



west virginia department of environmental protection

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

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

Monday, January 08, 2018
WELL WORK PERMIT
Horizontal 6A / Horizontal 6A Well

ARSENAL RESOURCES LLC
6031 WALLACE ROAD EXTENSION SUITE 603

WEXFORD, PA 15090

Re: Permit approval for DARWIN 214
47-077-00623-00-00

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: DARWIN 214
Farm Name: HUFFMAN, MARCHETTA
U.S. WELL NUMBER: 47-077-00623-00-00
Horizontal 6A / Horizontal 6A Well
Date Issued: 1/8/2018

Promoting a healthy environment.

PERMIT CONDITIONS

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

CONDITIONS

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

PERMIT CONDITIONS

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



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601 57th Street
Charleston, WV 25304
(304) 926-0450 fax (304) 926-0452

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
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**ORDER
ISSUED UNDER
WEST VIRGINIA CODE, CHAPTER 22, ARTICLE 6A**

TO: Arsenal Resources, LLC
6031 Wallace Rd Ext, Ste 300
Wexford, PA 15090

DATE: December 8, 2017
ORDER NO.: 2017-W-2

INTRODUCTION

This Order (hereinafter "Order") is issued by the Office of Oil and Gas (hereinafter "OOG"), by and through its Chief, pursuant to the authority of W. Va. Code §§ 22-1-1, 22-6-1 and 22-6A-1 *et seq.* to Arsenal Resources, LLC (hereinafter "Operator"), collectively the "Parties."

FINDINGS OF THE CHIEF

In support of this Order, the Chief hereby finds the following:

1. OOG, an office within the West Virginia Department of Environmental Protection, is the agency with the duty and authority to execute and enforce W. Va. Code §22-6-1 and §22-6A-1 *et seq.*, and the rules and regulations promulgated thereunder.
2. Arsenal Resources, LLC is a "person" as defined by W. Va. Code §22-6-1(n), with a corporate address as 6031 Wallace Rd Ext, Ste 300, Wexford, Pennsylvania.
3. On July 5, 2016, Arsenal Resources, LLC submitted a well work permit application identified as API# 47-077-00623. Subsequent well work applications were submitted on August 14, 2017, API# 47-077-00637; August 18, 2017, API#s 47-077-00638 and 47-077-00638; August 31, 2017, API# 47-077-00640; and September 29, 2017, API# 47-077-00641. The proposed wells are to be located on the Darwin Pad in Reno District of Preston County, West Virginia.
4. On November 17, 2016, Arsenal Resources, LLC requested a waiver for Wetland 1A and Wetland 1B outlined in Attachment 1, from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit application identified as API# 47-077-00623.

CONCLUSIONS OF LAW

1. West Virginia Code §22-1-6(d) requires, in part, that “[i]n addition to other powers, duties and responsibilities granted and assigned to the secretary by this chapter, the secretary is authorized and empowered to... (3) Enter private lands to make surveys and inspections for environmental protection purposes; to investigate for violations of statutes or rules which the Office of Oil and Gas is charged with enforcing; to serve and execute warrants and processes; to make arrests; issue orders, which for the purposes of this chapter include consent agreements; and to otherwise enforce the statutes or rules which the Office of Oil and Gas is charged with enforcing.”
2. West Virginia Code §22-6A-2(a)(6) requires, in part, that “Concomitant with the broad powers to condition the issuance of well work permits, the secretary should also have broad authority to waive certain minimum requirements of this article when, in his or her discretion, such waiver is appropriate: *Provided*, That the secretary shall submit a written report of the number of waivers granted to the Legislature commencing January 1, 2013, and each year thereafter.”
3. West Virginia Code §22-6A-12(b) requires, in part, that “[n]o 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 Office of Oil and Gas 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 Office of Oil and Gas 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.”

ORDER

West Virginia Code §22-6A-12(b) requires, in part, that “[n]o 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. The Office of Oil and Gas grants the request for a waiver for Wetland 1A and Wetland 1B from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit applications identified as API#s 47-077-00623, 47-077-00637, 47-077-00638, 47-077-00639, 47-077-00640 and 47-077-00641 . The Office of Oil and Gas hereby **ORDERS** that Arsenal Resources, LLC shall meet the following site construction and operational requirements for the Darwin well pad:


- a. A berm shall be constructed around the perimeter of the pad to contain any potential spills and storm water runoff. Berm is to be at least twenty-four inches (24”) in height;
- b. Erosion control blankets shall be installed on all slopes and down gradient locations of the pad as erosion and sediment controlling BMPs;
- c. Wetland 1A shall have a compost sock sediment trap (three socks stacked in pyramidal form) that will prevent any sediment from reaching the wetland or stream from the well pad and adjacent tank pad;
- d. Wetland 1B will be mostly covered by the construction of the well pad and tank pad. The remaining portion of the wetland shall have a compost sock sediment trap (three socks stacked in pyramidal form) that will prevent any sediment from reaching the wetland or stream from the well pad and adjacent tank pad;
- e. Disturbed areas not used for operations shall be seeded and mulched per the seeding tables in the WVDEP-OOG Erosion and Sediment Control Manual;
- f. Drill cuttings and associated drilling mud shall be disposed of in a permitted landfill;
- g. Waste generated by the flowback treatment systems shall be sent to offsite disposal at a permitted landfill;
- h. Weekly site inspections shall be conducted to monitor and maintain the integrity of the BMP storm water controls;
- i. Weekly storm water and spill prevention inspections shall be conducted focusing on storm water and spill prevention BMPs and maintenance of these BMPs;
- j. Inspections of the storm water and spill prevention measures shall be conducted after any major storm event defined as a half inch (½”) rain within any twenty-four (24) hour period;
- k. Pad inspections shall be conducted no less than once a week to identify and mitigate potential deficiencies;
- l. All records from inspections shall be maintained on site for the life of the project and be available upon request.

Thus ORDERED, the 8th day of December, 2017.

IN THE NAME OF THE STATE OF WEST VIRGINIA:

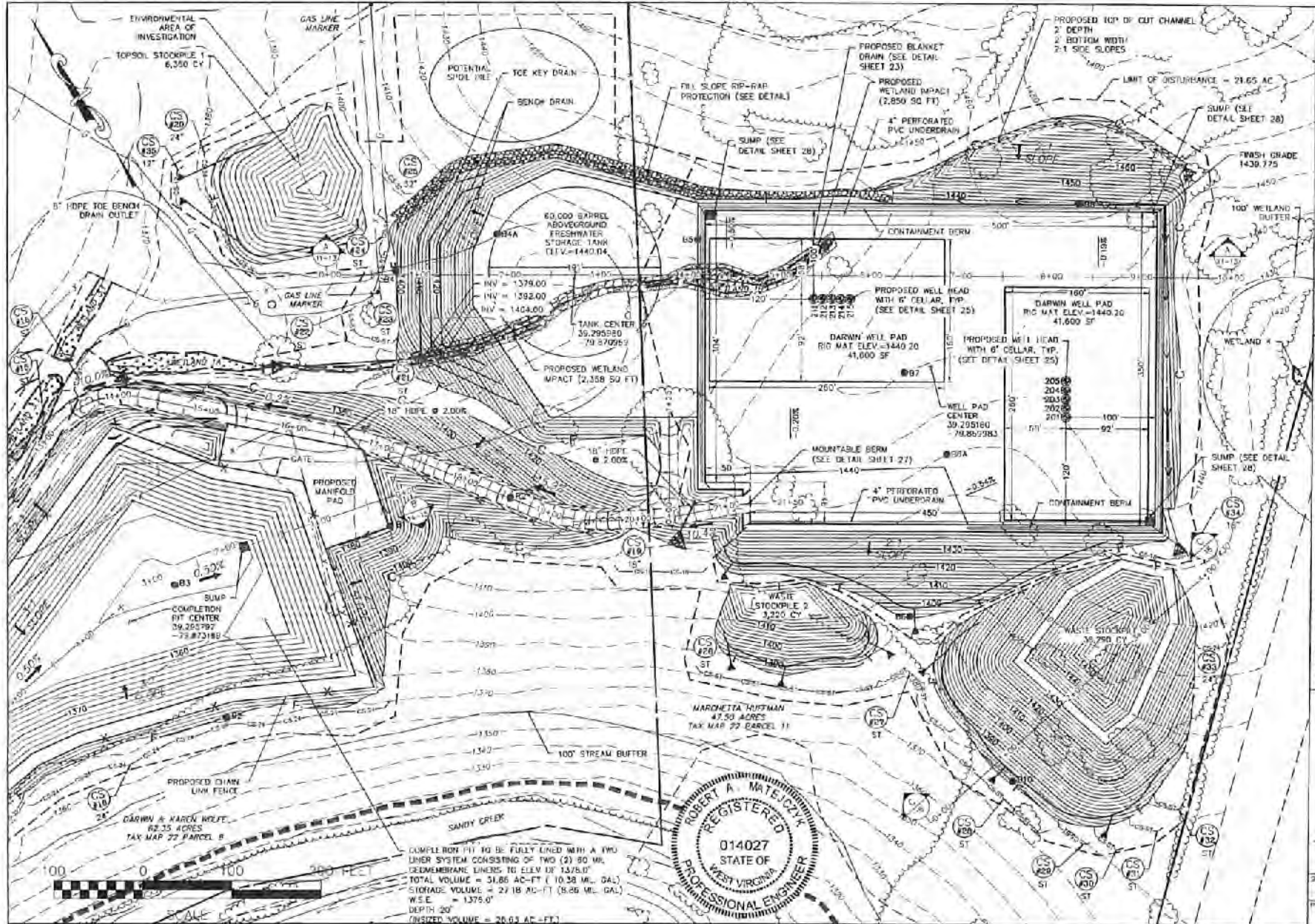
OFFICE OF OIL AND GAS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OF WEST VIRGINIA

By:



JAMES A. MARTIN, CHIEF

Darwin Wetland Waiver - Attachment 1



COMPLETION (1) TO BE FULLY LINED WITH A TWO LAYER SYSTEM CONSISTING OF TWO (2) 80 MIL. POLYETHYLENE LINERS TO ELEV. OF 1375.0'
 TOTAL VOLUME = 34.86 AC-FT (10.39 MIL. GAL.)
 STORAGE VOLUME = 27.18 AC-FT (8.26 MIL. GAL.)
 W.S.E. = 1375.0'
 DEPTH 20'
 (INSIZED VOLUME = 26.63 AC-FT)



Maintenance Keynotes, LLC
 Suite 202, Box 10, Ellettsville, IN 46120
 Phone: 724-240-1100

NO.	DATE	BY	REVISIONS
1	11/23/16	FWA	DESIGN REVISIONS
2	11/23/16	FWA	DESIGN REVISIONS
3	11/23/16	FWA	DESIGN REVISIONS
4	11/23/16	FWA	DESIGN REVISIONS
5	11/23/16	FWA	DESIGN REVISIONS
6	11/23/16	FWA	DESIGN REVISIONS
7	11/23/16	FWA	DESIGN REVISIONS
8	11/23/16	FWA	DESIGN REVISIONS
9	11/23/16	FWA	DESIGN REVISIONS
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97	11/23/16	FWA	DESIGN REVISIONS
98	11/23/16	FWA	DESIGN REVISIONS
99	11/23/16	FWA	DESIGN REVISIONS
100	11/23/16	FWA	DESIGN REVISIONS

EROSION AND SEDIMENT CONTROL PLAN
DARWIN WELL SITE
 PRELIMINARY COUNTY, WEST VIRGINIA

Larsen Design Group • Architects Engineers Surveyors
 2562 Cranberry St.
 Morgantown, WV 26508
 PHONE 304.777.2840 TOLL FREE 877.333.5634
 FAX 304.777.2841 • www.larsendesigngroup.com

Simon Land Surveying
 121 W. Main Street
 Charleston, WV 25301
 PHONE 304.457.5634



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

1) Well Operator: Arsenal Resources 494519412 Preston Reno Fellowsville 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Darwin 214 Well Pad Name: Darwin

3) Farm Name/Surface Owner: Darwin and Karen Wolfe Public Road Access: Rt. 92

4) Elevation, current ground: 1442.80' Elevation, proposed post-construction: 1440.20'

5) Well Type (a) Gas Oil Underground Storage

Other

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No

MDK 1/4/2018

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale, target top 7606', target bottom 7699', 93 ft. thick, .50 psi/ft.

8) Proposed Total Vertical Depth: 7798 ft. (Pilot), 7685 ft. (Lateral)

9) Formation at Total Vertical Depth: Huntersville Chert (Pilot), Marcellus Shale (Lateral)

10) Proposed Total Measured Depth: 19,036 ft.

11) Proposed Horizontal Leg Length: 10,898.15 ft.

12) Approximate Fresh Water Strata Depths: 940'

13) Method to Determine Fresh Water Depths: Offsetting wells reported water depths (077-00391, 077-00392, 077-00393, 077-00193, 07700545)

14) Approximate Saltwater Depths: 1500'

15) Approximate Coal Seam Depths: Bakerstown 42', Brush Creek 142', Upper Freeport 186', Lower Freeport 248', Uper Kittinging 344', Middle Kittinging 398', Lower Kittinging 420'

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

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

Depth: _____

Seam: _____

Owner: _____

WW-6B
(04/15)

API NO. 47- 077 - 00623
 OPERATOR WELL NO. Darwin 214
 Well Pad Name: Darwin

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	24"	New	H-40	94#	80'	80'	CTS
Fresh Water	13.375"	New	J-55	54.5#	1000'	1000'	CTS
Coal							
Intermediate	9.625"	New	J-55	40#	1900'	1900'	CTS
Production	5.5"	New	P-110	20#	19,036'	19,036'	TOC @ 1,750' MD
Tubing							
Liners							

MDK 1/4/2018

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	24"	36"			0	None	None
Fresh Water	13.375"	17.5"	0.38"	2730 psi	0	Class A 3% CaCl ₂	1.20
Coal					0		
Intermediate	9.625"	12.25"	0.395"	3950 psi	0	Class A 3% CaCl ₂	
Production	5.5"	8.5-8.75"	0.361"	12,640 psi	9500 psi	Type 1	1.29
Tubing					5000 psi		1.64/1.32
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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 grout 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 at the programmed depth, run 9 5/8" casing and cement to surface. The rig will then continue to drill a 8 3/4" hole to a designated Pilot Hole Depth, log the well, and then set a cement kick-off plug from Pilot hole TD to designated kick-off point. Once the plug has cured, the plan is to 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 9,500 psi.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 21.65 acres

22) Area to be disturbed for well pad only, less access road (acres): 6.62 acres

23) Describe centralizer placement for each casing string:

24" - No centralizer 13/38" - one bow spring centralizer on every 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 KOP. Every third joint from KOP to 2,050'; there will be no centralizers from 2,050' 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 5/8" casing will be cemented to surface with Type 1 cement, & no greater than 3% calcium chloride. The 5 1/2" production string will be cemented back to 1,350' (+/- 200' above the casing shoe for the 9 5/8") with Type 1 or Class A cement retarder (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 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 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.

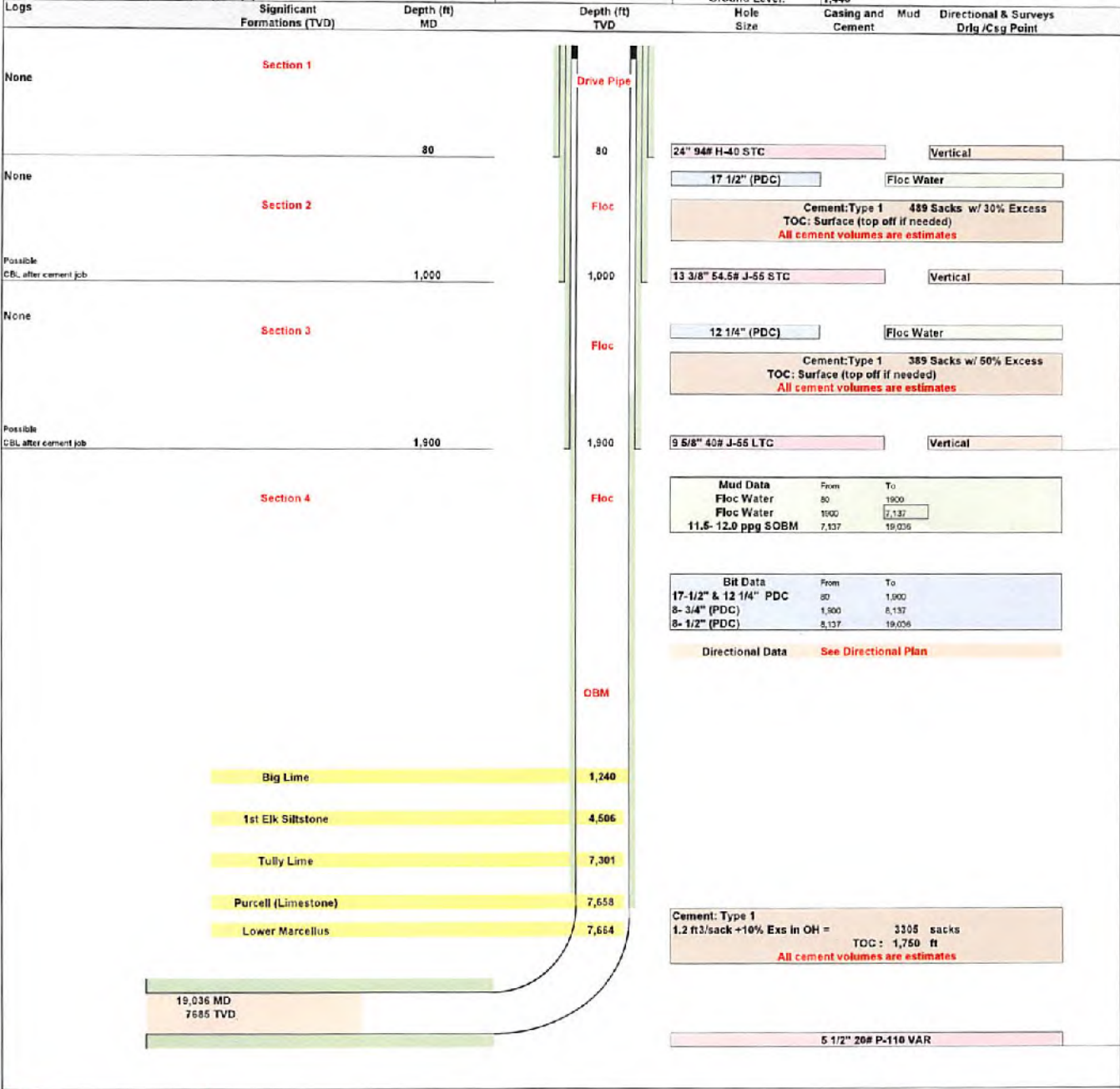
77-00623



Arsenal Resources
Darwin 214
Casing Design
Directional Plan # 4 DDC

Other Names:	N/A
Surface Location:	TBD
Bottom Hole Location:	TBD
Total Depth:	19,036 MD (ft) 7,685 TVD (ft)

County:	Preston
State:	West Virginia
AFE #:	XX
RKB:	27
Ground Level:	1,440



Revision 1
Note: Not drawn to scale
Cement Outside Casing Seal Assembly in Annulus
Date Last Revised: 6-Jul-17
Jarrett Toms

RECEIVED
Office of Oil and Gas
JUL 18 2017
WV Department of
Environmental Protection



RECEIVED
Office of Oil and Gas
JUL 18 2017
WV Department of
Environmental Protection

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 Darwin 214 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 7,606' TVD) and existing conventional natural gas wells in the partially-depleted, relatively high permeability Elk Sand formations (approximately 5,490' 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.



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 - Darwin Wolfe Pad, 214 Lateral, Preston County, WV

Well Name	API Number	Operator Name / Address	Well Type	Latitude	Longitude	Total Depth	Perforated Formation(s)	Producing Zones not Perforated
Clarkson 6	077-00436	Diversified Resources	Vertical/Existing/Unknown	39.319705	-79.883014	5699	Riley Stray, Benson, 1st Elk, 2nd Elk A, 3rd Elk	NA
Clarkson 8	077-00438	Diversified Resources	Vertical/Existing/Unknown	39.315726	-79.881514	5797	Lower Riley, Alexander, 2nd Elk, 3rd Elk, 5th Elk	NA
Clarkson 14	077-00428	Diversified Resources	Vertical/Existing/Unknown	39.311646	-79.879074	5472	Upper Riley, benson, Alexander, 3rd Elk, 5th Elk	NA
Hamilton 7	077-00397	Diversified Resources	Vertical/Existing/Unknown	39.308106	-79.878454	5719	Upper Riley, Alexander, 2nd Elk, 3rd Elk, 5th Elk	NA
Clarkson 17	077-00424	Diversified Resources	Vertical/Existing/Unknown	39.306976	-79.873794	5671	Fifth Sand, Speechley A, Alexander, 2nd Elk, 3rd Elk, 5th Elk	NA
Clarkson 12	077-00384	Diversified Resources	Vertical/Existing/Unknown	39.304863	-79.841338	5664	Alexander, 2nd Elk, 3rd Elk, 4th Elk, 5th Elk	NA
Hamilton 9	077-00399	Diversified Resources	Vertical/Existing/Unknown	39.300317	-79.871764	5538	Balltown B, Benson, Alexander, 2nd Elk A, 3rd Elk	NA
WSB 2	077-00545	Diversified Resources	Vertical/Existing/Unknown	39.29461	-79.868034	5544	2nd Elk, 3rd Elk	NA

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77-00023

WW-9
(4/16)

API Number 47 - 077 - 00623

Operator's Well No. Darwin 214

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Arsenal Resources OP Code 494519412

Watershed (HUC 10) Sandy Creek Quadrangle Fellowsville 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: Produced water

Will a synthetic liner be used in the pit? Yes No If so, what ml.? 60 ml

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number Various)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: Yes, the closed 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 horizontal)? Air, freshwater, oil based, etc. Vertical: freshwater. Horizontal: oil based mud

-If oil based, what type? Synthetic, petroleum, etc. Synthetic

Additives to be used in drilling medium? Bentonite, Soap & Polymer sticks, Soda Ash, Sodium Bicarbonate, Defoamer, Base Oil, Emulsifiers, Lime, Barite

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Advanced Disposal Services, Chestnut Valley Landfill

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto 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 or imprisonment.

Company Official Signature *William Veigel*

Company Official (Typed Name) William Veigel

Company Official Title Designated Agent

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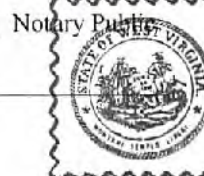
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WV Department of
Environmental Protection

Subscribed and sworn before me this 17TH day of JULY, 20 17

Carolinda Flanagan

My commission expires 9/15/2021



OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
CAROLINDA FLANAGAN
PO Box 803
Lumberport WV 26086
My Commission Expires September 15, 2021

Arsenal Resources

Proposed Revegetation Treatment: Acres Disturbed 21.65 Prevegetation pH unknown

Lime 2.67 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 600 lbs/acre

Mulch 3-4 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Orchard Grass	129	Orchard Grass	129
Ryegrass	93	Ryegrass	93
Clover	24	Clover	24
Timothy	45	Timothy	45

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: _____

Comments: Pre-seed/mulch all disturbed areas as reasonably possible per regulation.

Upgrade E & S where needed per WV DEP E&S manual, if necessary

Title: _____

Date: _____

Field Reviewed? () Yes

() No

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ARSENAL
R E S O U R C E S

SITE SAFETY PLAN

DARWIN #214 WELL PAD

911 Address:

78 S. MOUNTAINEER HIGHWAY

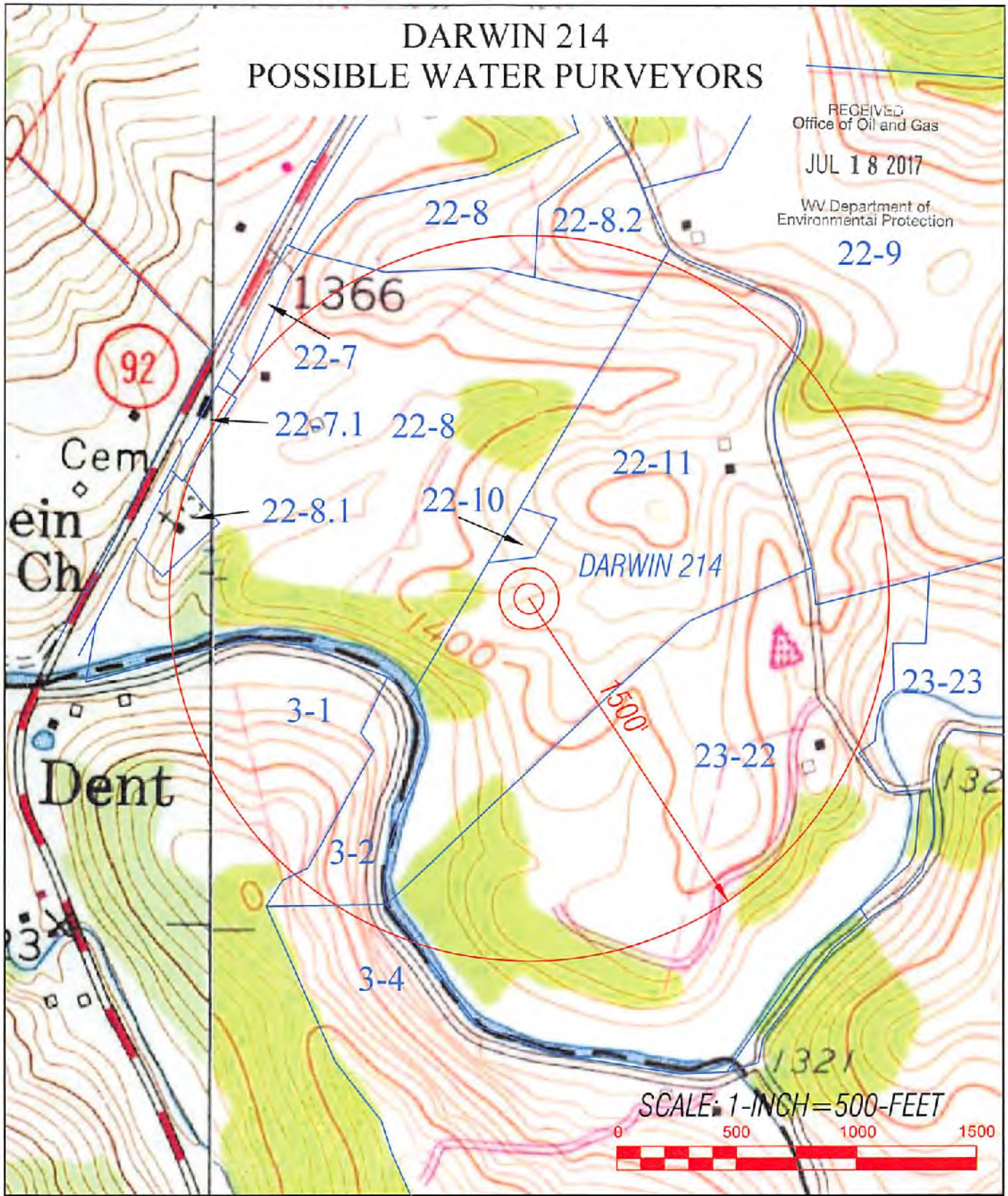
THORNTON, WV 26440


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DARWIN 214 POSSIBLE WATER PURVEYORS

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22-9



				TOPO SECTIONS OF:		OPERATOR: ARSENAL RESOURCES 6031 WALLACE RD. EXT, SUITE 300 WEXFORD, PA 15090
				THORNTON & FELLOWSVILLE WV 7.5' QUADS		
DRAWN BY		FILE NO.	DATE	CADD FILE:	COUNTY	DISTRICT
C.P.M.		8499	06-11-17	888WV0214.DWG	PRESTON/BARBOUR	RENO/COVE



77-00623

Possible Water Purveyors within 1500' of Darwin 214

22-7

22-8

Darwin & Karen Wolfe
316 S Mountaineer HWY
Thornton, WV 26440

22-7.1

22-8.1

Andrew Neptune (Teresa Neptune-Life)
6405 Cut Glass CT
Wendell, NC 27591

22-8.2

Lorn & Shannon Wolfe
635 Sunrise Drive
Thornton, WV 26440

22-9

Steven & Becky Bolyard
568 Sunrise Drive
Thornton, WV 26440

22-10

22-11

Marchetta Huffman
313 Simpson Ave.
Clarksburg, WV 26301

23-22

23-23

Willard Bolyard
123 Sunrise Drive
Thornton, WV 26440

3-1

Mary Lindley
727 NE 364 Ave.
Old Town, FL 32680

3-2

Harriett Matlick C/O Ramona Scarton
8926 Virginia Ave.
Manassas, VA 22110

3-4

Ralph & Glenda Sigley
798 Sandy Creek Road
Moatsville, WV 26405

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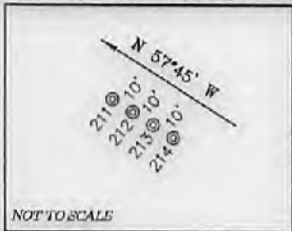
LATITUDE(NAD'83) 39°20'00"

DARWIN 214 WELL TIES

LINE	BEARING	DISTANCE
L1	N 58°16' W	662.08'
L2	S 83°59' W	1774.50'
L3	S 55°35' E	594.67'
L4	N 24°07' W	636.36'

TRACT #	SURFACE OWNER	SURFACE ACREAGE	OIL & GAS LEASE #
23-22	WILLIAM H. BELYARD	65.80±	00000073 00000162 00000117
22-4	ROBERT CLARESON	167.635±	00000087
22-5	TERRY & BETTY HAMILTON	57.18±	00000108
22-8	DARWIN & KAREN WOLFE	62.353±	0000188-0000191
22-8.2	LORN & SHANNON WOLFE	5.237±	0000188-0000191
22-10	MARCHETTA HUFFMAN	0.82±	00002288
22-11	MARCHETTA HUFFMAN	47.50±	00001865
15-06	JOHN & LORETTA CLARKSON	172.80±	00000046
15-12	ROBERTA AUSTIN	80.10±	00000639
15-18	TERRY & BETTY HAMILTON	40.26±	00000108
15-19	EDWARD & DOROTHY MYERS	-1.50±	00002295
15-21	JOHN & LORETTA CLARKSON	71.50±	00000046
STATE OF W.V.(MORGANTOWN-SBERVLY TURNPIKE AND W.V. ROUTE 92)		14.42±	00006657

DARWIN NORTH LAYOUT



LEGEND

LEASE LINE	---
SURFACE LINE	----
WELL LATERAL	-----
OFFSET LINE	-----
TIE LINE	-----
CREEK	~~~~~
ROAD	====
FENCE LINE	-----
COUNTY ROUTE	-----
STATE ROUTE	-----
PROPOSED WELL	☉
EXISTING WELL	☉
PERMITTED WELL	☉

**ARSENAL RESOURCES
DARWIN 214**

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

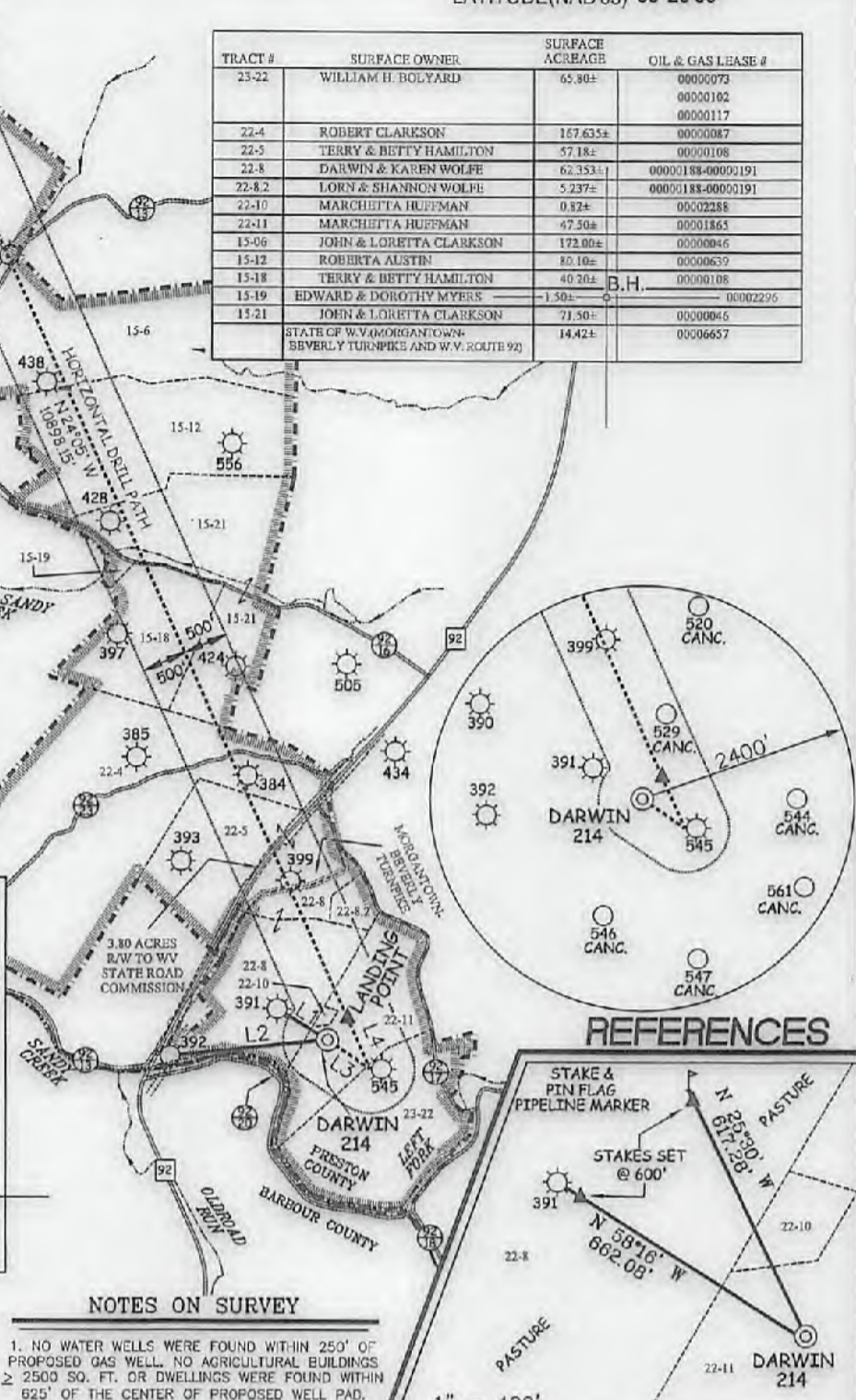
NAD'83 S.P.C.(FT) N. 289,951.6 E. 1,863,746.8
 NAD'83 GEO. LAT-(N) 39.295481 LONG-(W) 79.870142
 NAD'83 UTM (M) N. 4,350,175.6 E. 597,429.4

LANDING POINT

NAD'83 S.P.C.(FT) N. 290,201.8 E. 1,863,969.2
 NAD'83 GEO. LAT-(N) 39.296170 LONG-(W) 79.869360
 NAD'83 UTM (M) N. 4,350,253.0 E. 597,495.9

BOTTOM HOLE

NAD'83 S.P.C.(FT) N. 300,151.8 E. 1,859,523.3
 NAD'83 GEO. LAT-(N) 39.323437 LONG-(W) 79.885220
 NAD'83 UTM (M) N. 4,353,262.1 E. 596,090.9



REFERENCES



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.

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 Solutions from the ground up.
 P.O. Box 150 • 12 Van Horn Drive • Glenville, WV 26331 • (304) 462-5834
 www.slsurveys.com

GREGORY A. SMITH
 LICENSED
 No. 677
 STATE OF
 WEST VIRGINIA
 PROFESSIONAL SURVEYOR

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 FEBRUARY 12, 20 16
 REVISED JUNE 21, 20 17
 OPERATORS WELL NO. DARWIN 214
 API WELL NO. 47-077-00623
 STATE WV COUNTY PRESTON PERMIT H6A

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. 8499P214R3.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 LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION:
 ELEVATION EXISTING: 1,442.80' / PROPOSED: 1,440.20' WATERSHED SANDY CREEK
 DISTRICT RENO COUNTY PRESTON QUADRANGLE FELLOWSVILLE 7.5'
 SURFACE OWNER MARCHETTA HUFFMAN ACREAGE 47.50±
 ROYALTY OWNER MARCHETTA HUFFMAN ACREAGE 47.50±
 PROPOSED WORK:
 DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER
 PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION HUNTERSVILLE CHERT (PILOT)
 ESTIMATED DEPTH 19,036' TMD / 7,685' TVD (LATERAL) 7798' (PILOT)

WELL OPERATOR ARSENAL RESOURCES DESIGNATED AGENT WILLIAM VEIGEL
 ADDRESS 6031 WALLACE RD. EXT. SUITE 300 ADDRESS 65 PROFESSIONAL PLACE
WEXFORD, PA 15090 BRIDGEPORT, WV 26330

3,605' LONGITUDE (NAD'83) 79°52'30" B.H. 13,787' LONGITUDE (NAD'83) 79°50'00" T.H.

**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

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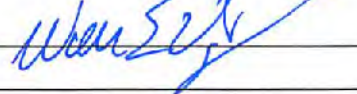
WV Department of
Environmental Protection

**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: Arsenal Resources
 By: William Veigel 
 Its: Designated Agent

Attachment to WW-6A1, Darwin 214

Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
Lease No. 0000073	Lawson L. Schooley and Marlene R. Schooley, husband and wife	Falcon Partners	12.50%	686/483	65.8
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00000102	Shirley S. White and Willard C. White, wife and husband	Falcon Partners	12.50%	686/491	65.8
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00000117	Willard H. Bolyard and Charlotte S. Bolyard, husband and wife	Falcon Partners	12.50%	681/589	65.8
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00001865	Marchetta Huffman	R.P. Land Company, L.L.C.	18.00%	774/314	47.5
	R.P. Land Company, L.L.C.	Mar Key, L.L.C.		758/387	
Lease No. 00002288	Marchetta Huffman, widow	Mar Key, L.L.C.	15.00%	763/975	0.8171875
Lease No. 00000188	L. Darwin Wolfe and Karen L. Wolfe, husband and wife	Falcon Partners	12.50%	680/986	68.64
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00000189	Elizabeth W. Rector, by Judy K. Neve & Susan E. Rector as AIF's	Falcon Partners	12.50%	695/805	68.64
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00000190	Linda K. Hamstead	Falcon Partners	12.50%	705/482	68.64
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00000191	Claudia A. Price	Falcon Partners	12.50%	705/478	68.64
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00000108	Terry Hamilton and Betty Hamilton, husband and wife, and Gladys Marie Hamilton, Life Estate	Falcon Partners	12.50%	680/313	224.836
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00000087	Robert F. Clarkson	Falcon Partners	12.50%	736/915	167.635
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00000046	John B. Clarkson and Loretta Clarkson, husband and wife	Falcon Partners	12.50%	679/713	454.16
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00000108	Terry Hamilton and Betty Hamilton, husband and wife, and Gladys Marie Hamilton, Life Estate	Falcon Partners	12.50%	680/313	224.836
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00002296	Edward C. Myers and Dorothy J. Myers, husband and wife	Mar Key, L.L.C.	15.00%	763/170	1.5
Lease No. 00000046	John B. Clarkson and Loretta Clarkson, husband and wife	Falcon Partners	12.50%	679/713	454.16
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00000639	Roberta Austin AKA Roberta Ann Knotts	R.P. Land Company, L.L.C.	18.00%	763/998	80.1
	R.P. Land Company, L.L.C.			740/1	
Lease No. 00000046	John B. Clarkson and Loretta Clarkson, husband and wife	Falcon Partners	12.50%	679/713	454.16
	Falcon Partners	Mar Key, L.L.C.		739/973	
Lease No. 00006657	West Virginia Department of Transportation, Division of Highways	Mar Key, L.L.C.	20.00%	790/666	77.12

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77-00602-3

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

Organization Information								
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			

Organization Information			
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	WV	Excess Acres	
At Will Term	A	Member Managed	MBR
At Will Term Years		Par Value	

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Authorized Shares

Addresses	
Type	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
Type	Address

Officers	
Type	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
Type	Name/Address

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Annual Reports
Date filed

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

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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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]

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77-00623

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

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

MOUNTAINEER KEYSTONE LLC

By: [Signature]
Name: Robert Koval
Title: CEO

PDC MOUNTAINEER, LLC

By: [Signature]
Name: Robert Koval
Title: CEO

PDC MOUNTAINEER HOLDINGS, LLC

By: [Signature]
Name: Robert Koval
Title: CEO

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17-00623

People Powered. Asset Strong.

June 26, 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; Darwin 214

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 well. The findings of the title examination show that some of the roadways crossed by the proposed well 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,

A handwritten signature in blue ink, appearing to read 'Ryan Brode'.

Ryan Brode
Title Attorney

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6031 Wallace Road Ext, Suite 300
Wexford, PA 15090
P: 724-940-1100
F: 800-420-0981
www.arsenalresources.com

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

Date of Notice Certification: 06/30/2016

API No. 47- 077 - 00623

Operator's Well No. Darwin 214

Well Pad Name: Darwin

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>597,429.4</u>
County: <u>Preston</u>		Northing: <u>4,350,175.6</u>
District: <u>Reno</u>	Public Road Access: <u>Rt. 92</u>	
Quadrangle: <u>Fellowsville 7.5'</u>	Generally used farm name: <u>Darwin Wolfe</u>	
Watershed: <u>Sandy Creek</u>		

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following: *PLEASE CHECK ALL THAT APPLY <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED <input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED <input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH) <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION <input checked="" type="checkbox"/> 5. PUBLIC NOTICE <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		OOG OFFICE USE ONLY <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED
RECEIVED Office of Oil and Gas JUL 18 2017 WV Department of Environmental Protection		

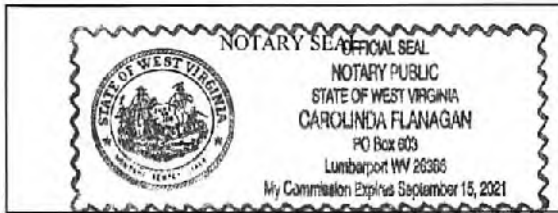
Required Attachments:

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

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:	<u>Arsenal Resources</u>	Address:	<u>6031 Wallace Road Extension, Suite 300</u>
By:	<u>William Veigel</u> <i>WV</i>		<u>Wexford, PA 15090</u>
Its:	<u>Designated Agent</u>	Facsimile:	<u>304-848-9134</u>
Telephone:	<u>724-940-1224</u>	Email:	<u>cflanagan@arsenalresources.com</u>



Subscribed and sworn before me this 17TH day of JULY 2017.
Carolinda Flanagan Notary Public
 My Commission Expires 9/15/2021

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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**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: 6/30/2016 **Date Permit Application Filed:** 6/30/2016

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)

Name: Marchetta Huffman
 Address: 313 Simpson Avenue
Clarksburg, WV 26301
 Name: _____
 Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: L. Darwin and Karen K. Wolfe
 Address: 316 S. Mountaineer Highway
Thornton, WV 26440
 Name: Marchetta Huffman
 Address: 313 Simpson Avenue
Clarksburg, WV 26301

SURFACE OWNER(s) (Impoundments or Pits)

Name: L. Darwin and Karen K. Wolfe
 Address: 316 S. Mountaineer Highway
Thornton, WV 26440

COAL OWNER OR LESSEE

Name: ACIN, LLC - Attn: George Angus
 Address: 5260 Irwin Road
Huntington, WV 25705

COAL OPERATOR

Name: _____
 Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: See Attached
 Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
 Address: _____

*Please attach additional forms if necessary

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Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

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:

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

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.**

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Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

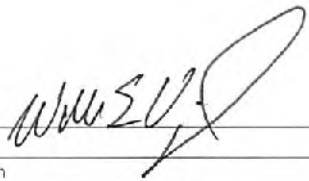
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WW-6A
(8-13)

API NO. 47-077 - 00623
OPERATOR WELL NO. Darwin 214
Well Pad Name: Darwin

Notice is hereby given by:

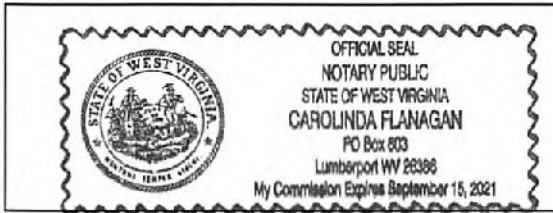
Well Operator: Arsenal Resources
Telephone: 724-940-1224
Email: cflanagan@arsenalresources.com



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 depprivacyofficer@wv.gov.



Subscribed and sworn before me this 17TH day of JULY 2017.

Carolinda Flanagan Notary Public

My Commission Expires 9/15/2021

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Possible Water Purveyors within 1500' of Darwin 214

22-722-8

Darwin & Karen Wolfe
316 S Mountaineer HWY
Thornton, WV 26440

22-7.122-8.1

Andrew Neptune (Teresa Neptune-Life)
6405 Cut Glass CT
Wendell, NC 27591

22-8.2

Lorn & Shannon Wolfe
635 Sunrise Drive
Thornton, WV 26440

22-9

Steven & Becky Bolyard
568 Sunrise Drive
Thornton, WV 26440

22-1022-11

Marchetta Huffman
313 Simpson Ave.
Clarksburg, WV 26301

23-2223-23

Willard Bolyard
123 Sunrise Drive
Thornton, WV 26440

3-1

Mary Lindley
727 NE 364 Ave.
Old Town, FL 32680

3-2

Harriett Matlick C/O Ramona Scarton
8926 Virginia Ave.
Manassas, VA 22110

3-4

Ralph & Glenda Sigley
798 Sandy Creek Road
Moatsville, WV 26405

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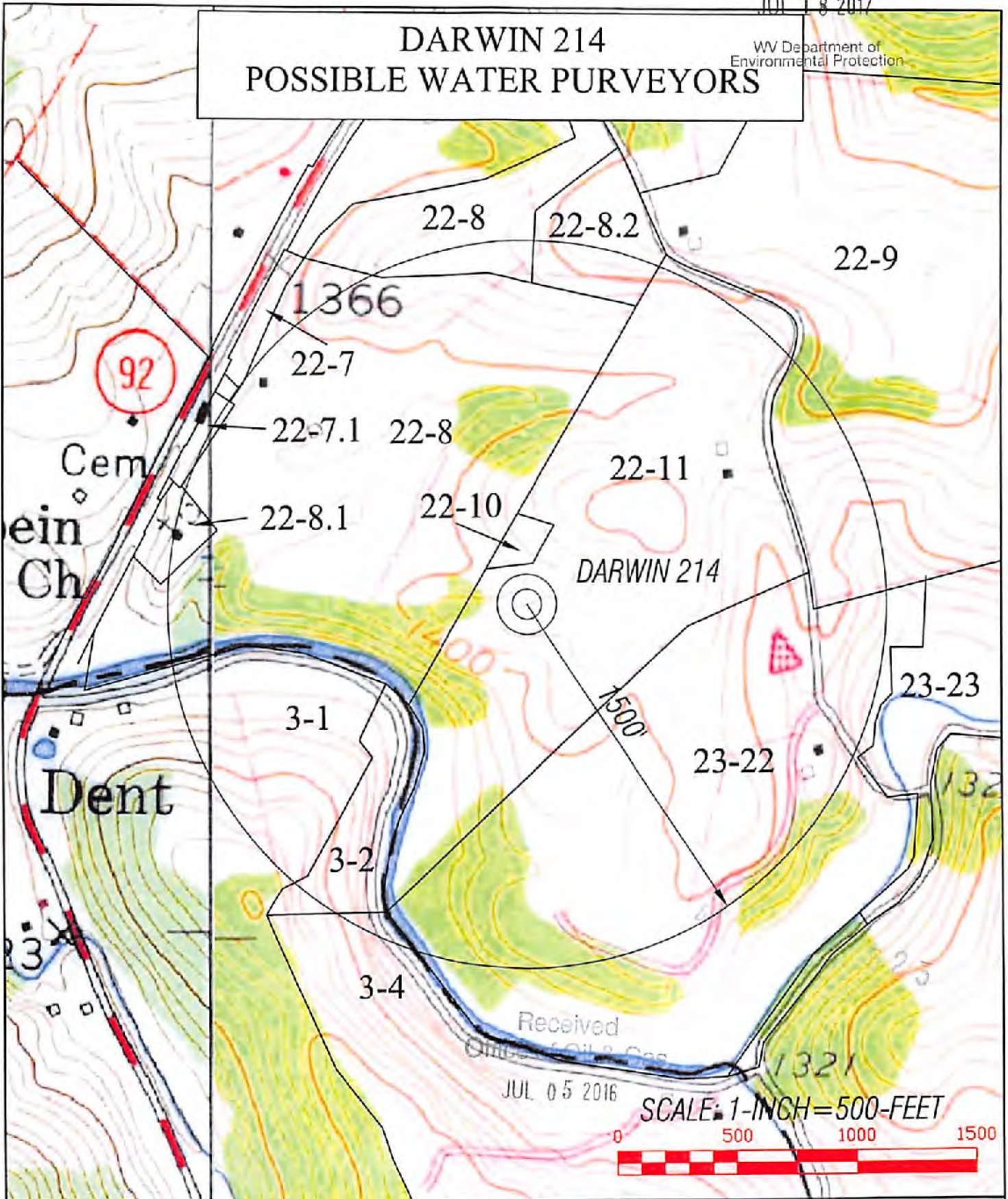
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Environmental Protection

JUL 18 2017

WV Department of
Environmental Protection

DARWIN 214 POSSIBLE WATER PURVEYORS



				TOPO SECTIONS OF: THORNTON & FELLOWSVILLE WV 7.5' QUADS		OPERATOR: MOUNTAINEER KEYSTONE, LLC 6031 WALLACE RD. EXT, SUITE 300 WEXFORD, PA 15090	
DRAWN BY: C.P.M.		FILE NO.: 8499		DATE: 12-18-15		CADD FILE: BARBARA@EPCWV.COM	
COUNTY: PRESTON/BARBOUR				DISTRICT: RENO/COVE			

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

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

Date of Notice: 9/15/2015 **Date of Planned Entry:** 9/22/2015

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Office of Oil and Gas

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WV Department of
Environmental Protection

Delivery method pursuant to West Virginia Code § 22-6A-10a

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

Notice is hereby provided to:

SURFACE OWNER(s)
Name: Marchetta Huffman
Address: 313 Simpson Avenue
 Clarksburg, WV 26301
Name: L. Darwin & Karen K. Wolfe
Address: 316 S. Mountaineer Hwy.
 Thornton, WV 26440
Name: _____
Address: _____

COAL OWNER OR LESSEE
Name: ACIN, LLC
Address: 5260 Irwin Road
 Huntington, WV 25705

MINERAL OWNER(s)
Name: Marchetta Huffman
Address: 313 Simpson Avenue
 Clarksburg, WV 26301
 *please attach additional forms if necessary

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State:	West Virginia	Approx. Latitude & Longitude:	39.2958; -79.8729
County:	Preston	Public Road Access:	Rt. 92
District:	Reno	Watershed:	Sandy Creek
Quadrangle:	Fellowsville 7.5'	Generally used farm name:	Darwin Wolfe

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: Arsenal Resources
Telephone: 724-940-1224
Email: cflanagan@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 depprivacyofficer@wv.gov.

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least TEN (10) days prior to filing a permit application.

Date of Notice: 07/12/2017 **Date Permit Application Filed:** 08/30/2016

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

HAND DELIVERY CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Marchetta A. Huffman
Address: 313 Simpson Ave
Clarksburg, WV 26301

Name: L. Darwin and Karen K. Wolfe
Address: 316 S. Mountaineer Highway
Thomton, WV 26440

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Office of Oil and Gas

JUL 18 2017

WV Department of
Environmental Protection

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 597,429.4
County: Preston Northing: 4,350,175.6
District: Reno Public Road Access: Rt. 92
Quadrangle: Fellowsville 7.5' Generally used farm name: Darwin Wolfe
Watershed: Sandy Creek

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. 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.

Notice is hereby given by:

Well Operator: Arsenal Resources
Address: 6031 Wallace Road Extension, Suite 300
Wexford, PA 15090
Telephone: 724-940-1224
Email: cflanagan@arsenalresources.com
Facsimile: 304-848-9134

Authorized Representative: William Veigel, Arsenal Resources
Address: 65 Professional Place, Suite 200
Bridgeport, WV 26330
Telephone: 724-940-1224
Email: cflanagan@arsenalresources.com
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 depprivacyofficer@wv.gov.

77-00623

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

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 06/30/2016 **Date Permit Application Filed:** 06/30/2016

RECEIVED
Office of Oil and Gas

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

JUL 18 2017

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

WV Department of
Environmental Protection

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: Marchetta Huffman
Address: 313 Simpson Avenue
Clarksburg, WV 26301

Name: L. Darwin and Karen K. Wolfe
Address: 316 S. Mountaineer Highway
Thornton, WV 26440

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83 Easting:	<u>597,429.4</u>
County:	<u>Preston</u>	Northing:	<u>4,350,175.6</u>
District:	<u>Reno</u>	Public Road Access:	<u>Rt. 92</u>
Quadrangle:	<u>Fellowsville 7.5'</u>	Generally used farm name:	<u>Darwin Wolfe</u>
Watershed:	<u>Sandy Creek</u>		

This Notice Shall Include:

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

Well Operator: Arsenal Resources
Telephone: 724-940-1224
Email: cflanagan@arsenalresources.com

Address: 6031 Wallace Road Extension, Suite 300
Wexford, PA 15090
Facsimile: 304-848-9134

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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

I, Marchetta A. Huffman, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>697429.40</u>
County:	<u>Preston</u>		Northing:	<u>4350175.65</u>
District:	<u>Reno</u>	Public Road Access:	<u>Rt. 92</u>	
Quadrangle:	<u>Fellowsville</u>	Generally used farm name:	<u>Darwin Wolfe</u>	
Watershed:	<u>Little Sandy Creek</u>			

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

<p>*Please check the box that applies</p> <p><input checked="" type="checkbox"/> SURFACE OWNER</p> <p><input checked="" type="checkbox"/> SURFACE OWNER (Road and/or Other Disturbance)</p> <p><input type="checkbox"/> SURFACE OWNER (Impoundments/Pits)</p> <p><input type="checkbox"/> COAL OWNER OR LESSEE</p> <p><input type="checkbox"/> COAL OPERATOR</p> <p><input type="checkbox"/> WATER PURVEYOR</p> <p><input type="checkbox"/> OPERATOR OF ANY NATURAL GAS STORAGE FIELD</p>	<p>FOR EXECUTION BY A NATURAL PERSON</p> <p>Signature: <u>Marchetta Huffman</u></p> <p>Print Name: <u>Marchetta A. Huffman</u></p> <p>Date: <u>6-7-16</u></p> <p>FOR EXECUTION BY A CORPORATION, ETC.</p> <p>Company: _____</p> <p>By: _____</p> <p>Its: _____</p> <p>Signature: _____</p> <p>Date: <u>Received</u></p>
	<p>RECEIVED Office of Oil and Gas JUL 18 2016 WV Department of Environmental Protection</p>

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.

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

I, _____, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>587,429.4</u>
County:	<u>Preston</u>		Northing:	<u>4,350,175.6</u>
District:	<u>Reno</u>	Public Road Access:		<u>Rt. 92</u>
Quadrangle:	<u>Fellowsville 7.5'</u>	Generally used farm name:		<u>Darwin Wolfe</u>
Watershed:	<u>Sandy Creek</u>			

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

<p>*Please check the box that applies</p> <p><input type="checkbox"/> SURFACE OWNER</p> <p><input type="checkbox"/> SURFACE OWNER (Road and/or Other Disturbance)</p> <p><input type="checkbox"/> SURFACE OWNER (Impoundments/Pits)</p> <p><input checked="" type="checkbox"/> COAL OWNER OR LESSEE ✓</p> <p><input type="checkbox"/> COAL OPERATOR</p> <p><input type="checkbox"/> WATER PURVEYOR</p> <p><input type="checkbox"/> OPERATOR OF ANY NATURAL GAS STORAGE FIELD</p>	<p>FOR EXECUTION BY A NATURAL PERSON</p> <p>Signature: _____</p> <p>Print Name: _____</p> <p>Date: _____</p> <p>FOR EXECUTION BY A CORPORATION, ETC.</p> <p>Company: <u>ACIN LLC</u></p> <p>By: <u>Gregory F. Wooten</u></p> <p>Its: <u>Vice President / Chief Engineer</u></p> <p>Signature: _____</p> <p>Date: <u>July 11, 2017</u></p>
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Office of Oil and Gas
JUL 18 2017
WV Department of
Environmental Protection

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

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VOLUNTARY STATEMENT OF NO OBJECTION

I, L. Darwin Wolfe and Karen K. Wolfe, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83 Easting:	<u>597429.40</u>
County:	<u>Preston</u>	UTM NAD 83 Northing:	<u>4350175.65</u>
District:	<u>Reno</u>	Public Road Access:	<u>Rt. 92</u>
Quadrangle:	<u>Fellowsville</u>	Generally used farm name:	<u>Darwin Wolfe</u>
Watershed:	<u>Little Sandy Creek</u>		

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

<p>*Please check the box that applies</p> <p><input checked="" type="checkbox"/> SURFACE OWNER</p> <p><input checked="" type="checkbox"/> SURFACE OWNER (Road and/or Other Disturbance)</p> <p><input checked="" type="checkbox"/> SURFACE OWNER (Impoundments/Pits)</p> <p><input type="checkbox"/> COAL OWNER OR LESSEE</p> <p><input type="checkbox"/> COAL OPERATOR</p> <p><input type="checkbox"/> WATER PURVEYOR</p> <p><input type="checkbox"/> OPERATOR OF ANY NATURAL GAS STORAGE FIELD</p>	<p>FOR EXECUTION BY A NATURAL PERSON</p> <p>Signature: <u>L. Darwin Wolfe</u></p> <p>Print Name: <u>L. Darwin Wolfe and Karen K. Wolfe</u></p> <p>Date: <u>6/2/16</u></p> <p>FOR EXECUTION BY A CORPORATION, ETC.</p> <p>Company: _____</p> <p>By: _____</p> <p>Its: _____</p> <p>Signature: <u>Karen K. Wolfe</u></p> <p>Date: <u>6-2-16</u></p>
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JUL 18 2017



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

June 30, 2016

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 Darwin Pad, Preston County
Darwin # 214 Well Site

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WV Department of
Environmental Protection

Dear Mr. Martin,

The West Virginia Division of Highways has issued Permit # 04 -2016-0001 to Mountaineer Keystone, LLC for access to the well site located off of WV 92 in Preston County.

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

Very Truly Yours,

Gary K. Clayton

Gary K. Clayton
Regional Maintenance Engineer
Central Office O&G Coordinator

Cc: Amy L. Miller
Mountaineer Keystone, LLC
CH, OM, D-4

Received
Office of Oil & Gas
JUL 05 2016

77-00623

Darwin 214			
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	HCl - 7.5%	7647-01-0

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Office of Oil and Gas

JUL 18 2017

WV Department of
Environmental Protection

PROJECT INFORMATION

PROJECT NAME: DARWIN
 TAX PARCEL:
 RENO DISTRICT
 MAP 22 PARCELS 8, 11
 SURFACE OWNER:



DARWIN & KAREN WOLFE
 TM 22 PAR 8
 TOTAL PROPERTY AREA: 62.35 AC
 TOTAL DISTURBED AREA: 11.75 AC

MARCHETTA HUFFMAN
 TM 22 PAR 11
 TOTAL PROPERTY AREA: 47.50 AC
 TOTAL DISTURBED AREA: 9.73 AC

STATE OF WEST VIRGINIA
 DE 204 PG 327
 TOTAL PROPERTY AREA: 0.79 AC
 TOTAL DISTURBED AREA: 0.17 AC

OPERATOR

ARSENAL RESOURCES
 55 PROFESSIONAL PLACE
 SUITE 200
 BRIDGEPORT, WV 26330
 PHONE: (304) 842-3597

6031 WALLACE ROAD EXT
 SUITE 300
 WEXFORD, PA 15090
 PHONE: (724) 924-1202

ENGINEER

LARSON DESIGN GROUP
 2502 CRANBERRY SQUARE
 MORGANTOWN, WV 26508
 PHONE: (304) 777-2940

SURVEYOR

SMITH LAND SURVEYING, INC.
 12 VAHORN DRIVE
 GLENVILLE, WV 26351
 PHONE: (304) 462-5634



SHEET INDEX

- 1 COVER SHEET
- 2-3 GENERAL NOTES
- 4 OVERALL PLAN SHEET INDEX
- 5-6 EROSION AND SEDIMENT CONTROL PLAN
- 7 ACCESS ROAD PROFILE
- 8-10 ACCESS ROAD CROSS SECTIONS
- 11-13 WELL PAD + TANK PAD CROSS SECTIONS
- 14-15 COMPLETION PIT CROSS SECTIONS
- 16 WASTE STOCKPILE 1 CROSS SECTIONS
- 17-18 RECLAMATION PLAN
- 19-31 DETAILS

RESTRICTIONS NOTES:

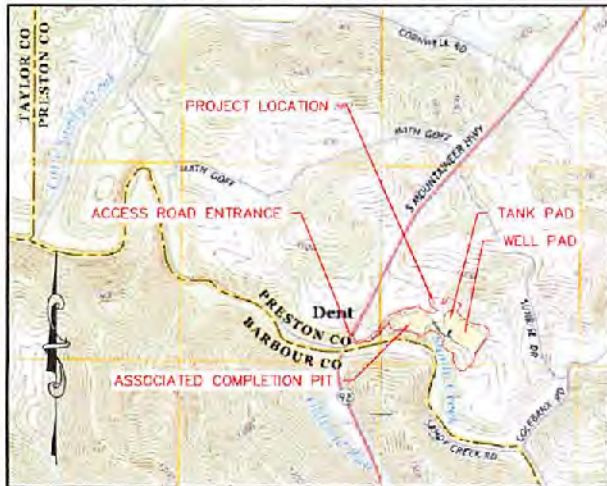
1. THERE ARE WETLAND IMPACTS TOTALING 0.07 ACRES WITHIN 100 FEET OF THE WELL PAD LOD.
2. THERE ARE NO PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD LOD.
3. THERE ARE NO NATURALLY PRODUCING (ROUT) STREAMS WITHIN 300 FEET OF THE WELL PAD AND LOD.
4. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PAD AND LOD.
5. THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELL(S) BEING DRILLED.
6. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.
7. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.

DARWIN WELL SITE PLAN

ARSENAL RESOURCES

(PROPOSED WELL NO. 201, 202, 203, 204, 205, 211, 212, 213, 214, 215)

SITUATE ON THE WATERS OF SANDY CREEK IN RENO DISTRICT, PRESTON COUNTY, WEST VIRGINIA



SCALE: 1" = 2000'
 FELLOWSVILLE AND THORNTON QUADRANGLES
 WEST VIRGINIA

MISS Utility of West Virginia
 1-800-245-4848
 West Virginia State Law
 (Section XIV, Chapter 24-C)
 Requires that you call two
 business days before you dig,
 IT'S THE LAW!

LOCATION COORDINATES

ACCESS ROAD ENTRANCE
 LATITUDE: 39.295159 LONGITUDE: -79.876767 (NAD 83)

CENTER OF WELL PAD
 LATITUDE: 39.295160 LONGITUDE: -79.869983 (NAD 83)

CENTER OF TANK PAD
 LATITUDE: 39.295980 LONGITUDE: -79.870969 (NAD 83)

CENTER OF ASSOCIATED COMPLETION PIT
 LATITUDE: 39.295797 LONGITUDE: -79.873189 (NAD 83)

GENERAL DESCRIPTION

THE WELL PADS, ASSOCIATED P.T. AND ABOVEGROUND STORAGE TANK ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

SITE DISTURBANCE COMPUTATIONS

WELL PAD	=	6.52 AC
MANIFOLD PAD,		
TANK PAD,		
STOCKPILES,		
ACCESS ROADS	=	15.03 AC
TOTAL SITE DISTURBANCE	=	21.65 AC
TIMBER CLEARING AREA	=	3.21 AC

ENTRANCE PERMIT

ACCESS TO THE SITE HAS BEEN APPROVED AND PERMITTED BY THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS THROUGH AN MM-109 ENCROACHMENT PERMIT.

MISS UTILITY STATEMENT

MISS UTILITY OF WEST VIRGINIA WAS NOTED FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN; TICKET #1528182548. IN ADDITION, MISS UTILITY WILL BE CONTACTED PRIOR TO START OF THE PROJECT.

FLOODPLAIN NOTE

A 0.41 ACRE PORTION OF THE PROPOSED LIMITS OF DISTURBANCE FOR THIS PROJECT IS LOCATED WITHIN THE EXISTING FEMA 100-YEAR FLOODPLAIN, PER FEMA MAPS #54077C03750 AND #54077C04000.

ENVIRONMENTAL NOTES

WETLAND DELINEATIONS WERE PERFORMED ON OCTOBER 13, 2015, AND NOVEMBER 2, 2015 BY APEX TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). IT IS STRONGLY RECOMMENDED THAT THE AFOREMENTIONED AGENCIES BE CONSULTED IN AN EFFORT TO GAIN WRITTEN CONFIRMATION OF THE DELINEATION SHOWN ON THIS EXHIBIT PRIOR TO ENGAGING CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FILLS AND STREAM CROSSINGS.

GEOTECHNICAL NOTE

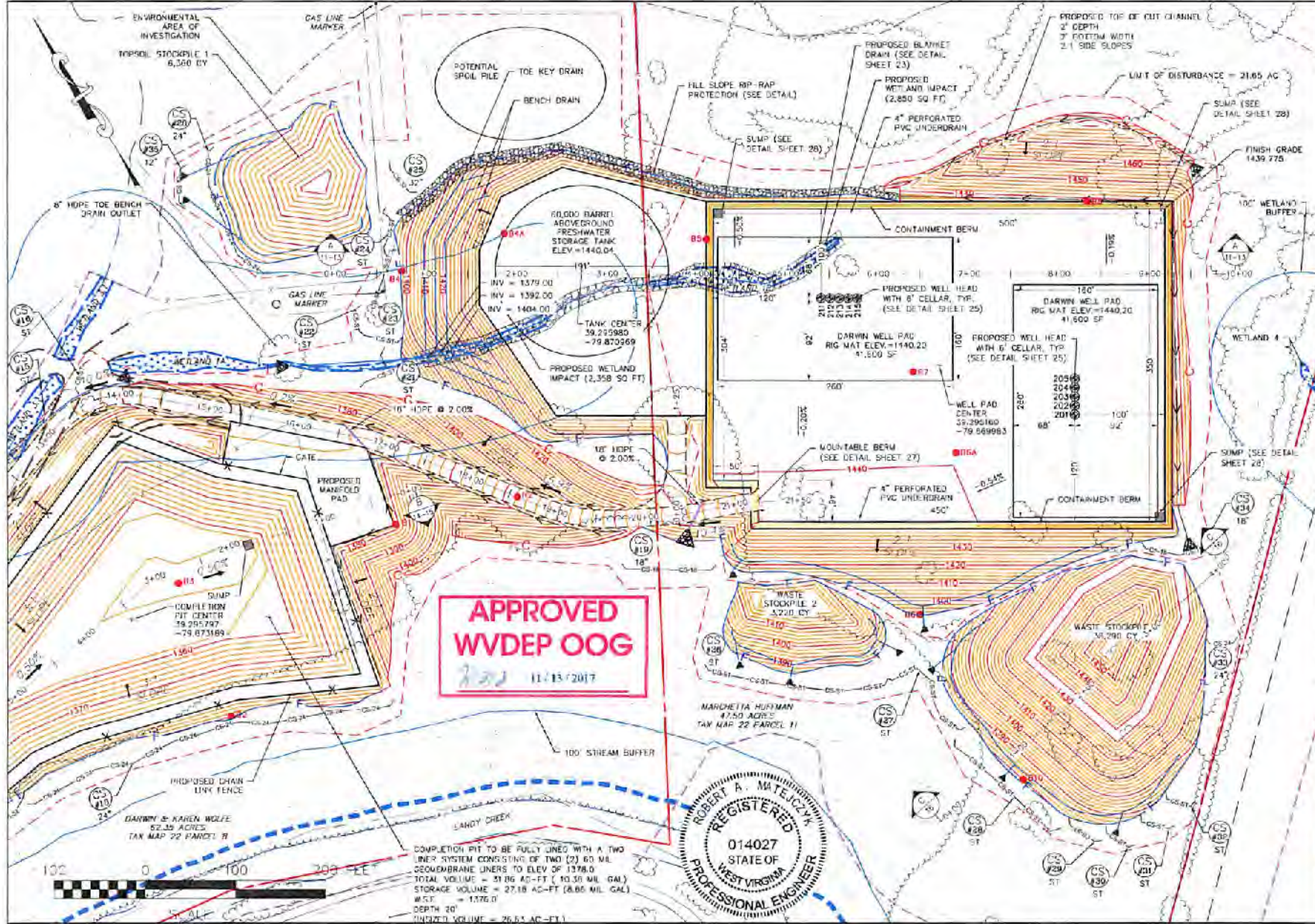
A GEOTECHNICAL INVESTIGATION OF THE PROPOSED SITE WAS CONDUCTED BY LARSON DESIGN GROUP ON NOVEMBER 16 THROUGH NOVEMBER 17, 2015. THE REPORT PREPARED BY LARSON DESIGN GROUP, DATED JANUARY 7, 2016 REFLECTS THE RESULTS OF THE SUBSURFACE INVESTIGATION. THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS REPORT WAS USED IN THE PREPARATION OF THESE PLANS. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT BY LARSON DESIGN GROUP FOR ADDITIONAL INFORMATION.



NO.	DATE	COMMENTS	BY	CHK
1	11/13/2017	FINAL DESIGN REVISIONS	JRH	JRH
2	11/13/2017	FINAL DESIGN REVISIONS	JRH	JRH
3	11/13/2017	FINAL DESIGN REVISIONS	JRH	JRH
4	11/13/2017	FINAL DESIGN REVISIONS	JRH	JRH
5	11/13/2017	FINAL DESIGN REVISIONS	JRH	JRH

COVER SHEET
DARWIN WELL SITE
 PRESTON COUNTY, WEST VIRGINIA
 Larson Design Group • Architects Engineers Surveyors
 2502 Cranberry Sq.
 Morgantown, WV 26508
 PHONE: 304.777.2940 • TOLL FREE: 877.323.6803
 PHONE: 304.779.5044 • www.larsondesigngroup.com





**APPROVED
WVDEP OOG**
11-13-2017

ROBERT A. MATEJKA
REGISTERED
014027
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER



ARSENAL RESOURCES
1000 W. MAIN ST., SUITE 200
MORGANTOWN, WV 26508
PHONE: 304.843.5907

DATE	2017.04.10
BY	J. W. WILSON
CHECKED	J. W. WILSON
SCALE	AS SHOWN
PROJECT	EROSION & SEDIMENT CONTROL
ISSUE	REVISION 1

**EROSION AND SEDIMENT CONTROL PLAN
DARWIN WELL SITE**
FREDERICK COUNTY, WEST VIRGINIA

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