

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

Friday, February 23, 2018 WELL WORK PERMIT Horizontal 6A / New Drill

ARSENAL RESOURCES LLC 6031 WALLACE ROAD EXTENSION SUITE 603

WEXFORD, PA 15090

Re: Permit approval for FRANKLIN JENNINGS 212

47-077-00648-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0450.

James A. Martin Chief

Operator's Well Number: FRANKLIN JENNINGS 212 Farm Name: FRANKLIN M. & PEGGY A. JENNINGS

U.S. WELL NUMBER: 47-077-00648-00-00

Horizontal 6A / New Drill

Date Issued: 2/23/2018

Promoting a healthy environment.

API N	lumbe	r: _								
NIC	47	0	7	7	0	0	6	4	8	

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

- This proposed activity may require permit coverage from the United States Army Corps of Engineers
 (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed
 activity.
- 2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
- 3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
- 4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
- 5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled Water Well Regulations, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply supply well.
- 6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
- 7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
- 8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
- 9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
- 10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

API Number:	

PERMIT CONDITIONS 4707700648

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, cessation of drilling, sending an email to DEPOOGNotify@wv.gov.

WW-6B (04/15)

API NO. 47	
OPERATOR WELL NO.	Franklin Jennings 212
Well Pad Name: Frents	n Jennings

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

Operator ID County District Quadrangle 2) Operator's Well Number: Franklin Jennings 212 Well Pad Name: Franklin Jennings 3) Farm Name/Surface Owner: Franklin Jennings Public Road Access: Preston County Route 60/8 4) Elevation, current ground: 1725.8 Elevation, proposed post-construction: 1726 5) Well Type (a) Gas X Oil Underground Storage Other (b) If Gas Shallow X Deep	5
2) Operator's Well Number: Franklin Jennings 212 Well Pad Name: Franklin Jennings 3) Farm Name/Surface Owner: Franklin Jennings Public Road Access: Preston County Route 60/9 4) Elevation, current ground: 1725.8 Elevation, proposed post-construction: 1726 5) Well Type (a) Gas X Oil Underground Storage Other	5
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5) Well Type (a) Gas X Oil Underground Storage Other	
Other	
(b)If Gas Shallow X Deep	
Horizontal X	
6) Existing Pad: Yes or No No	
7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s): Target Formation-Marcellus Shale, Top-8,191.0ft, Bottom-8,298.0ft, Anticipated Thickness-107ft, Associated Pressure-0.5 p	osi/ft
8) Proposed Total Vertical Depth: 8,286 ft.	
9) Formation at Total Vertical Depth: Marcellus Shale	
10) Proposed Total Measured Depth: 18,506 ft.	
11) Proposed Horizontal Leg Length: 9,713.64 ft.	
12) Approximate Fresh Water Strata Depths: 475', 675', 845', 1000'	
13) Method to Determine Fresh Water Depths: Offsetting wells reported water depths (077-00480, 077-00481, 077-00482, 077-00583, 07	7-00564)
14) Approximate Saltwater Depths: 1,600 ft.	
15) Approximate Coal Seam Depths: Et Lich-277, Modeso - 207, Behaviouri - 420; Study Creek - 847, Upper Françoit - 827, Licher Françoit - 837, Upper Hollandring - 747, Modeso 128, Coner Filteratury - 227	, Claton - [37'
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: None	
Depth:	
Seam: Office of Oil and Gas	
Owner: FFR 9 2 2010	

WV Department of Environmental Protection

Page 1 of 3

WW-6B (04/15) API NO. 47-_____ OPERATOR WELL NO. Franklin Jennings 212
Well Pad Name: Franklin Jennings

18)

CASING AND TUBING PROGRAM

ТҮРЕ	Size (in)	New or Used	<u>Grade</u>	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	94	80	80	CTS
Fresh Water	13.375	New	J-55	54.5	1,050	1,050	CTS
Coal							
Intermediate	9.625	New	J-55	40	1,900	1,900	CTS
Production	5.5	New	P-110	20	18,506	18,506	TOC @ 1,750
Tubing							
Liners							

MJK 10/20/2017

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	Type 1, 3% CaC(2	1.2
Fresh Water	13.375	17.5	0.38	2,730	900	Class A, 3% CaCl2	1.2
Coal							
Intermediate	9.625	12.25	0.395	3,950	1,500	Class A, 3% CaCl2	1.29
Production	5.5	8.5-8.75	0.361	12,640	9,500	Class A/50:50 Poz	1.29/1.34
Tubing					5,000		
Liners					N/A		

PACKERS

Kind:	
Sizes:	Office of Oil and Gas
Depths Set:	NOV - 1 2017 WV Department of Environmental Protection

WW-6B
(10/14)

n47-077-00648 API NO. 47-OPERATOR WELL NO. Franklin Jennings 212 Well Pad Name: Franklin Jennings

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 ½" 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 with 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 ½" 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 9,500 psi.

- 21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 23.33
- 22) Area to be disturbed for well pad only, less access road (acres): 8.01
- 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 2,000'; there will be no centralizers from 2,000 to surface.

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

24" will be grouted from surface. The 13 3/8" casing will be cemented to surface with Class A cement and no greater than 3% CaCl (calcium chloride). The 9 24" will be grouted from surface. The 13 3/6 casing will be cemented to surface with Class A cement, & no greater than 3% calcium chloride. The 5 1/2" production string will be cemented back to RECEIVED 5/8" casing will be cemented to surface with Class A cement, & no greater than 3% calcium chloride. The 5 1/2 production string this becomes fished with Cycle 1,750' (+/- 150' above the casing shoe for the 9 5/8") with Type 1 or Class A and 50/50 Poz cement retarded (to extend pumpability) cellophane flaked with Cycle 1 and Get and Cycle 1 and Get 1 and 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) helps cement achieve a "right angle" set) during the plastic phase of the cement set-up.

25) Proposed borehole conditioning procedures:

WV Department of Environmental Protection

2017

Top holes will be drilled with fresh water to 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 to 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 stands and load the hole. The weight indicator on the rig will be monitored for any occurrences of drag and if any are notices, we will re-run the previous stand of pipe pulled across and circulate 2X bottoms up while watching the shakers for signs of cuttings. Once at the base of the 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.

ARSE	NAL	Arsenal Ro Franklin Jer Casing B Directional P	nings 212 lesign		047-077-00648
Other Names: Surface Location: Bottom Hole Location: Total Depth:	N/A TBD TBD 18,506 MD (tt)			State: AFE #: RKB:	Preston
Logs		oth (ft) Depth-(ft)		Ground Level: Hold Size	1,726 Casing and Mud Directional & Surveys Cement Drig /Csg Point
None	Section 1	Drive Pipe		J.C.	- Odnam
		80 3 80	24" 9	94# H-40 STC	Vertical
None	Section 2	Floc		TOC: S	Floc Water ient:Class A 489 Sacks w/ 30% Excess surface (top off if needed) ent volumes are estimates
Possible CBL after cement job		.050 1,050	13.3/	8" 54.5# J-55 STC	Vertical
None	Section 3	Floc		12 1/4" (PDC)	Floc Water
				TOC: Sur	face (top off if needed) ent volumes are estimates
Possible CBL after cement job	i	.900 1,900	9 5/8	" 40# J-55 LTC	Vertical
	Section 4	Floc		Floc Water Floc Water	From To 80 1900 1900 1900 7,792 18,506
			8-3/4	/2" & 12 1/4" PDC 4" (PDC) 2" (PDC)	From To 80 1,900 1,900 8,792 8,792 18,506 See Directional Plan
		ОВМ			
	Big Lime	1,523	20120100		
	1st Elk Siltstone	4,968			
	Tully Lime	7,828			
	Purcell (Limestone)	8,256	Cem	ent: Class A/ 50:50 POZ	
	Lower Marcellus	8,264		13/sack +10% Exs in OH	
	18,506 MD 8286 TVD				
	District Control of the Control of t	Constant			5 1/2" 20# P-110 VAR
Revision	1.	Note: Not drawn	to scale		Cement Outside Casing Soal Assembly in Annulus
Date	Last Revised: 25-Oct-17 Jarrett Toms				RECEIVED.

Office of Oil and Gas

NOV - 1 2017



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 Preston County, WV prior to hydraulic fracturing at the following ARSENAL RESOURCES wells on the Franklin Jennings 212 Pad.

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 8,300'TVD) and existing conventional natural gas wells in partially-depleted, relatively high permeability reservoirs at depths shallower than the Marcellus.

ARSENAL RESOURCES has determined there are no existing active or inactive wells within the 500' offset of the Franklin Jennings 212 wellbore.

Office of Oil and Gas

NOV - 1 2017

WV Department of Environmental Protection

API Number	47 -	-	
One	ator's Well	No E	capillo lancines 212

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

FLUIDS/CUTTINGS DISPOSAL & RECLAMATION PLAN

	OD C. J. 404540442
Operator Name Arsenal Resources	OP Code 494519412
Watershed (HUC 10) Sandy Creek	Quadrangle Thornton
Do you anticipate using more than 5,000 bbls of water to co	omplete the proposed well work? Yes Vo No
Will a pit be used? Yes V No No	
If so, please describe anticipated pit waste: Pro	duced Water
Will a synthetic liner be used in the pit? Yes	No If so, what ml.? 60 ml
Proposed Disposal Method For Treated Pit Waste	s:
Land Application	
Underground Injection (UIC Po	ermit Number)
Reuse (at API Number Various	
Off Site Disposal (Supply form	WW-9 for disposal location)
Other (Explain	
And the state of t	
	sed loop system will contain all of the drilling medium and drill cuttings on location to then be taken to a landfill
Drilling medium anticipated for this well (vertical and hori	zontal)? Air, freshwater, oil based, etc. Vertical freshwater, Horizontal synthetic oil based muc
-If oil based, what type? Synthetic, petroleum, etc	Synthetic
Additives to be used in drilling medium? Bentonite, soap and	polymer sticks, soda ash, sodium bicarbonate, defoamer, base oil, emulsifiers, lime, and barite
Drill cuttings disposal method? Leave in pit, landfill, remo	
-If left in pit and plan to solidify what medium wi	
-Landfill or offsite name/permit number? Advance	ed Disposal Services, Chestnut Valley Landill
	and Gas of any load of drill cuttings or associated waste rejected at any rided within 24 hours of rejection and the permittee shall also disclose
on August 1, 2005, by the Office of Oil and Gas of the We provisions of the permit are enforceable by law. Violatio law or regulation can lead to enforcement action. I certify under penalty of law that I have perso application form and all attachments thereto and that,	Prom
Company Official (Typed Name) William Veigel	Office of Oil and G
Company Official Title Designated Agent	NOV - 1 2017
Company Official Title Designator 1901	
	Environmental Protect
Subscribed and sworn before me this 26 day	of October, 2017
My commission expires July 3, 20	Notary Public, State Of West Virginia AMY R MILLER 109 Parkview Drive No 101 Bridgeport, WV 26330 My Commission Engineer in 2726321

Proposed Revegetation Treatm	nent: Acres Disturbed 1	5.2 Prevegetation pH	6.8 Average
Lime 2.67	Tons/acre or to correct	ct to pH 6.4	
Fertilizer type 10-2	0-20	*	
Fertilizer amount_10	000	lbs/acre	
Mulch 3-4		_Tons/acre	
		Seed Mixtures	
Ten	nporary	Perma	nent
Seed Type	lbs/acre	Seed Type	lbs/acre
Orchard Grass	129	Orchard Grass	129
Rye	93	Rye	93
Clover	24	Clover	24
Timothy	45	Time attent	45
	and proposed area for land it will be land applied, inc n area.	Timothy d application (unless engineered plans include lude dimensions (L x W x D) of the pit, and	
Attach: Maps(s) of road, location, pit approvided). If water from the pacreage, of the land application Photocopied section of involve Plan Approved by:	and proposed area for land it will be land applied, income area. ed 7.5' topographic sheet.	d application (unless engineered plans included lude dimensions (L x W x D) of the pit, and	ling this info have been dimensions (L x W), an
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Attach: Maps(s) of road, location, pit approvided). If water from the pacreage, of the land application. Photocopied section of involved by: Plan Approved by: Re-seed all per regulation. Upg per the West Virginal per the	and proposed area for land it will be land applied, inconsider and applied, inconsider and area. ed 7.5' topographic sheet. and mulch all distorated erosion and area.	d application (unless engineered plans include clude dimensions (L x W x D) of the pit, and urbed areas as soon as reast as sediment control measure I Sediment Control Field Ma	ling this info have been dimensions (L x W), an something this info have been dimensions (L x W), and something the something th
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SITE SAFETY PLAN

Franklin Jennings Well Pad 212

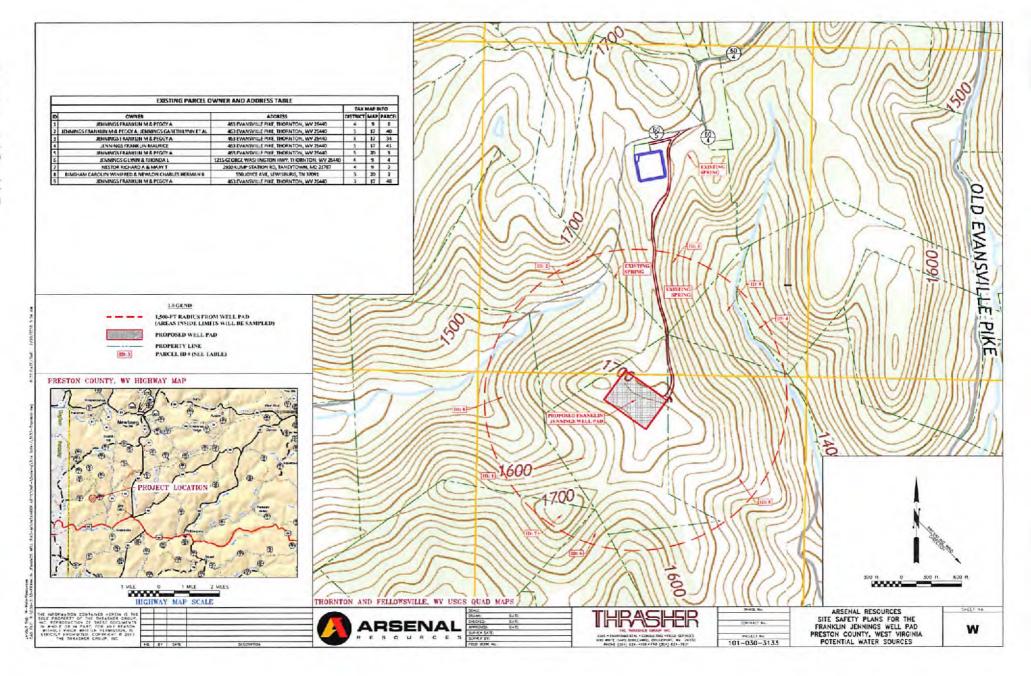
911 Address:

919 May Road

Thornton, WV 26440

RECEIVED
Office of Oil and Gas

NOV - 1 2017



1,500' 3,000'

LEASE BOUNDARY

500' DHP BUFFER

DOWN HOLE PATH DHP BUFFER DRAWN BY: R. DOERR

SCALE: 1" = 2000'
DRAWING NO: 030-313.
WELL LOCATION PLAT

EXISTING / PRODUCING WELLHEAD ABANDONED WELL

PLUGGED & ABANDONED WELL

CUT CONDUCTOR

WW-6A1 (5/13)

Operator's Well No. Franklin Jennings 212

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:

. Lessor	antor, Le	essor, et	etc.	Grantee	 Lessee. 	etc.	R	ovalty	Boo	k/Pag
		inertee of	7.0							1.70

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: RECEIVED
Office of Oil and Gas

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: Arsenal Resources

By: William Veigel

Its: Designated Agent

Page 1 of

Walls

047-077-00648

Attachment to WW-6A1, Franklin Jennings 212

Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
***************************************	Franklin M. Jennings and Peggy A.				
1/2	Jennings	R.P. Land Company, LLC	0.18	763/162	703.101
	R.P. Land Company, LLC	Mar Key, LLC		740/1	
2	G. Lynn Jennings	R.P. Land Company, LLC	0.18	763/158	64.68
	R.P. Land Company, LLC	Mar Key, LLC		740/1	
	Charles Herman Newlon II and				
3	Donna R. Newlon	Mar Key, LLC	0.17	801/693	87
3	Carolyn Winifred Bingham and James	Mar Key, LLC	0.17	801/691	87
4	Everett L. St. Clair, widower	Mar Key, LLC	0.15	762/973	171.61
5/6/7	William Larew	R.P. Land Company, LLC	0.18	750/481	222.961
	R.P. Land Company, LLC	Mar Key, LLC		740/1	
	Crystal A. Huffman, f/k/a Crystal A.				
7	Austin, f/k/a Crystal A. Jennings	Mar Key, LLC	0.18	764/261	20.82
8	William Larew	R.P. Land Company, LLC	0.18		222.961
	R.P. Land Company, LLC	Mar Key, LLC		740/1	
-	Alden B. Jennings and Elnora				
9	Jennings	R.P. Land Company, LLC	0.18	753/182	403.04
	R.P. Land Company, LLC	Mar Key, LLC		740/1	
	Alden B. Jennings and Elnora	2			
10	Jennings	R.P. Land Company, LLC	0.18	64/284 (Taylor County)	248.085
	R.P. Land Company, LLC	Mar Key, LLC		32/249 (Taylor County)	

Agreement to Drill, Complete and Operate Oil & Gas Wells

This Agreement to Drill, Complete and Operate Oil & Gas Wells (this "Agreement"), by and among Mountaineer Keystone LLC, a West Virginia limited liability company ("Mountaineer Keystone"), PDC Mountaineer, LLC, a Delaware limited liability company ("PDC"), and PDC Mountaineer Holdings, LLC, a Delaware limited liability company ("PDC Holdings"), is effective as of October 15, 2014. (the "Effective Date") and sets forth the terms pursuant to which Mountaineer Keystone will drill, complete and operate the Wells (as defined below) on behalf of PDC and PDC Holdings. Mountaineer Keystone, PDC, and PDC 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 Mountaineer Keystone on the one hand or PDC and PDC Holdings on the other hand with 30 days' written notice to the other Party or Parties, as applicable (the "Term").
- 2. Authorization to Operate: PDC and PDC Holdings authorize Mountaineer Keystone to undertake and perform, on PDC and PDC 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 PDC or PDC Holdings. PDC, PDC Holdings and Mountaineer Keystone are affiliates with a common parent. Mountaineer Keystone was formed to operate oil and gas leasehold acreage held by PDC, PDC Holdings and certain other affiliates. Mountaineer Keystone 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 PDC or PDC Holdings from time to time as directed by PDC or PDC 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]

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Office of Oil and Gas

NOV - 1 2017

IN WITNESS WHEREOF, Mountaineer Kcystone, PDC, and PDC Holdings have caused their duly authorized representatives to execute this Agreement as of the Effective Date.

MOUNTAINEER KEYSTONE LLC

Name:

Title: CEO

PDC MOUNTAINEER, LLC

Title: Caro

PDC MOUNTAINEER HOLDINGS, LLC

Name:

Title: Co

Office of Oil and Gas

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 Holdings"), 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").
- 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]

Office of Oil and Gas

NOV - 1 2017

WV Department of Environmental Protection

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

Name: Joel E. Symonds

Title: Vice President - Land

RIVER RIDGE ENERGY, LLC

Name: Joel E. Symonds

Title: Vice President - Land

RIVER RIDGE HOLDINGS, LLC

Name: Joel E. Symonds

Title: Vice President - Land

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WV Department of conmental Protection

02/23/2018

West Virginia Secretary of State — Online Data Services

Business and Licensing

Online Data Services Help

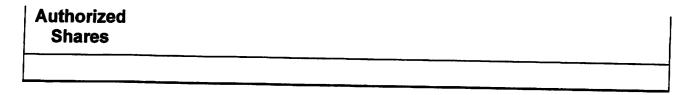
Business Organization Detail

NOTICE: The West Virginia Secretary of State's Office makes every reasonable effort to ensure the accuracy of information. However, we make no representation or warranty as to the correctness or completeness of the information. If information is missing from this page, it is not in the The West Virginia Secretary of State's database.

MAR KEY LLC

Organiza	ation Info	rmation						
Org Type	Effective Date	Established Date	Filing Date	Charter	Class	Sec Type	Termination Date	Termination Reason
LLC Limited Liability Company	7/11/2011		7/11/2011	Domestic	Profit			

Business Purpose	2111 - Mining, Quarrying, Oil & Gas Extraction - Oil and Gas Extraction - Crude Oil and Natural Gas Extraction	Capital Stock			
Charter County		Control Number	99Q1F		
Charter State	W	Excess Acres			
At Will Term	Α	Member Managed	MBR		
At Will Term Years		Par Value		RECE Office of C NOV - WV Depar Environmenta	1 2



Addresses		
Туре	Address	
Designated Office Address	65 PROFESSIONAL PLACE SUITE 200 BRIDGEPORT, WV, 26330	
Mailing Address	6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090 USA	
Notice of Process Address	CORPORATION SERVICE COMPANY 209 WEST WASHINGTON STREET CHARLESTON, WV, 25302	
Principal Office Address	6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090 USA	
уре	Address	

Officers		
Туре	Name/Address	
Member	MOUNTAINEER KEYSTONE ENERGY LLC 6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090	
Organizer	PAUL M HERZING 560 EPSILON DR. PITTSBURGH, PA, 15238 USA	
Туре	Name/Address	Office of (

Annual Reports

WV Department of Protection

Date filed

02/23/2018

Date filed			
5/8/2012			
6/28/2013		-	
4/28/2014			
6/30/2015		-	
6/20/2016			

For more information, please contact the Secretary of State's Office at 304-558-8000.

Thursday, February 23, 2017 — 9:08 AM

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Office of Oil and Gas

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WV Department of Environmental Protection



People Powered. Asset Strong.

October 27, 2017

Mr. James Martin, Chief of Oil and Gas West Virginia Department of Environmental Protection 601 57th Street, SE Charleston, WV 25304

RE: Ownership of Roadways; Franklin Jennings Pad

Dear Mr. Martin:

In preparation of filing a permit application for the above referenced well, the Title Department of Arsenal Resources has conducted a thorough title examination in order to determine the ownership of the oil and gas underlying all roadways crossed by the proposed wells. The findings of the title examination show that some of the roadways crossed by the proposed wells are owned in fee by the West Virginia Department of Transportation, Division of Highways and that some are only right of ways. If owned in fee by the West Virginia Department of Transportation, Division of Highways, a lease covering its interest in the roadway or roadways has been properly obtained and provided in the application materials. If a right of way only, the oil and gas underlying such roadway or roadways is owned by the adjoining landowners and is also covered by the leaseholds provided in the application materials.

If you have any questions, concerns or need further information, please do not hesitate to contact me at the address listed below.

Sincerely,

Ryan Brode Title Attorney

> RECEIVED Office of Oil and Gas

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WV Department of Environmental Protection

6031 Wallace Road Ext, Suite 300 Wexford, PA 15090 P: 724-940-1100 F: 800-428-0981 www.arsenelresources.com

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

	ce Certification: 10-30-17		API No. 47		
			Operator's	Well No. F	ranklin Jennings 212
			Well Pad N	ame: Fran	ıklin Jennings
Notice has l	oeen given:				
	ne provisions in West Virginia Code	§ 22-6A, the Operator has pro-	vided the req	uired partie	es with the Notice Forms listed
	tract of land as follows:				
State:	West Virginia	UTM NAD 83	Easting:	596,438.813	
County:	Preston		Northing:	4,355,941.63	
District:	Lyon	Public Road Acc			nty Route 60/5
Quadrangle:	Thornton	Generally used fa	arm name:	Franklin M. 8	Peggy A. Jennings
Watershed:	Sandy Creek				
information r of giving the requirements Virginia Cod	ed the owners of the surface descri- equired by subsections (b) and (c), so surface owner notice of entry to su of subsection (b), section sixteen of e § 22-6A-11(b), the applicant shall thave been completed by the applican	ection sixteen of this article; (in arvey pursuant to subsection (of this article were waived in tender proof of and certify to the	i) that the red (a), section t writing by	quirement ven of this the surface	was deemed satisfied as a result article six-a; or (iii) the notice owner; and Pursuant to West
Pursuant to	West Virginia Code § 22-6A, the Operator has properly served the require	perator has attached proof to the	his Notice Co	ertification	
	ECK ALL THAT APPLY	ed parties with the following.			OOG OFFICE USE ONLY
*PLEASE CHI					
*PLEASE CHI	ECK ALL THAT APPLY	■ NOTICE NOT REQUIR SEISMIC ACTIVITY WAS	CONDUC'	ΓED	ONLY RECEIVED/ NOT REQUIRED
*PLEASE CHI	ECK ALL THAT APPLY FICE OF SEISMIC ACTIVITY or	■ NOTICE NOT REQUIRESEISMIC ACTIVITY WAS	CONDUCTEY WAS CORED BECAU	TED ONDUCTE USE	ONLY RECEIVED/ NOT REQUIRED
*PLEASE CHI	ECK ALL THAT APPLY FICE OF SEISMIC ACTIVITY or FICE OF ENTRY FOR PLAT SURV	■ NOTICE NOT REQUIRESEISMIC ACTIVITY WAS VEY or □ NO PLAT SURVED NOTICE NOT REQUIRED NOTICE OF ENTRY FOR I	CONDUCTEY WAS CORED BECAUPLAT SURV	TED ONDUCTE USE VEY	ONLY RECEIVED/ NOT REQUIRED RECEIVED/ NOT REQUIRED
*PLEASE CHI	ECK ALL THAT APPLY FICE OF SEISMIC ACTIVITY or FICE OF ENTRY FOR PLAT SURV	■ NOTICE NOT REQUIR SEISMIC ACTIVITY WAS VEY or □ NO PLAT SURV ■ NOTICE NOT REQUIR NOTICE OF ENTRY FOR IT WAS CONDUCTED or □ WRITTEN WAIVER	CONDUCTEY WAS CORED BECAUPLAT SURV	TED ONDUCTE USE VEY	ONLY RECEIVED/ NOT REQUIRED RECEIVED/ NOT REQUIRED
*PLEASE CHI 1. NO 2. NO 3. NO	ECK ALL THAT APPLY FICE OF SEISMIC ACTIVITY OF FICE OF ENTRY FOR PLAT SURV	■ NOTICE NOT REQUIR SEISMIC ACTIVITY WAS VEY or □ NO PLAT SURV ■ NOTICE NOT REQUIR NOTICE OF ENTRY FOR IT WAS CONDUCTED or □ WRITTEN WAIVER	CONDUCTEY WAS CORED BECAUPLAT SURV	TED ONDUCTE USE VEY	ONLY RECEIVED/ NOT REQUIRED RECEIVED/ NOT REQUIRED

Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Reference Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service of the return receipt card or other postal receipt for certified mailing.

Certification of Notice is hereby given:

THEREFORE, I William Veigel , have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator: Arsenal Resources

By: William Veigel

Its: Designated Agent

Telephone: 724-940-1218 Address:

6031 Wallace Road Extension, Suite 300

Wexford, PA 15090

Facsimile: 304-848-9134

Email:

kdavis@arsenalresources.com

NOTARY SEA OFFICIAL SEAL NOTARY PUBLIC STATE OF WEST VIRGINIA CAROLINDA FLANAGAN PO Box 603 Lumberport WV 26386 My Commission Expires September 15, 2021 Subscribed and sworn before me this 30

day of OCT,

Notary Public

My Commission Expires

Oil and Gas Privacy Notice:

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

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WV Department of Environmental Protection

02/23/2018

API NG. 77- 0 7 7 0 0 6 4 8 OPERATOR WELL NO. Franklin Jennings 212

Well Pad Name: Franklin Jennings

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

Notice Time Requirement: notice shall be provided no later than the filing date of permit application. Date of Notice: 10-30-17 Date Permit Application Filed: 10-31-17 Notice of: PERMIT FOR ANY ☑ CERTIFICATE OF APPROVAL FOR THE WELL WORK CONSTRUCTION OF AN IMPOUNDMENT OR PIT Delivery method pursuant to West Virginia Code § 22-6A-10(b) ☐ PERSONAL REGISTERED ✓ METHOD OF DELIVERY THAT REQUIRES A SERVICE MAIL RECEIPT OR SIGNATURE CONFIRMATION Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R, § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule. ☑ Application Notice ☑ WSSP Notice ☑ E&S Plan Notice ☑ Well Plat Notice is hereby provided to: ☑ SURFACE OWNER(s) COAL OWNER OR LESSEE Name: Franklin M. & Peggy A. Jennings Name: See Attached Address: 463 Evansville Pike Address: Thornton, WV 26440 COAL OPERATOR Name: Name: None Address: Address: SURFACE OWNER(s) (Road and/or Other Disturbance) SURFACE OWNER OF WATER WELL Name: Christopher R. Jennings AND/OR WATER PURVEYOR(s) Address: P.O. Box 86 Name: See Attached Newburg, WV 26410 Name: Franklin M. & Peggy A. Jennings Address: Address: 463 Evansville Pike ☐ OPERATOR OF ANY NATURAL GAS STORAGE FIELD Thornton, WV 26440 RECEIVED Gas ☑ SURFACE OWNER(s) (Impoundments or Pits) Name: Name: Franklin M. & Peggy A. Jennings Address: Address: 463 Evansville Pike MON - 1 5011 Thomton, WV 26440 *Please attach additional forms if necessary WV Department of Environmental Protection WW-6A (8-13) RECEIVED Office of Oil and Gas

NOV - 1 2017

API NO. 47OPERATOR WELL NO. Franklin Jennings 212
Well Pad Name: Franklin Jennings

047-077-00648

WV Department of Environmental Protection

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a firesh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements, (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items WW-6A (8-13) API NO. 47-____OPERATOR WELL NO. Franklin Jennings 212
Well Pad Name: Franklin Jennings

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Office of Oil and Gas

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

NOV - 1 2017

WV Department of Environmental Protection

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.

047-077-00648 API NO. 47-

OPERATOR WELL NO. Franklin Jennings 212
Well Pad Name: Franklin Jennings

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have THIRTY (30) DAYS after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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NOV - 1 2017

WW-6A (8-13) API NO. 47-___OPERATOR WELL NO. Franklin Jennings 212
Well Pad Name: Franklin Jennings

Notice is hereby given by:

Well Operator: Arsenal Resources

Telephone: 724-940-1218
Email: kdavis@arsenalresources.com

Address: 6031 Wallace Road Extension, Suite 300

Wexford, PA 15090

Facsimile: 304-848-9134

Oil and Gas Privacy Notice:

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

OFFICIAL SEAL

NOTARY PUBLIC

STATE OF WEST VIRIGINIA

CAROLINDA FLANAGAN
PO Box 603

Lumberport WV 26366
My Commission Expires September 15, 2021

Subscribed and sworn before me this

day of OCT

Notary Public

My Commission Expires

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Arsenal Resources Franklin Jennings WW-6-A Attachment

Coal Owner or Lessee

Franklin M. and Peggy A. Jennings 463 Evansville Pike Thornton, WV 26440

ACIN 5260 Irwin Road Huntington, WV

Water Purveyors

Franklin M. and Peggy A. Jennings/ 463 Evansville Pike Thornton, WV 26440

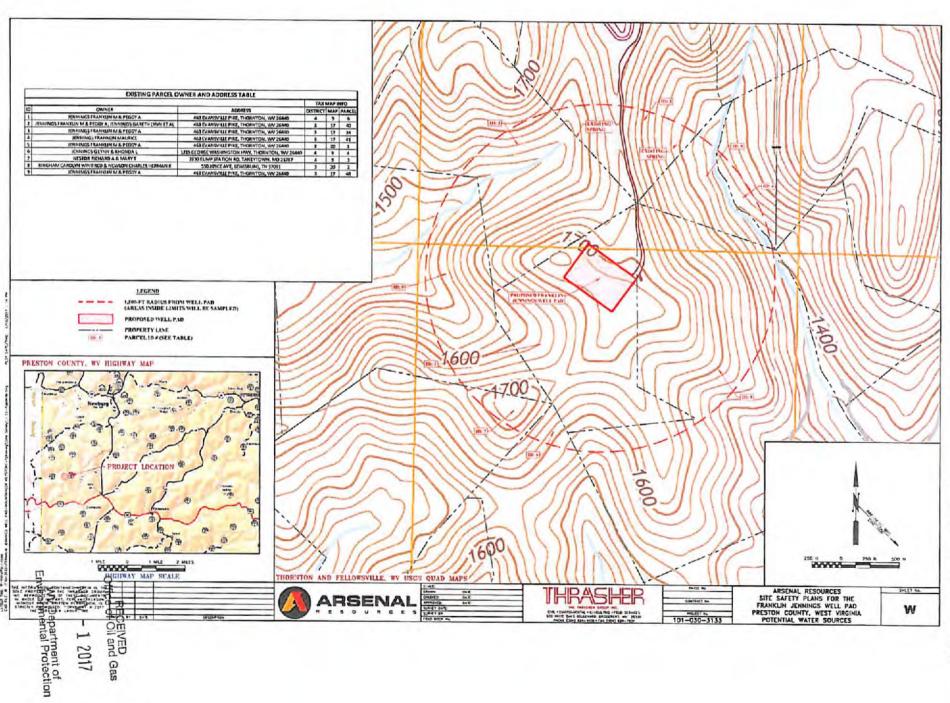
Richard A & Mary T Nestor 2930 Kump Station Road Taneytown, MD 21787

G Lynn & Rhoda L Jennings 1215 George Washington Hwy Thornton, WV 26440

Carolyn W. Bingham & Charles H. Newlon II 550 Joyce Avenue Lewisburg, TN 37091

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

PERSONAL SERVICE Pursuant to West on to the surface to but no more than beneath such tractowner of minerals and Sediment Cor Secretary, which	MAIL Virginia Code § 22-6A-10(a), Prictificate to conduct any plat surveys reforty-five days prior to such entry to that has filed a declaration pursus underlying such tract in the countrol Manual and the statutes and statement shall include contact into owner to obtain copies from the approvided to:	METHOD OF DEL RECEIPT OR SIGN or to filing a permit applic equired pursuant to this ar to: (1) The surface owner ant to section thirty-six, ar ty tax records. The notice rules related to oil and gas formation, including the ac-	ATURE CONFIR ation, the operator icle. Such notice: of such tract; (2) ticle six, chapter to shall include a sta exploration and p	shall provide notice of shall be provided at le to any owner or lesses wenty-two of this cod atement that copies of production may be obt	east seven days e of coal seams le; and (3) any the state Erosion ained from the
Pursuant to West on to the surface to but no more than beneath such tract owner of minerals and Sediment Cor Secretary, which seenable the surface	MAIL Virginia Code § 22-6A-10(a), Prictificate to conduct any plat surveys reforty-five days prior to such entry to that has filed a declaration pursus underlying such tract in the countrol Manual and the statutes and statement shall include contact into owner to obtain copies from the approvided to:	RECEIPT OR SIGN or to filing a permit applic equired pursuant to this ar to: (1) The surface owner ant to section thirty-six, ar ty tax records. The notice rules related to oil and gas formation, including the ac	ATURE CONFIR ation, the operator icle. Such notice: of such tract; (2) ticle six, chapter to shall include a sta exploration and p	shall provide notice of shall be provided at le to any owner or lesses wenty-two of this cod atement that copies of production may be obt	east seven days e of coal seams le; and (3) any the state Erosion ained from the
on to the surface to but no more than beneath such tract owner of minerals and Sediment Cor Secretary, which senable the surface	tract to conduct any plat surveys reforty-five days prior to such entry that has filed a declaration pursus underlying such tract in the countrol Manual and the statutes and statement shall include contact into owner to obtain copies from the provided to:	equired pursuant to this are to: (1) The surface owner ant to section thirty-six, are ty tax records. The notice rules related to oil and gas formation, including the ac-	icle. Such notice s of such tract; (2) ticle six, chapter t shall include a sta exploration and p	shall be provided at le to any owner or lessed wenty-two of this cod atement that copies of production may be obt	east seven days e of coal seams le; and (3) any the state Erosion ained from the
■ SURFACE C	OWNER(s)	■ COAL	OWNER OR LE	ESSEE	
Name: Franklin M. &		Name: See		JOSEE	
Address: 463 Evans					
Thornton, WV 26440	/	Address.			
	R. Jennings (access road)	7-2-20			
Address: P.O. Box 8		■ MINE	RAL OWNER(s)		
Newburg, WV 26410			klin M. & Peggy A. Jennir		
Name:			63 Evansville Pike	-	
Address:		Thornton, WV			
			additional forms if ne	ecessary	
a plat survey on the State: We	Virginia Code § 22-6A-10(a), not he tract of land as follows: est Virginia		ide & Longitude:	l operator is planning 39'22'30"; 79'52'30" Preston County Route 60/5 Sandy Creek	
	ornton	Generally use	farm name	Franklin M. & Peggy A. Jeni	nings
Copies of the stat may be obtained Charleston, WV obtained from the Notice is hereb Well Operator:	Arsenal Resources	partment of Environmenta f such documents or additi	Protection headq onal information i	uarters, located at 601 related to horizontal d	1 57th Street, SE,
	724-940-1218	Facsimile:	- N. O. S. T. O.		MUY - IZUII
Oil and Gas Pr	rivacy Notice: I and Gas processes your personal		304-848-9134		WV Department of Environmental Protect

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

Arsenal Resources Franklin Jennings Pad WW-6A3 Attachment

Coal Owner or Lessee:

Franklin M. and Peggy A. Jennings 463 Evansville Pike Thornton, WV 26440

ACIN 5260 Irwin Road Huntington, WV 25705

Office of Oil and Gas

NOV - 1 2017

WV Department of Environmental Protection

WW-6A5 (1/12) Operator Well No. Franklin Jennings 212

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

	Requirement: notice shall be provide: 10-30-17 Date Perm	ded no later than the mit Application File			application.
Delivery metl	hod pursuant to West Virginia Co	de § 22-6A-16(c)			
CERTIF	TIED MAIL	☐ HAND			
RETUR	N RECEIPT REQUESTED	DELIVERY			
return receipt the planned o required to be drilling of a h damages to the	requested or hand delivery, give the peration. The notice required by t provided by subsection (b), section forizontal well; and (3) A proposed a surface affected by oil and gas open to the proposed of the	e surface owner who this subsection shall ten of this article to I surface use and co crations to the exten	se land l include a surfa ompens t the da	will be used for de: (1) A copy ace owner whos ation agreement mages are comp	cation, an operator shall, by certified mail or the drilling of a horizontal well notice of of this code section; (2) The information we land will be used in conjunction with the at containing an offer of compensation for pensable under article six-b of this chapter, sted in the records of the sheriff at the time
(at the address Name: Franklin N	by provided to the SURFACE OV s listed in the records of the sheriff a M. & Peggy A. Jennings	t the time of notice)	Name:	Christopher R. Jennin	98 (access Road)
Address: 463 E Thornton, WV 264		/		P.O. Box 86 WV 26410	
Pursuant to W operation on t State:	est Virginia Code § 22-6A-16(c), no the surface owner's land for the purp West Virginia	pose of drilling a ho	rizonta	I well on the tra	well operator has developed a planned act of land as follows: 596,438.813
County:	Preston	UTM	NAD 8	Northing:	4,355,941.639
District:	Lyan	Public	Road .	Access:	Preston County Route 60/5
Quadrangle:	Thornton	Genera	ally use	ed farm name:	Franklin M. & Peggy A. Jennings
Watershed:	Sandy Creek				
to be provide horizontal we surface affects information re	fest Virginia Code § 22-6A-16(c), the d by W. Va. Code § 22-6A-10(b). II; and (3) A proposed surface use a sed by oil and gas operations to the elated to horizontal drilling may be located at 601 57th Street, SE,	to a surface owner and compensation ag extent the damages to obtained from the	whose greeme are co Secret	e land will be un nt containing an ompensable und ary, at the WV	code section; (2) The information required used in conjunction with the drilling of a noffer of compensation for damages to the ler article six-b of this chapter. Additional Department of Environmental Protection or by visiting

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

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110 Charleston, West Virginia 25305-0430 • (304) 558-3505

Revised February 20, 2018

Thomas J. Smith, P. E. Secretary of Transportation/ Commissioner of Highways

Jill M. Newman Deputy Commissioner

James A. Martin, Chief Office of Oil and Gas Department of Environmental Protection 601 57th Street, SE Charleston, WV 25304

Subject: DOH Permit for the Franklin Jennings Pad, Preston County Franklin Jennings 212H

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #04-2017-0033 for the subject site to ARSENAL Resources for access to the State Road for the well site located off of Preston County 60/5 SLS.

The operator has signed a DISTRICT WIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT for DOH District 4 and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

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FEB 2 0 2018

WV Department of Environmental Protection Very Truly Yours,

Gary K. Clayton

Regional Maintenance Engineer Central Office Oil &Gas Coordinator

Day K. Clayton

Cc: Kelly Davis

ARSENAL Resources

CH, OM, D-4

File

	Franklin Jer	nings 212	
	FRACTURING	ADDITIVES	
	PURPOSE	TRADE NAME	CAS#
Additive #1:	Friction Reducer	WFRA-405	Proprietary
Additive #2:	Scale Inhibitor	SI-1000	7440-21-3
Additive #3:	Biocide	BIOCLEAR 2000	25314-61-8
Additive #4:	Gelling Agent	LGC-15	9000-30-0
Additive #5:	Corrosion Inhibitor	AI-300	111-76-2
Additive #6:	Gel Breaker	AP-One	7727-54-0
Additive #7:	Acid	HCI - 7.5%	7647-01-0

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77-00442-201

77-00643-202

77-00644-203

77-00645-204

77-00647-211

77-00648 - 212

WVDEP

February 8, 2018

Office of Oil and Gas ATTN: Laura Adkins 601 57th Street SE Charleston, WV 25304

RE: Franklin Jennings Pad 201-205 - 211-212

Dear Laura:

Enclosed, please find the <u>Voluntary Statement of No Objection</u> signed form for ACIN LLC, coal owner or lessee for the Franklin Jennings Pad.

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

Sincerely,

Carolinda Flanagan Permitting Specialist

1-304-838-2987 mobile

1-724-940-1224 office

cflanagan@arsenalresources.com

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FEB 1 2 2018

WW-6AW (1-12)

FEB 1 2 2018

WV Department of Environmental Protection

API NO. 47- 077 OPERATOR WELL NO. See Attached Well Pad Name, Frankin Jennings

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS VOLUNTARY STATEMENT OF NO OBJECTION

Instructions to Persons Named on Page WW-6A

The well operator named on page WW-6A is applying for a permit from the State of West Virginia to conduct oil or gas well work. Well work permits are valid for twenty-four (24) months. Please contact the listed well operator and the Office of Oil and Gas if you do not own any interest in the listed surface tract.

Comment and Waiver Provisions

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary.

Pursuant to West Virginia Code § 22-6A-8(b) No permit may be issued less than thirty days after the filing date of the application for any well work except plugging or replugging; and no permit for plugging or replugging may be issued less than five days after the filing date of the application except a permit for plugging or replugging a dry hole: Provided, That if the applicant certifies that all persons entitled to notice of the application under the provisions of subsection (b), section ten of this article have been served in person or by certified mail, return receipt requested, with a copy of the well work application, including the erosion and sediment control plan, if required, and the well plat, and further files written statements of no objection by all such persons, the secretary may issue the well work permit at any time.

VOLUNTARY STATEMENT OF NO OBJECTION

State:	l attachments consisting of pages one (1) through the well plat, all for proposed well work on the transfer versions. West Virginia	act of land as follows: Easting:	See Attached
County: District:	Preston	Northing:	See Attached
Quadrangle:		Public Road Access: Generally used farm name:	County Route 80/5
Watershed:	Maple Run	denerally used farin hame.	President M. & Peggy A. Jennings
*Please check	the box that applies	FOR EXECUT	ON BY A NATURAL PERSON
C CUDPA	OF OWNER		2 Challetin
☐ SURFAC			dainy F. Wooten
□ SURFAC	CE OWNER (Road and/or Other Disturbance)	Print Name: 6	Coding F. Wooden
□ SURFAC		Print Name: 6	nber 3, 2017
□ SURFAC	CE OWNER (Road and/or Other Disturbance)	Print Name: Date: Nover FOR EXECUTI Company:	ON BY A CORPORATION, ETC.
□ SURFAC	CE OWNER (Road and/or Other Disturbance) CE OWNER (Impoundments/Pits) OWNER OR LESSEE	Print Name: 5 Date: Nover FOR EXECUTI Company: By:	ON BY A CORPORATION, ETC.
□ SURFAC □ SURFAC □ COAL O □ COAL O	CE OWNER (Road and/or Other Disturbance) CE OWNER (Impoundments/Pits) OWNER OR LESSEE	Print Name: Date: Nover Date: Nover FOR EXECUTI Company: By: Its:	ON BY A CORPORATION, ETC.

Oil and Gas Privacy Notice:

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if

PRESTON COUNTY, WV HIGHWAY MAP ENTRANCE LOCATION PROJECT LOCATION

HIGHWAY MAP SCALE

THORNTON AND FELLOWSVILLE, WV QUAD MAPS ENTRANCE LOCATION PROJECT LOCATION 4000

ONE CALL UTILITY SYSTEM CONTACT INFO

VICINITY MAP SCALE

MANAGE

WEST VIRGINIA 811

CONTRACTOR SHALL NOTIFY THE ONE-CALL SYSTEM OF THE INTENDED EXCAVATION OR DEMOCRATION NOT LESS THAN PORTY-EIGHT (8) HOURS, EXCLUDING SATURDAYS, SUSDAYS AND LIGHT PEDERAL OR SI ALE HOLDHAYS, NOR MORE THAN TEN (10) WORK DAYS PRIOR TO THE BEGINNING OF SUCH WORK.

ARSENAL RESOURCES CONSTRUCTION PLANS FOR THE FRANKLIN JENNINGS WELL PAD

LYON DISTRICT, PRESTON COUNTY, WV **FEBRUARY 2017**

DRIVING DIRECTIONS FROM NEWBURG, WV

- TRAVEL BAST ON PRESTON COUNTY ROUTE (CR) 33 FOR APPROXIMATELY 6.3 MRUS

- THAVIE BAST ON PRESTON COUNTY ROUTE (28) 33 FOR AL THAN REGIT ON TO RESERVE I.E PERCEIVE 99 THAVE SOUTH AFFECTION ATTENTY 12 MILES ON W.C. 91 THAN REGIT ON TOO SCOTTCHILLE DOOD (CF. 90 TH). THAN REGIT ON THE SCOTTCHILLE DOOD (CF. 90 TH). THAN REGIT ON THE SCOTTCHILLE DOOD (CF. 90 TH). THAVES SOUTH AFFECTION ATTENTY 99 MILES ON CF. 90 THAVES SOUTH AFFECTION ATTENTY 99 MILES ON CF. 90 THAVES SOUTH AFFECTION ATTENTY 99 MILES ON CF. 90 THAVES SOUTH OF PRESENTANT SOUTH AFFECTION ATTENTY 99 MILES ON CF. 90 THAVES SOUTH OF PRESENTANT IN THE SOUTH AFFECTION ATTENTY 10 MILES ON CF. 904 BRAN BETT TO REGISTER ON CF. 904

- TERN ESFT ONTO CR 60'S TRAVEL WEST APPROXIMATELY 200 FEET ON CR 60'S
- THEN RECEIT ONTO SPANKE IN TENNINGS WELL PAD ACCESS BOACH

SITE COORDINATES

Courdinate Label	Well Pad Center	Flowback Pit Center	Auters Road Beginning
WVEX-N Latitude	N 39.347257"	4 35.353657*	N 39.354584*
WVE3-N Longitude	W 29 88/0456*	W 79 £79443*	W 79.876954*
WYSI-N Worthing	8063816.723.6	314155.989 ft	331489.016.0
WV83-N Easting	1860907.783 %	1861062.684 R	1861330.387 ft
UTM 83-17 Northing	4355915 294 en	4355622712m	4558725.555.m
(Tid \$3-17 Earling	545458 780 m	596504 225 m	\$86584.286 m

Courdinate Label	Well Pad Center	Flowback Pit Center	August Road Beginning		
WVEX-N Latitude	N 39.347257"	4 35.353667*	N 39.354584*		
WVE3-N Longitude	W 29 880456*	W 79 £79443*	W 79.876954*		
WYSI-N Northing	3063856.723.6	314155.989 ft	311489.016.0		
WVB3-M Easting	1860907.78111	1861062.684 R	1861330.387 ft		
UTM 81-17 Northing	4355915 294 en	4355622712m	4558775.555 m		
()Tiel #3-17 Emring	596468.780 m	596504 225 m	596584.286 m		

SURFACE HOLE COORDINATES

Coordinate Label	Well Rumber									
	301	381	30)	205	211	213	213	211	215	214
WV83-N Latitude	5 29.347D0P	N 35.346583°	N 19 346959"	4 39 346935	N 99.3475057	439.347534*	14.35.347572*	9.35,347505*	N 39.347639*	N.39.347672"
WVX3-N Longitude	W 79.8802.87*	W:79.880274"	W 79.8301801	W 79.880187"	W THESECUTOR	W 74 RESERVE	W 79 ARTTER	W 79 520718"	W 79.E30707*	W PR EDGSTST
WV83-N Northing	308730.749 ft	308721.587 h	308713.226 ft	308704.464 h	304912.157 Ft	308924 829 h	308537.004 Pt	308549 179 h	304061 354 h	308 973 530 h
WVE3-N Enting	18600000E93 ft	TREOWNER TO	1850935-243 /t	1800097.417.5	1860802-270 ft	1350311-021-0	1867819.79274	18608.28 554 R	1860637.315 N	1960848-07719
UTM 83-17 Northing	4355883.274 m	4355890.567 =	4355878.057 m	4355875.451 m	4335337,895 m	4355941 549 m	4355945.403 m	4355940.357 m	4555952.911 m	4253056.685 m
UTM 83-17 Easting	596485.496 m	596483.250 m	595493.854 m	596496.758 m	596436 245 m.	596438.653 m	556-441-460 m	226444 668 m	556446.675 m	395449 284 m

DISTURBANCE SUMMARY (Chistries - Ton Map - Porce durtamer (Ac.) Disturbance (Ac PROJECT Incomegy Franklin M & Peacy A (3-17-40) 0.50 D.ed LOCATION Jennings Franklin M. & Peggy A (P/O 4-9-6)

PAVELIBRE: CONTACT INFORMATION WEST VIRGINIA THE THRASHER GROUP, INC. B. BRAD MESSENGER, PE OFFICB: 304-624-4108

EMAIL benessenger@ hrushereng.com ARSENAL RESOURCES

OFFICE: 724-940-1204

THE IMPORTANCE CONTAINS WHEN IS THE SCALE PROPERTY OF THE THEASTER SHOWS SEE, REPRODUCTION OF THESE BOOKINGS IN MINOUS ON THE PROPERTY OF THE PROPERTY IS THE PROPERTY OF THE



SHEET INDEX

TITLE SHEET EXBITING CONDITIONS OVERALL SITE PLAN WELL PAD ACCESS ROAD PLAN & PROFILE WELL PAD ACCESS ROAD SECTIONS
FLOWBACK PIT ACCESS ROAD PLAN & PROFILE FLOWBACK PIT ACCESS ROAD SECTIONS WELL PAD PLAN WELL PAD PROFILE WELL PAD SECTIONS FLOWBACK PIT & STACING AREA PLAN FLOWBACK PIT PROFILE FLOWBACK PIT SECTIONS TOPSOIL STOCKPILE I PLAN

TOPSOT, STOCKPILE 2 & 3 PLAN OVERALL GEOMETRIC LAYOUT WELL PAD GEOMETRIC LAYOUT

FLOWBACK PIT & STAGING AREA LAYOUT RECLAMATION PLAN

CENERAL NOTES QUANTITIES TYPICAL SECTIONS DETAILS





BY: RBM APPROVED FOR PERMITS DATE: 02/14/17 APPROVED FOR BID DATE: BY: APPROVED FOR CONSTRUCTION DATE: BY:

REVISION NUMBER	REVISED SHEETS	HY	DAIF	DESCRIPTION
1	3-5, 16 & 30	£W.	05/08/17	ADDED EMERGENCY LITTURE TO FLOMBACK FIT: & REMSED WILL PAD SUMP & WILL PAD TRENCH DRAIN DETAILS



500 WHITE OAKS BOULEVARD - BRIDGEPORT, WV 25330 PHONE (304) 624-4108 - FAX (304) 624-7831

