0.38	2,730	900	Class A/L, 3% CaCl2	1.2
Coal							
Intermediate	9.625	12.25	0.395	3,950	1500	Class A/L, 3% CaCl2	1.29
Production	5.5	8.5-8.75	0.361	15,920 ✓	11,500	Class A/L, Poz	1.29/1.34
Tubing					5,000		
Liners					N/A		

WV Department of Environmental Protection

PACKERS

Kind:				
Sizes:				
Depths Set:				

Kenny Willatt / 1/9/25

4703306044

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

The well will be started with a conductor rig drilling a 36" hole to Conductor programmed depth then running 24" casing and circulate cement back to surface. The conductor rig will move out and the drilling rig will move in and rig up. The drilling rig will then spud a 17 1/2" hole and drill to fresh water casing (Surface) to the programmed depth, Run 13- 3/8" casing and cement to surface. The rig will continue drilling a 12- 1/4" intermediate hole to the programmed depth, run 9- 5/8" casing and cement to surface. The rig will then continue to drill an 8- 3/4" hole to a designed KOP. We will then start drilling the curve and lateral section to the programmed total measured depth, run 5 1/2" casing and cement according to the program.

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

The well will be completed using a plug and perforation method and stimulated with a slickwater and sand slurry. The anticipated maximum rate will be 90 bpm and the maximum pressure will be 11,500 psi.

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21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 13.17

22) Area to be disturbed for well pad only, less access road (acres): 5.76

23) Describe centralizer placement for each casing string:

24"- No centralizers 13 3/8" – one bow spring centralizer on every other joint 9 5/8" – one bow spring centralizer every third joint from TD to surface 5 1/2" – one semi rigid centralizer on every joint from TD of casing to end of curve. Then every other joint to KOP. Every third joint from KOP to 2,700'; there will be no centralizers from 2,700' to surface.

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

24" will be circulated to surface. The 13 3/8" casing will be cemented to surface with Class A/L cement and no greater than 3% CaCl2 (calcium chloride). The 9 5/8" casing will be cemented to surface with Class A/L cement, & no greater than 3% calcium chloride. The 5 1/2" production string will be cemented back to 2,450' (+/- 150' above the casing shoe for the 9 5/8") with Class A/L Poz cement retarded (to extend pumpability) cellophane flaked for fluid loss, Bentonite gel as an extender (increased pumpability and fluid loss), a defoaming agent to decrease cement foaming during mixing to insure the cement is of proper weight to placement and possibly gypsum gas blocking additive to aid in blocking/gas migration (in combination with other additive mentioned here, helps cement achieve a "right angle" set) during the plastic phase of the cement set-up.

25) Proposed borehole conditioning procedures:

Top holes will be drilled with fresh water KOP. At KOP, the wellbore will be loaded with synthetic oil based mud, barite-weighted mud system with such properties as to build a filter-cake on the face of the bore-hole. This will provide lubricity as well as stabilizing the well bore. We will begin rotating the drill string and mud will be circulated upon reaching TD until no further cuttings are observed coming across the shaker screens. Once clean mud is circulated back to surface, we will pull three stands of drill pipe, load the hole, pull three strands and load the hole. The weight indicator on the rig will be monitored for any occurrences of drag and if any are noticed, we will re-run the previous stand of pipe pulled across and circulate 2x bottoms up while watching shakers for signs of cuttings. Once at the base curve, the string will be continuously rotated while pumping 2x bottoms up. We will pull three stands and fill the hole until we reach the vertical section of the well.

*Note: Attach additional sheets as needed.

Kenny Willett 1/9/25



Arsenal Resources
D'Annunzio #201
Casing Design

Other Names:	D'Annunzio #201
Surface Location:	LAT 39.255229N x Long 80.336486 W
Bottom Hole Location:	LAT 39.255229N x Long 80.336486 W
Directional Plan Vs.	SDI #1
Total Depth (MD)	21,916

County:	Harrison		
State:	WV		
AFE #:	000000	API #:	0
RKB:	26		
Ground Level:	1,118		

Significant Formations (TVD)	Depth (ft) MD	Depth (ft) TVD	Hole Size	Casing and Cement	Mud	Directional & Surveys Drlg /Csg Point
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None	Section 1	120	120
None	Section 2	650	650
Possible CBL after cement job		650	650
None	Section 3	2,600	2,600

Drive Pipe

4703306044

24" 94# H-40 BTC	Vertical
17 1/2" (PDC)	Floc Water
Cement	Class A/L, 3% CaCl2
Density/Yield/Volume (sx)	15.6 1.2 703
TOC	Surface

13 3/8" 54.5# J-55 LTC	Vertical	
12 1/4" (PDC)	Floc Water	
Cement (Lead/Tail)	Class A/L, 3% CaCl2	Class A/L, 3% CaCl2
Density/Yield/Volume (sx)	14.5 1.19	712
TOC	Surface	

9 5/8" 40# J-55 LTC	Vertical	
Mud Data	From	To
Floc Water	120	2600
Floc Water	2600	6900
11.5- 12.0 ppg SOBM	6900	21916

Bit Data	From	To
17-1/2" & 12 1/4" PDC	120	2600
8- 3/4" (PDC)	2600	6900
8- 1/2" (PDC)	2699	21916

Directional Data	
KOP	6900
Curve	9°/100 ft
Angle	90
Azi	161
EOB	MD 21,916
	TVD 7,250

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Cement	Production
Lead	Lead: 50-50 Poz/A
	13.8 1.33 TBD
Tail	Tail: Class A
	15 1.3 TBD
TOC	2450

Wireline: None
Mudloggers: KOP - TD
KOP @ 6900

Geo Prognosis

Formation	Depth (Tss)	Top (TVD)	Base (TVD)
Bakerstown Coal	0	0	0
Brush Creek Coal	0	0	0
Upper Freeport Coal	0	0	0
Lower Freeport Coal	0	0	0
Upper Kittanning Coal	0	0	0
Middle Kittanning Coal	0	0	0
Lower Kittanning Coal	0	0	0
Big Lime	0	0	0
Balltown Sandstone	0	0	0
Bradford Sandstone	0	0	0
Benson Sandstone	0	0	0
1st Elk Siltstone	0	0	0
Burkett Shale	0	0	0
Tully Limestone	0	0	0
Mahantango Shale	0	0	0
Marcellus Shale	0	0	0
Purcell Limestone	0	0	0
Lower Marcellus Shale	0	0	0
TARGET	0	0	0
Onondaga Limestone	0	0	0

MD	21,916
TVD	7,250
Azimuth	161

5 1/2" 20# P-110HP Weld Tube GBCD

Revision 1

Note: Not drawn to scale

Date Last Revised: 2024
Ross Schweitzer

Cement Outside Casing
Seal Assembly in Annulus

03/14/2025



4703306044
People Powered. Asset Strong.

January 21, 2025

West Virginia Department of Environmental Protection
Office of Oil and Gas
ATTN: Taylor Brewer
601 57th Street SE
Charleston, WV 25304

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RE: D'Annunzio #201, API # 47-033-06044 Expedited Modification due to well extension

Dear Mr. Brewer,

Enclosed please find the permit modification application for D'Annunzio #201 (API# 47-033-06044). I have enclosed a USB flash drive containing the E&S Plan, Site Safety Plan, and the MSDS.

The wellhead location remains the same as the current permit. The well is being extended in lateral length. This well was originally permitted to 7,250 feet. The modification request is to increase the total measured depth to 21,916 feet. Additional leases under the extended section are shown on the revised WW-6A1.

Should you have any questions or need any additional information, please feel free to contact me by phone or email.

Sincerely,

Dave Boyer
Director of Geology & Development Planning
(c) 724-759-0088
(e) dboyer@arsenalresources.com

6031 Wallace Road Ext, Suite 101
Wexford, PA 15090
P: 724-940-1100
F: 800-428-0981
www.arsenalresources.com

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Purpose

The purpose of this pad-specific Hydraulic Fracturing Monitoring Plan is to identify and notify conventional well operators near Arsenal Resources hydraulic fracturing in Harrison County, WV prior to hydraulic fracturing at the D'Annunzio Pad, well #201.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 7,250' TVD) and existing conventional natural gas wells in the partially-depleted, relatively high permeability Benson formations (approximately 4,800' TVD).

The plan is being implemented as an additional safety measure to be utilized in conjunction with best management practices and emergency action plans for this site. These additional measures include pre-notification of conventional well operators of the timing and location of the hydraulic fracturing, establishment of measures conventional well operators should implement, and assurance that the Division of Oil and Gas is notified of the timeline, as well as any issues that may arise during fracturing.

1. Communications with Conventional Operators.

Arsenal Resources, using available data (WV Geological Survey, WVDEP Website, and IHS data service), has identified all known conventional wells and well operators within 500 feet of this pad and the lateral sections. A map showing these wells along with a list of the wells and operators is included in Attachment A.

Upon approval of this plan, Arsenal Resources will notify these operators, via letter, of the hydraulic fracturing schedule for these wells. A copy of this letter is included in Attachment B.

The letter provides recommendations to these conventional operators to 1) increase their monitoring of their wells during that time period, 2) ensure that their well head equipment is sound, and 3) provide immediate notification to Arsenal Resources and the OOG in the event of any changes in their well conditions.

Specifically, the letter recommends that conventional well operators conduct the following activities during and after fracturing operations:

1. Inspect their surface equipment prior to fracturing to establish integrity and establish pre-frac well conditions.
2. Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas or pressure.
3. Inspect or install master valves rated to 3,000 psi or other necessary equipment for wellhead integrity.
4. Notify the OOG and ARSENAL RESOURCES if any changes in water, gas production, pressure or other anomalies are identified.



4703306044

2. Reporting

Arsenal Resources will provide information relating to the hydraulic fracturing schedule, communication with conventional operators, and ongoing monitoring of the work upon request of OOG or immediately after any event of any noted abnormalities.

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Area of Review Report - D'Annunzio Pad, 201 Lateral, Harrison County, WV

Well Name	API Number	Operator Name / Address	Well Type	Latitude	Longitude	Total Depth	Perforated Formation(s)	Producing Zones not Perforated
D'Annunzio 1HM	033-05563	Arsenal Resources, LLC	Existing	39.254804	-80.335771	12624	Marcellus Shale	NA
D'Annunzio 2HM	033-05564	Arsenal Resources, LLC	Existing	39.254821	-80.335819	13614	Marcellus Shale	NA
D'Annunzio 3HM	033-05565	Arsenal Resources, LLC	Existing	39.254838	-80.335867	13862	Marcellus Shale	NA
D'Annunzio 4HM	033-05566	Arsenal Resources, LLC	Existing	39.254854	-80.335916	13605	Marcellus Shale	NA
D'Annunzio 205	033-05914	Arsenal Resources, LLC	Existing	39.255037	-80.336355	15828	Marcellus Shale	NA
D'Annunzio 206	033-05915	Arsenal Resources, LLC	Existing	39.255019	-80.336211	16059	Marcellus Shale	NA
D'Annunzio 207	033-05918	Arsenal Resources, LLC	Existing	39.255003	-80.336183	15632	Marcellus Shale	NA
Roger Phillips	033-04432	Arsenal Resources, LLC	Existing	39.25009	-80.341911	5118	Benson, Balltown, 5th	NA
Roger Phillips	033-04489	Arsenal Resources, LLC	Existing	39.246175	-80.338367	4350	Benson, Riley, Bayard	NA
Johnson 2	033-04525	Mule Head, LLC	Existing	39.24284	-80.338367	3609	Bayard, 30ft	NA
Porter 1793	033-04691	Diversified Production, LLC	Existing	39.239359	-80.337061	5127	Benson, Riley, Balltown, Speechley, 5th	NA
Hornor 1779	033-04708	Diversified Production, LLC	Existing	39.231963	-80.334077	5000	Benson, Balltown, Speechley, 5th	NA
Hornor 1972	033-04711	Diversified Production, LLC	Existing	39.226163	-80.329885	4818	Benson, Riley, Balltown, Speechley, 5th	NA
Sutton 199	033-04735	Diversified Production, LLC	Existing	39.222393	-80.328951	5045	Benson, Riley, Balltown, Speechley, Hampshire	NA
M/M Bragg 2007	033-04719	Diversified Production, LLC	Existing	39.219347	-80.325594	4950	Balltown, Greenland Gap, Hampshire, 50ft	NA
Barnosky 2006	033-04718	Diversified Production, LLC	Existing	39.216012	-80.325778	4750	Benson, Riley, Balltown, Speechley, 5th, 4th	NA

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 JAN 27 2025

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202306044



Diversified Energy Company

101 MCQUISTON DRIVE
Jackson Center, Pa 16133

RE: D'Annunzio Pad

Dear Sir/Madam,

Arsenal Resources has developed a Marcellus pad, the D'Annunzio, well #201, located in Harrison County, WV. As an owner or operator of conventional natural gas wells in this area, we are requesting your assistance in this matter.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 7,250' TVD) and existing conventional natural gas wells included in the attached well list for which you are believed to be the operator.

Arsenal Resources anticipates conducting hydraulic fracturing at the D'Annunzio Pad, well #201, during the 2nd Quarter of 2025. We have identified conventional natural gas wells operated by your company within 500' (lateral distance) of our newly planned wells. Plats for each well on this pad are attached.

We recommend that conventional well operators conduct the following activities before, during and after fracturing operations:

1. Inspect surface equipment, prior to fracturing, to establish integrity and establish well conditions.
2. Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas, or pressure.
3. Inspect or install master valves rated to 3,000 psi or other necessary equipment for wellhead integrity.
4. Notify the OOG and Arsenal Resources if any changes in water, gas production, pressure or other anomalies are identified.

Please feel free to contact me at 724-940-1100 with any questions or comments. You may also contact the WV Office of Oil and Gas at 304-926-0499.

Sincerely,

Dave Boyer
Director of Geology & Development Planning

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D'ANNUNZIO PAD
WELL NO. 201
ARSENAL RESOURCES

T.H. LATITUDE 39°17'30"
B.H. LATITUDE 39°15'00"

T.H. LONGITUDE 80°20'00"
B.H. LONGITUDE 80°17'30"

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
C1	129.07'	94.10'	92.03'	S 45°29' W
C2	427.31'	182.00'	180.63'	S 12°26' W
C3	1535.99'	531.79'	529.13'	S 09°56' E

TAG	PARCEL	SURFACE OWNER/ROAD/RIVER	ACREAGE
A	3-327-17	A & B MANAGEMENT LLC	199.03
B	3-327-26	HARRISON COUNTY BOARD OF EDUCATION	185.84
C	1-347-8	ROGER & BETTY PHILLIPS	93.36
D	1-347-33	SKASIK KURT G & ANDREW SKASIK	93.35
E	12-347-32	W VA DIVISION OF NATURAL RESOURCES	245.15
F	1-347-35	W VA DIVISION OF NATURAL RESOURCES	378.32
G	12-347-50	MICHAEL W & MARY M BALL	39.88
ROAD	N/A	STREETS IN CLAREDALE SUBDIVISION	N/A
H	12-347-88	MICHAEL W & MARY M BALL	1.1
I	1-347-89	W VA DIVISION OF NATURAL RESOURCES	62.24
J	1-367-37	W VA DIVISION OF NATURAL RESOURCES	160
K	1-367-47	FRANK FERNANDEZ (LE)	177.9
L	11-367-58.1	MARK S & MARCIE G BRAGG	19.25
M	11-367-58.4	GUY A II & RACQUEL A BUFFEY	9.4

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(S.P.C. NORTH ZONE) (UTM(M) ZONE 17)

NAD83 S.P.C.(FT) N. 276,177.76 E. 1,731,634.10
 NAD83 GEO. LAT-(N) 39.255229 LONG-(W) 80.336486
 NAD83 UTM (M) N. 4,345,309.95 E. 557,248.15

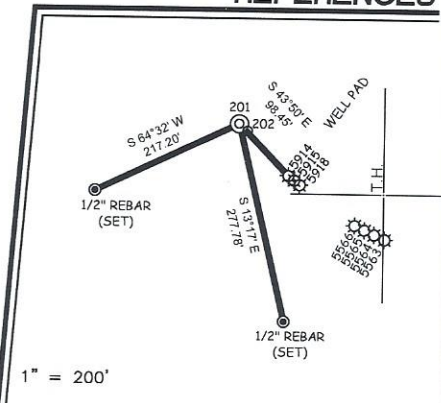
LANDING POINT

NAD83 S.P.C.(FT) N. 274,895.8 E. 1,730,225.3
 NAD83 GEO. LAT-(N) 39.251673 LONG-(W) 80.341418
 NAD83 UTM (M) N. 4,344,912.3 E. 556,825.4

BOTTOM HOLE

NAD83 S.P.C.(FT) N. 261,727.9 E. 1,734,769.6
 NAD83 GEO. LAT-(N) 39.215637 LONG-(W) 80.324945
 NAD83 UTM (M) N. 4,340,923.5 E. 558,276.6

REFERENCES



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26031 | 304-462-5654
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304-545-3952
 254 East Beckley Bypass | Beckley, WV 25801 | 304-355-5296
 slsw.com

NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE ARE 1"=2000'

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 DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677

Gregory A. Smith



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

DATE JANUARY 8, 20 25

REVISED _____, 20 _____

OPERATORS WELL NO. 201

API WELL NO. 47 - 033 - 06044
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 9483P201R3.dwg

HORIZONTAL & VERTICAL SCALE 1" = 2000'
CONTROL DETERMINED BY: DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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



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

LOCATION: ELEVATION 1118.00' WATERSHED TRIBUTARY TO NUTTER RUN

DISTRICT CLARK-CLARKSBURG CORP. COUNTY HARRISON QUADRANGLE CLARKSBURG

SURFACE OWNER A & B MANAGEMENT LLC ACREAGE 199.03±

ROYALTY OWNER A & B MANAGEMENT LLC ET AL ACREAGE 199.03±

PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD

FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___

PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS

ESTIMATED DEPTH TMD 21,915.54' / TVD 7,250'

WELL OPERATOR ARSENAL RESOURCES DESIGNATED AGENT ERIC MORRIS

ADDRESS 6031 WALLACE RD. EXT. SUITE 200 ADDRESS 633 WEST MAIN STREET

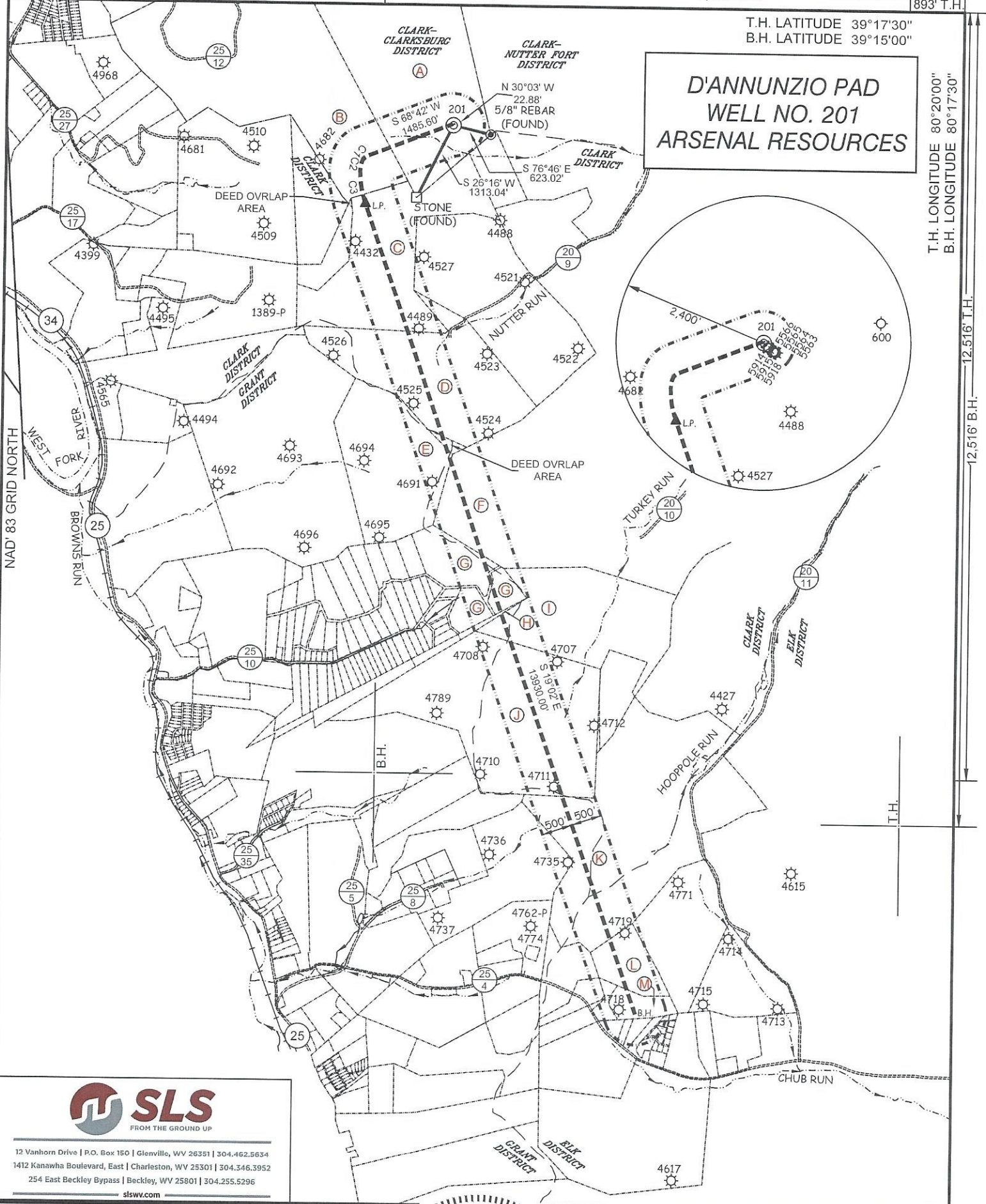
WEXFORD, PA 15090 BRIDGEPORT, WV 26330

COUNTY NAME

PERMIT

03/14/2025

**D'ANNUNZIO PAD
WELL NO. 201
ARSENAL RESOURCES**



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slsw.com

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17)

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NAD'83 UTM (M) N. 4,345,309.95 E. 557,248.15

LANDING POINT

NAD'83 S.P.C.(FT) N. 274,895.8 E. 1,730,225.3
NAD'83 GEO. LAT-(N) 39.251673 LONG-(W) 80.341418
NAD'83 UTM (M) N. 4,344,912.3 E. 556,825.4

BOTTOM HOLE

NAD'83 S.P.C.(FT) N. 261,727.9 E. 1,734,769.6
NAD'83 GEO. LAT-(N) 39.215637 LONG-(W) 80.324945
NAD'83 UTM (M) N. 4,340,923.5 E. 558,276.6

SCALE 1" = 2000' FILE NO. 9483P201R3.dwg

DATE JANUARY 8, 20 25
REVISED _____, 20 _____

OPERATORS WELL NO. 201
API WELL NO. 47-033-06044
STATE COUNTY PERMIT

WELL OPERATOR ARSENAL RESOURCES
ADDRESS 6031 WALLACE RD. EXT. SUITE 200
WEXFORD, PA 15090



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



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

P.S. 677 Gregory A. Smith

LEGEND

- LEASE LINE [Symbol]
- SURFACE LINE [Symbol]
- WELL LATERAL [Symbol]
- OFFSET LINE [Symbol]
- TIE LINE [Symbol]
- CREEK [Symbol]
- ROAD [Symbol]
- COUNTY ROUTE [Symbol]
- PROPOSED WELL [Symbol]
- EXISTING WELL [Symbol]
- PERMITTED WELL [Symbol]
- TAX MAP-PARCEL [Symbol]
- SURFACE OWNER (SEE TABLE) [Symbol]
- LEASE # (SEE WW-6A1) [Symbol]

03/14/2025

COUNTY NAME PERMIT

**D'ANNUNZIO PAD
WELL NO. 201
ARSENAL RESOURCES**

T.H. LATITUDE 39°17'30"
B.H. LATITUDE 39°15'00"

T.H. LONGITUDE 80°20'00"
B.H. LONGITUDE 80°17'30"

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
C1	129.07'	94.10'	92.03'	S 45°29' W
C2	427.31'	182.00'	180.63'	S 12°26' W
C3	1535.99'	531.79'	529.13'	S 09°56' E

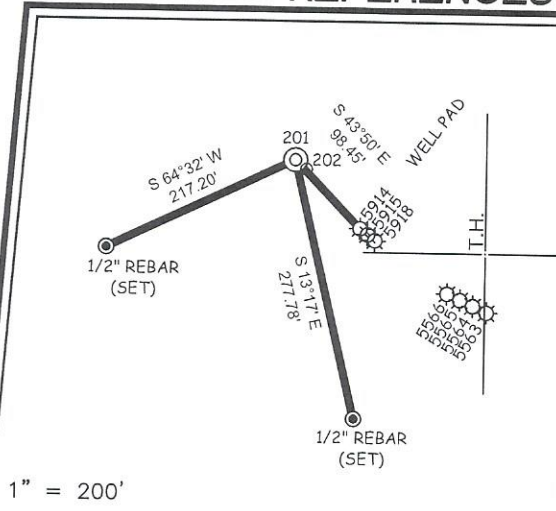
TAG	PARCEL	SURFACE OWNER/ROAD/RIVER	ACREAGE
A	3-327-17	A & B MANAGEMENT LLC	199.03
B	3-327-26	HARRISON COUNTY BOARD OF EDUCATION	185.84
C	1-347-8	ROGER & BETTY PHILLIPS	93.36
D	1-347-33	SKASIK KURT G & ANDREW SKASIK	93.35
E	12-347-32	W VA DIVISION OF NATURAL RESOURCES	245.15
F	1-347-35	W VA DIVISION OF NATURAL RESOURCES	378.32
G	12-347-50	MICHAEL W & MARY M BALL	39.88
ROAD	N/A	STREETS IN CLAREDALE SUBDIVISION	N/A
H	12-347-88	MICHAEL W & MARY M BALL	1.1
I	1-347-89	W VA DIVISION OF NATURAL RESOURCES	62.24
J	1-367-37	W VA DIVISION OF NATURAL RESOURCES	160
K	1-367-47	FRANK FERNANDEZ (LE)	177.9
L	11-367-58.1	MARK S & MARCIE G BRAGG	19.25
M	11-367-58.4	GUY A II & RACQUEL A BUFFEY	9.4

13,272' T.H.
12,516' B.H.

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17)

NAD'83 S.P.C.(FT)	N. 276,177.76	E. 1,731,634.10
NAD'83 GEO.	LAT-(N) 39.255229	LONG-(W) 80.336486
NAD'83 UTM (M)	N. 4,345,309.95	E. 557,248.15
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 274,895.8	E. 1,730,225.3
NAD'83 GEO.	LAT-(N) 39.251673	LONG-(W) 80.341418
NAD'83 UTM (M)	N. 4,344,912.3	E. 556,825.4
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 261,727.9	E. 1,734,769.6
NAD'83 GEO.	LAT-(N) 39.215637	LONG-(W) 80.324945
NAD'83 UTM (M)	N. 4,340,923.5	E. 558,276.6

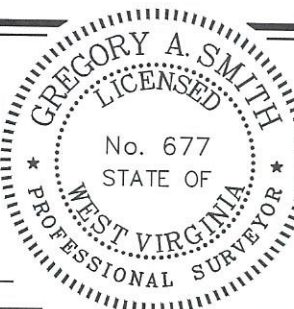
REFERENCES



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
sllswv.com

NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. WELL SPOT CIRCLE & TOPO MARK SCALE ARE 1"=2000'



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 DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677 Gregory A. Smith

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
DATE JANUARY 8, 2025
REVISED _____, 20____
OPERATORS WELL NO. 201
API WELL NO. 47 - 033 - 06044
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 9483P201R3.dwg
HORIZONTAL & VERTICAL CONTROL DETERMINED BY: DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

WELL TYPE: OIL _____ GAS X LIQUID INJECTION _____ WASTE DISPOSAL _____ IF "GAS" PRODUCTION X STORAGE _____ DEEP _____ SHALLOW X
LOCATION :
ELEVATION 1118.00' WATERSHED TRIBUTARY TO NUTTER RUN
DISTRICT CLARK-CLARKSBURG CORP. COUNTY HARRISON QUADRANGLE CLARKSBURG
SURFACE OWNER A & B MANAGEMENT LLC ACREAGE 199.03±
ROYALTY OWNER A & B MANAGEMENT LLC ET AL ACREAGE 199.03
PROPOSED WORK :
DRILL X CONVERT _____ DRILL DEEPER _____ REDRILL _____ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION _____ PERFORATE NEW FORMATION _____ PLUG AND ABANDON _____ CLEAN OUT AND REPLUG _____ OTHER _____
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TMD 21,915.54' / TVD 7,250'

WELL OPERATOR ARSENAL RESOURCES DESIGNATED AGENT ERIC MORRIS
ADDRESS 6031 WALLACE RD. EXT. SUITE 200 ADDRESS 633 WEST MAIN STREET
WEXFORD, PA 15090 BRIDGEPORT, WV 26330

COUNTY NAME
PERMIT

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

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

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

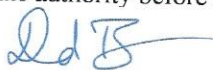
Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
See attached				

**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: 
 By: Dave Boyer
 Its: Director of Geology & Development Planning

WW6A-1 D'ANNUNZIO 201

TAG	PARCEL	LEASE	LESSOR	LESSEE	BK PG	GROSS AC ROYALTY
A	47-033-03-327-17	4630	MAUD LEE QUINN PDC MOUNTAINEER, LLC	PDC MOUNTAINEER LLC RIVER RIDGE ENERGY, LLC	1456/1018 59/1263	239.01 +12.5%
A	47-033-03-327-17	4632	A & B MANAGEMENT LLC PDC MOUNTAINEER, LLC	PDC MOUNTAINEER LLC RIVER RIDGE ENERGY, LLC	1455/173 59/1263	239.01 +12.5%
A	47-033-03-327-17	4636	REBECCA ANN JARVIS XTO ENERGY INC PDC MOUNTAINEER, LLC	XTO ENERGY INC PDC MOUNTAINEER LLC RIVER RIDGE ENERGY, LLC	1438/1202 1479/880 59/1263	199.03 +12.5%
A	47-033-03-327-17	3417	LEMUEL D AND MARY JARVIS ET UX CLARENCE MUTSHELKNAUS SWIFT ENERGY COMPANY PETROLEUM DEVELOPMENT CORP PDC MOUNTAINEER, LLC	CLARENCE C MUTSHELKNAUS SWIFT ENERGY COMPANY PETROLEUM DEVELOPMENT CORP PDM MOUNTAINEER LLC RIVER RIDGE ENERGY LLC	1146/1146 1148/341 1167/141 1440/364 59/1263	73.33 +12.5%
A	47-033-03-327-17	3418	PORTER M JARVIS TRUSTEE CLARENCE MUTSHELKNAUS SWIFT ENERGY COMPANY PETROLEUM DEVELOPMENT CORP PDC MOUNTAINEER, LLC	CLARENCE C MUTSHELKNAUS SWIFT ENERGY COMPANY PETROLEUM DEVELOPMENT CORP PDM MOUNTAINEER LLC RIVER RIDGE ENERGY LLC	1146/1148 1148/341 1167/141 1440/364 59/1263	73.33 +12.5%
B	47-033-03-327-26	4519	HARRISON COUNTY BOARD OF EDUCATION PDC MOUNTAINEER, LLC	PDC MOUNTAINEER LLC RIVER RIDGE ENERGY, LLC	1449/1126 59/1263	189.07 +12.5%
C	47-033-01-347-8	9264	ROGER & BETTY PHILLIPS EDWARD MULLOOLY MOUNTAIN V OIL & GAS INC MOUNTAIN V OIL & GAS INC (CORRECTIVE) NORTH COAST ENERGY EASTERN INC EXCO NORTH COAST ENERGY EASTERN INC EXCO RESOURCES (WV) INC ET AL EXCO RESOURCES (WV) LLC EXCO PRODUCTION COMPANY (WV) LLC ET AL ANTERO RESOURCES APPALACHIAN CORPORATION ANTERO RESOURCES CORPORATION	EDWARD MULLOOLY MOUNTAIN V OIL & GAS INC NORTH COAST ENERGY EASTERN INC NORTH COAST ENERGY EASTERN INC EXCO NORTH COAST ENERGY EASTERN INC EXCO RESOURCES (WV) NAME CHANGE EXCO RESOURCES (WV) LLC ET AL EXCO PRODUCTION COMPANY (WV) LLC NAME CHANGE ANTERO RESOURCES APPALACHIAN CORPORATION ANTERO RESOURCES CORPORATION NAME CHANGE MAR KEY LLC	1343/59 1357/1170 1394/756 1405/1169 59/806 NOT OF RECORD 1448/721 NOT OF RECORD 1503/565 NOT OF RECORD 1782/1046	93.35 +12.5%
D	47-033-01-347-33	9262	KURT SKASIK MOUNTAIN V OIL & GAS INC	MOUNTAIN V OIL & GAS INC NORTH COAST ENERGY EASTERN INC	1363/544 1394/756	93.35 +12.5%

			MOUNTAIN V OIL & GAS INC (CORRECTIVE)	NORTH COAST ENERGY EASTERN INC	1405/1169	
			NORTH COAST ENERGY EASTERN INC	EXCO NORTH COAST ENERGY EASTERN INC	59/806	
			EXCO NORTH COAST ENERGY EASTERN INC	EXCO RESOURCES (WV) NAME CHANGE	NOT OF RECORD	
			EXCO RESOURCES (WV) INC ET AL	EXCO RESOURCES (WV) LLC ET AL	1448/721	
			EXCO RESOURCES (WV) LLC	EXCO PRODUCTION COMPANY (WV) LLC NAME CHANGE	NOT OF RECORD	
			EXCO PRODUCTION COMPANY (WV) LLC ET AL	ANTERO RESOURCES APPALACHIAN CORPORATION	1512/1090	
			ANTERO RESOURCES APPALACHIAN CORPORATION	ANTERO RESOURCES CORPORATION NAME CHANGE	NOT OF RECORD	
			ANTERO RESOURCES CORPORATION	MAR KEY LLC	1782/1046	
D	47-033-01-347-33	9263	J CARL PALMER	MOUNTAIN V OIL & GAS INC	1363/540	93.35 +12.5%
			MOUNTAIN V OIL & GAS INC	NORTH COAST ENERGY EASTERN INC	1394/756	
			MOUNTAIN V OIL & GAS INC (CORRECTIVE)	NORTH COAST ENERGY EASTERN INC	1405/1169	
			NORTH COAST ENERGY EASTERN INC	EXCO NORTH COAST ENERGY EASTERN INC	59/806	
			EXCO NORTH COAST ENERGY EASTERN INC	EXCO RESOURCES (WV) NAME CHANGE	NOT OF RECORD	
			EXCO RESOURCES (WV) INC ET AL	EXCO RESOURCES (WV) LLC ET AL	1448/721	
			EXCO RESOURCES (WV) LLC	EXCO PRODUCTION COMPANY (WV) LLC NAME CHANGE	NOT OF RECORD	
			EXCO PRODUCTION COMPANY (WV) LLC ET AL	ANTERO RESOURCES APPALACHIAN CORPORATION	1512/1090	
			ANTERO RESOURCES APPALACHIAN CORPORATION	ANTERO RESOURCES CORPORATION NAME CHANGE	NOT OF RECORD	
			ANTERO RESOURCES CORPORATION	MAR KEY LLC	1782/1046	
D	47-033-01-347-33	9275	WILLIAM M KESTER SR BY AIF	MOUNTAIN V OIL & GAS INC	1366/27	93.35 +12.5%
			MOUNTAIN V OIL & GAS INC	NORTH COAST ENERGY EASTERN INC	1394/756	
			MOUNTAIN V OIL & GAS INC (CORRECTIVE)	NORTH COAST ENERGY EASTERN INC	1405/1169	
			NORTH COAST ENERGY EASTERN INC	EXCO NORTH COAST ENERGY EASTERN INC	59/806	
			EXCO NORTH COAST ENERGY EASTERN INC	EXCO RESOURCES (WV) NAME CHANGE	NOT OF RECORD	
			EXCO RESOURCES (WV) INC ET AL	EXCO RESOURCES (WV) LLC ET AL	1448/721	
			EXCO RESOURCES (WV) LLC	EXCO PRODUCTION COMPANY (WV) LLC NAME CHANGE	NOT OF RECORD	
			EXCO PRODUCTION COMPANY (WV) LLC ET AL	ANTERO RESOURCES APPALACHIAN CORPORATION	1512/1090	
			ANTERO RESOURCES APPALACHIAN CORPORATION	ANTERO RESOURCES CORPORATION NAME CHANGE	NOT OF RECORD	
			ANTERO RESOURCES CORPORATION	MAR KEY LLC	1782/1046	
D	47-033-01-347-33	9284	ADAM F WILSON	MOUNTAIN V OIL & GAS INC	1363/542	93.35 +12.5%

			MOUNTAIN V OIL & GAS INC	NORTH COAST ENERGY EASTERN INC	1394/756	
			MOUNTAIN V OIL & GAS INC (CORRECTIVE)	NORTH COAST ENERGY EASTERN INC	1405/1169	
			NORTH COAST ENERGY EASTERN INC	EXCO NORTH COAST ENERGY EASTERN INC	59/806	
			EXCO NORTH COAST ENERGY EASTERN INC	EXCO RESOURCES (WV) NAME CHANGE	NOT OF RECORD	
			EXCO RESOURCES (WV) INC ET AL	EXCO RESOURCES (WV) LLC ET AL	1448/721	
			EXCO RESOURCES (WV) LLC	EXCO PRODUCTION COMPANY (WV) LLC NAME CHANGE	NOT OF RECORD	
			EXCO PRODUCTION COMPANY (WV) LLC ET AL	ANTERO RESOURCES APPALACHIAN CORPORATION	1512/1090	
			ANTERO RESOURCES APPALACHIAN CORPORATION	ANTERO RESOURCES CORPORATION NAME CHANGE	NOT OF RECORD	
			ANTERO RESOURCES CORPORATION	MAR KEY LLC	1782/1046	
D	47-033-01-347-33	9285	MARK SKASIK	MOUNTAIN V OIL & GAS INC	1364/485	93.35 +12.5%
			MOUNTAIN V OIL & GAS INC	NORTH COAST ENERGY EASTERN INC	1394/756	
			MOUNTAIN V OIL & GAS INC (CORRECTIVE)	NORTH COAST ENERGY EASTERN INC	1405/1169	
			NORTH COAST ENERGY EASTERN INC	EXCO NORTH COAST ENERGY EASTERN INC	59/806	
			EXCO NORTH COAST ENERGY EASTERN INC	EXCO RESOURCES (WV) NAME CHANGE	NOT OF RECORD	
			EXCO RESOURCES (WV) INC ET AL	EXCO RESOURCES (WV) LLC ET AL	1448/721	
			EXCO RESOURCES (WV) LLC	EXCO PRODUCTION COMPANY (WV) LLC NAME CHANGE	NOT OF RECORD	
			EXCO PRODUCTION COMPANY (WV) LLC ET AL	ANTERO RESOURCES APPALACHIAN CORPORATION	1512/1090	
			ANTERO RESOURCES APPALACHIAN CORPORATION	ANTERO RESOURCES CORPORATION NAME CHANGE	NOT OF RECORD	
			ANTERO RESOURCES CORPORATION	MAR KEY LLC	1782/1046	
D	47-033-01-347-33	9286	ORIAN & MARY SUE NUTTER	MOUNTAIN V OIL & GAS INC	1364/487	93.35 +12.5%
			MOUNTAIN V OIL & GAS INC	NORTH COAST ENERGY EASTERN INC	1394/756	
			MOUNTAIN V OIL & GAS INC (CORRECTIVE)	NORTH COAST ENERGY EASTERN INC	1405/1169	
			NORTH COAST ENERGY EASTERN INC	EXCO NORTH COAST ENERGY EASTERN INC	59/806	
			EXCO NORTH COAST ENERGY EASTERN INC	EXCO RESOURCES (WV) NAME CHANGE	NOT OF RECORD	
			EXCO RESOURCES (WV) INC ET AL	EXCO RESOURCES (WV) LLC ET AL	1448/721	
			EXCO RESOURCES (WV) LLC	EXCO PRODUCTION COMPANY (WV) LLC NAME CHANGE	NOT OF RECORD	
			EXCO PRODUCTION COMPANY (WV) LLC ET AL	ANTERO RESOURCES APPALACHIAN CORPORATION	1512/1090	
			ANTERO RESOURCES APPALACHIAN CORPORATION	ANTERO RESOURCES CORPORATION NAME CHANGE	NOT OF RECORD	
			ANTERO RESOURCES CORPORATION	MAR KEY LLC	1782/1046	

D	47-033-01-347-33	9287	ELIZABETH A & ROBERT L DODD MOUNTAIN V OIL & GAS INC MOUNTAIN V OIL & GAS INC (CORRECTIVE) NORTH COAST ENERGY EASTERN INC EXCO NORTH COAST ENERGY EASTERN INC EXCO RESOURCES (WV) INC ET AL EXCO RESOURCES (WV) LLC EXCO PRODUCTION COMPANY (WV) LLC ET AL ANTERO RESOURCES APPALACHIAN CORPORATION ANTERO RESOURCES CORPORATION	MOUNTAIN V OIL & GAS INC NORTH COAST ENERGY EASTERN INC NORTH COAST ENERGY EASTERN INC EXCO NORTH COAST ENERGY EASTERN INC EXCO RESOURCES (WV) NAME CHANGE EXCO RESOURCES (WV) LLC ET AL EXCO PRODUCTION COMPANY (WV) LLC NAME CHANGE ANTERO RESOURCES APPALACHIAN CORPORATION ANTERO RESOURCES CORPORATION NAME CHANGE MAR KEY LLC	1365/713 1394/756 1405/1169 59/806 NOT OF RECORD 1448/721 NOT OF RECORD 1512/1090 NOT OF RECORD 1782/1046	93.35 +12.5%
E	47-033-12-347-32	8672	CHARLES MILLER WACO OIL & GAS CO LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	WACO OIL AND GAS CO INC LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1342/955 1358/110 1419/959 1459/109 1628/1031	245 +12.5%
E	47-033-12-347-32	8678	JOHN WILLIAMS ROGERS II WACO OIL & GAS CO LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	WACO OIL AND GAS CO INC LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1342/1245 1358/110 1419/959 1459/109 1628/1031	245 +12.5%
E	47-033-12-347-32	8679	ROBERT F STARR WACO OIL & GAS CO LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	WACO OIL AND GAS CO INC LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1342/1243 1358/110 1419/959 1459/109 1628/1031	245 +12.5%
E	47-033-12-347-32	8680	STACEY M DAVIS WACO OIL & GAS CO LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	WACO OIL AND GAS CO INC LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1345/819 1358/110 1419/959 1459/109 1628/1031	245 +12.5%
E	47-033-12-347-32	8681	MYRTLE TANGEMAN WACO OIL & GAS CO LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	WACO OIL AND GAS CO INC LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1345/1203 1358/110 1419/959 1459/109 1628/1031	245 +12.5%

E	47-033-12-347-32	8682	MELINDA A DEBNER WACO OIL & GAS CO LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	WACO OIL AND GAS CO INC LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1347/320 1358/110 1419/959 1459/109 1628/1031	245 +12.5%
E	47-033-12-347-32	8683	LENA JANE WILT LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1374/699 1419/959 1459/109 1628/1031	245 +12.5%
E	47-033-12-347-32	8684	LOUIS J TANGEMAN ET UX LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1374/703 1419/959 1459/109 1628/1031	245 +12.5%
E	47-033-12-347-32	8689	GEORGE STEPHEN ROGERS ET UX LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1374/707 1419/959 1459/109 1628/1031	245 +12.5%
E	47-033-12-347-32	8691	ROBERTA JANE QUEEN LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1374/711 1419/959 1459/109 1628/1031	245 +12.5%
E	47-033-12-347-32	8692	LOUIS TREVELYN TANGEMAN LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1376/955 1419/959 1459/109 1628/1031	245 +12.5%
E	47-033-12-347-32	8693	ROBERT W STEWART ET UX LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1387/601 1419/959 1459/109 1628/1031	245 +12.5%
E	47-033-12-347-32	8694	PORTER M ROGERS ET UX LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1387/597 1419/959 1459/109 1628/1031	245 +12.5%
F	47-033-01-347-35	7775	PAUL S HORNOR PPG INDUSTRIES INC WHITE SHIELD OIL AND GAS CORP PARTNERSHIP PROPERTIES INC EASTERN AMERICAN ENERGY CORP	PPG INDUSTRIES INC WHITE SHIELD OIL AND GAS CORP PARTNERSHIP PROPERTIES INC EASTERN AMERICAN ENERGY CORP ENERGY CORPORATION OF AMERICA	954/739 1005/298 1019/416 1124/449 59/832	465.06 +12.5%

			ENERGY CORPORATION OF AMERICA	ANTERO RESOURCES APPALACHIAN CORPORATION	1495/314	
			ANTERO RESOURCES APPALACHIAN CORPORATION	ANTERO RESOURCES CORPORATION NAME		
			ANTERO RESOURCES CORPORATION	CHANGE	154/620	
				RIVER RIDGE ENERGY LLC	1586/1196	
G & H	47-033-12-347-50					
	47-033-12-347-88	8655	XTO ENERGY INC	MAR KEY LLC	1629/1307	151 +12.5%
I	47-033-01-347-89	9204	PATRICIA THOMAS	MAR KEY LLC	1781/554	96.25 +12.5%
I	47-033-01-347-89	9205	THERESA HATHAWAY	MAR KEY LLC	1782/19	96.25 +12.5%
I	47-033-01-347-89	9214	CAROL WILFORD	MAR KEY LLC	1782/21	96.25 +12.5%
I	47-033-01-347-89	9221	JAMES ISRAEL	MAR KEY LLC	1782/1348	96.25 +12.5%
I	47-033-01-347-89	9225	TERRY BONNER	MAR KEY LLC	1782/1337	96.25 +12.5%
I	47-033-01-347-89	9233	MARIANNE BAKER	MAR KEY LLC	1783/463	96.25 +12.5%
I	47-033-01-347-89	9247	KATHERINE L MCCALL	MAR KEY LLC	1784/733	96.25 +12.5%
I	47-033-01-347-89	9258	ROBERT ISRAEL	MAR KEY LLC	PENDING	96.25 +12.5%
I	47-033-01-347-89	9288	JAMES KIRK KIBLER	MAR KEY LLC	PENDING	96.25 +12.5%
I	47-033-01-347-89	9298	ANNE DAY	MAR KEY LLC	PENDING	96.25 +12.5%
I	47-033-01-347-89	N/A	ROYALTY OWNER SUBJECT TO UNITIZATION FILING	N/A	N/A	N/A N/A
J	47-033-01-367-37	8695	MARY VIRGINIA THORPE	WACO OIL AND GAS CO INC	1343/335	160 +12.5%
			WACO OIL & GAS CO	LINN ENERGY HOLDINGS LLC	1358/110	
			LINN ENERGY HOLDINGS LLC	XTO ENERGY INC	1419/959	
			LINN ENERGY HOLDINGS LLC	XTO ENERGY INC	1459/109	
			XTO ENERGY INC	MAR KEY LLC	1628/1031	
J	47-033-01-367-37	8696	ELIZABETH ANN KETTERING	WACO OIL AND GAS CO INC	1343/295	160 +12.5%
			WACO OIL & GAS CO	LINN ENERGY HOLDINGS LLC	1358/110	
			LINN ENERGY HOLDINGS LLC	XTO ENERGY INC	1419/959	
			LINN ENERGY HOLDINGS LLC	XTO ENERGY INC	1459/109	
			XTO ENERGY INC	MAR KEY LLC	1628/1031	
J	47-033-01-367-37	8697	BUCKNER W HORNOR	WACO OIL AND GAS CO INC	1343/293	160 +12.5%
			WACO OIL & GAS CO	LINN ENERGY HOLDINGS LLC	1358/110	
			LINN ENERGY HOLDINGS LLC	XTO ENERGY INC	1419/959	
			LINN ENERGY HOLDINGS LLC	XTO ENERGY INC	1459/109	
			XTO ENERGY INC	MAR KEY LLC	1628/1031	
J	47-033-01-367-37	8698	PAUL ALLEN HORNOR JR	WACO OIL AND GAS CO INC	1343/262	160 +12.5%
			WACO OIL & GAS CO	LINN ENERGY HOLDINGS LLC	1358/110	
			LINN ENERGY HOLDINGS LLC	XTO ENERGY INC	1419/959	
			LINN ENERGY HOLDINGS LLC	XTO ENERGY INC	1459/109	

J	47-033-01-367-37	8699	XTO ENERGY INC JAMES Y HORNOR WACO OIL & GAS CO LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	MAR KEY LLC WACO OIL AND GAS CO INC LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1628/1031 1342/484 1358/110 1419/959 1459/109 1628/1031	160 +12.5%	
K	47-033-01-367-47	9010	SAMUEL W STOUT	MAR KEY LLC	1751/1333	179 +12.5%	
K	47-033-01-367-47	9230	MATTHEW MAY	MAR KEY LLC	1783/452	179 +12.5%	
K	47-033-01-367-47	N/A	ROYALTY OWNER SUBJECT TO UNITIZATION FILING	N/A	N/A	N/A	N/A
L & M	47-033-11-367-58.1 47-033-11-367-58.4	8724	MARK S BRAGG ET UX LINN ENERGY HOLDINGS LLC LINN ENERGY HOLDINGS LLC XTO ENERGY INC	LINN ENERGY HOLDINGS LLC XTO ENERGY INC XTO ENERGY INC MAR KEY LLC	1387/1218 1419/959 1459/109 1628/1031	17.94 +12.5%	

* Horizontal well unit utilization - Subject to unitization filing with the West Virginia Oil and Gas Commission

Agreement to Drill, Complete and Operate Oil & Gas Wells

This Agreement to Drill, Complete and Operate Oil & Gas Wells (this "Agreement"), by and among Arsenal Resources LLC, a West Virginia limited liability company ("Arsenal"), River Ridge Energy, LLC, a Delaware limited liability company ("River Ridge"), and River Ridge Energy, Holdings, LLC, a Delaware limited liability company ("River Ridge Holdings"), is effective as of March 1, 2017. (the "Effective Date") and sets forth the terms pursuant to which Arsenal will drill, complete and operate the Wells (as defined below) on behalf of River Ridge and River Ridge Holdings. Arsenal, River Ridge, and River Ridge Holdings are each a "Party" and are collectively the "Parties". In consideration of the foregoing and the respective agreements hereinafter set forth and the mutual benefits to be derived therefrom, the Parties, intending to be legally bound, hereby agree as follows:

1. **Term:** This Agreement is effective from the Effective Date until terminated by Arsenal on the one hand or River Ridge and River Ridge Holdings on the other hand with 30 days' written notice to the other Party or Parties, as applicable (the "Term").
2. **Authorization to Operate:** River Ridge and River Holdings authorize Arsenal to undertake and perform, on River Ridge and River Ridge Holdings behalf, all operations, including without limitation permit applications, well pad preparation, drilling and completing wells, and marketing gas, oil and other hydrocarbons therefrom with respect to all oil and gas wells to be drilled on oil and gas leasehold acreage held by River Ridge or River Ridge Holdings. River Ridge, River Ridge Holdings and Arsenal are affiliates with a common parent. Arsenal was formed to operate oil and gas leasehold acreage held by River Ridge, River Ridge Holdings and certain other affiliates. Arsenal agrees that it shall, in a good and workmanlike manner and in accordance with industry standards as they prevail in the area, drill, complete and operate oil and gas wells on leasehold acreage owned by River Ridge or River Ridge Holdings from time to time as directed by River Ridge or River Ridge Holdings (collectively, the "Wells").
3. **No Third Party Beneficiary:** This Agreement is for the benefit of the Parties and is not for the benefit of any third party.
4. **Counterparts:** This Agreement may be simultaneously executed in several counterparts and via facsimile or similar electronic transmittal, each of which shall be deemed to be an original and taken together shall constitute one and the same instrument.

[Signature Page Follows]

4703306044

IN WITNESS WHEREOF, Arsenal, River Ridge, and River Ridge Holdings have caused their duly authorized representatives to execute this Agreement as of the Effective Date.

ARSENAL RESOURCES LLC

By: Joel E. Symonds
Name: Joel E. Symonds
Title: Vice President - Land

RIVER RIDGE ENERGY, LLC

By: Joel E. Symonds
Name: Joel E. Symonds
Title: Vice President - Land

RIVER RIDGE HOLDINGS, LLC

By: Joel E. Symonds
Name: Joel E. Symonds
Title: Vice President - Land