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west virginia department of environmental protection

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

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

Friday, August 18, 2017  
WELL WORK PERMIT  
Horizontal 6A / New Drill

ARSENAL RESOURCES LLC  
6031 WALLACE ROAD EXTENSION SUITE 300

WEXFORD, PA 15090

Re: Permit approval for HAMILTON 214  
47-077-00628-00-00

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: HAMILTON 214  
Farm Name: HAMILTON, TERRY D. & BETTY  
U.S. WELL NUMBER: 47-077-00628-00-00  
Horizontal 6A / New Drill  
Date Issued: 8/18/2017

Promoting a healthy environment.

08/18/2017

# 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

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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.

08/18/2017

## 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](mailto:DEPOOGNotify@wv.gov).

WW-6B  
(04/15)

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

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  
Operator ID County District Quadrangle

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

3) Farm Name/Surface Owner: Terry D. & Betty Hamilton Public Road Access: Route 92

4) Elevation, current ground: 1562 Elevation, proposed post-construction: 1563

5) Well Type (a) Gas  Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_

Other \_\_\_\_\_

(b) If Gas Shallow  Deep \_\_\_\_\_

Horizontal  \_\_\_\_\_

6) Existing Pad: Yes or No Yes *MJK 4/25/2017*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale, Top - 7715ft, Bottom - 7811ft, 96ft, 0.5 psi/ft

8) Proposed Total Vertical Depth: 7795ft

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 19246ft

11) Proposed Horizontal Leg Length: 11061ft

12) Approximate Fresh Water Strata Depths: 700 ft

13) Method to Determine Fresh Water Depths: Offsetting wells reported water depths (077-00399, 077-00434, 077-00505, 077-00557)

14) Approximate Saltwater Depths: 1,100 ft

15) Approximate Coal Seam Depths: Bakerstown 205', Brush Creek 305', Upper Freeport 367', Lower Freeport 420', Upper Kittanning 527', Middle Kittanning 572', Lower Kittanning 597'

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: \_\_\_\_\_

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**WV Department of Environmental Protection**

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#	800'	800'	CTS
Coal							
Intermediate	9.625"	New	J-55	40#	1,900'	1,900'	CTS
Production	5.5"	New	P-110	20#	19,246'	19,246'	TOC @ 1,750'
Tubing							
Liners							

*MSJK 4/25/2017*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	24"	36"			0	Type 1, 3% Calcium	1.20
Fresh Water	13.375"	17.5"	0.38"	2730	0	Class A, 3% CaC12	1.20
Coal					0		
Intermediate	9.625"	12.25"	0.395"	3950psi	0	Class A, 2% CaC12	1.29
Production	5.5"	8.5-8.75	0.361"	12,640psi	9500	Type 1	1.64 / 1.32
Tubing					5000		
Liners					N/A		

**PACKERS**

Kind:				
Sizes:				
Depths Set:				

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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 to 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 designed KOP and 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.

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21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 6.91

22) Area to be disturbed for well pad only, less access road (acres): 4.12

WV Department of  
Environmental Protection

23) Describe centralizer placement for each casing string:

20" No centralizers 13 3/8" - one bow spring centralizer on every other joint 9 5/8" - one bow spring centralizer every third joint from TD to surface 5 1/2" - one semi rigid centralizer on every joint from TD of casing to end of curve. Then every other joint to KOP. Every third joint from KOP to 1,800', there will be no centralizers from 1,800' 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 the surface with Class A cement and no greater than 3% CaCl (calcium chloride). The 9-5/8" casing will be cemented to the surface with Type 1 cement, & no greater than 3% calcium chloride. The 5-1/2" production string will be cemented back to 1,450' (+/- 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 has an extender (increased pumpability and fluid loss), a defoaming agent to decrease cement foaming during mixing to ensure the cement is of proper weight to placement and possibility a 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 freshwater to KOP. At KOP, the wellbore will be loaded with synthetic oil based mud, barite-weighted mud system with such properties as to build a filter-cake on the face to the bore-hole. This will provide lubricity as well as stabilizing the well bore. We will begin rotating the drill string and mud will be circulated upon reaching TD until no further cuttings are observed coming across the shaker screens. Once clean mud is circulated back to surface, we will pull three stands of drill pipe, load the hole, pull three strands and load the hole. The weight indicator on the rig will be monitored for any occurrences of drag and if any are notices, we will re-run the previous stand of pipe pulled across and circulate 2X bottoms up while watching the shakers for signs of cuttings. Once at the base of the curve, the string will be continuously rotated while pumping 2X bottoms up. We will pull three stands and fill the hole until we reach the vertical section of the well.

\*Note: Attach additional sheets as needed.



609 West Main Street • P.O. Drawer 190 • Clarksburg, WV 26302-0190  
304.624.9700 • 304.622.0981 • 304.842.3325 • <http://www.msesinc.com>  
Office Fax 24 Hour World Wide Web

May 3, 2017  
Project No: 13-284

Mr. Eddie Carder  
Permitting Manager  
Arsenal Resources  
65 Professional Place  
Suite 200  
Bridgeport, WV 26330

**TRANSMITTAL  
KARST TERRAIN REVIEW  
PROPOSED T. HAMILTON WELL PAD**

Dear Mr. Carder:

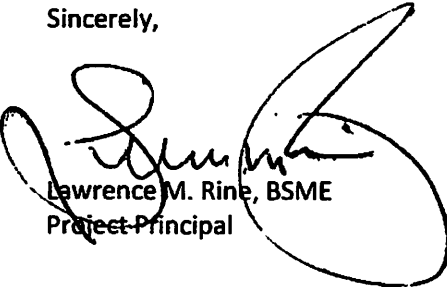
Per Arsenal Resources' (Arsenal) May 2, 2017 request, MSES Consultants, Inc. (MSES) has conducted an on-line data search for mapped Karst Terrain in relation to the proposed T. Hamilton Well Pad located in Reno District, Preston County, West Virginia at latitude N39°-18'-13.29" and longitude E 79°-51'-46.22" (center of well pad).

The West Virginia Geological and Economic Survey, West Virginia Karst Geology on-line files and Karst Terrain 1968 Geology Mapping were used to assess the absence of Karst conditions at the proposed T. Hamilton Well Pad. The results of this file and map review is illustrated by the attached drawings 1 of 1 entitled "Proposed T. Hamilton Well Pad, Karst Terrain Map".

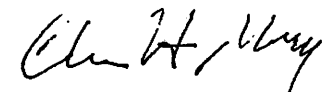
As indicated by the published Karst Terrain mapping, no Karst Terrain is shown to exist at or adjacent to the proposal T. Hamilton Well Pad.

Should Arsenal or you have questions or need further information, please contact MSES at 304.669.9642 (mobile), 304.624.9700 (office) or [larry@msesinc.com](mailto:larry@msesinc.com) (email).

Sincerely,



Lawrence M. Rine, BSME  
Project Principal

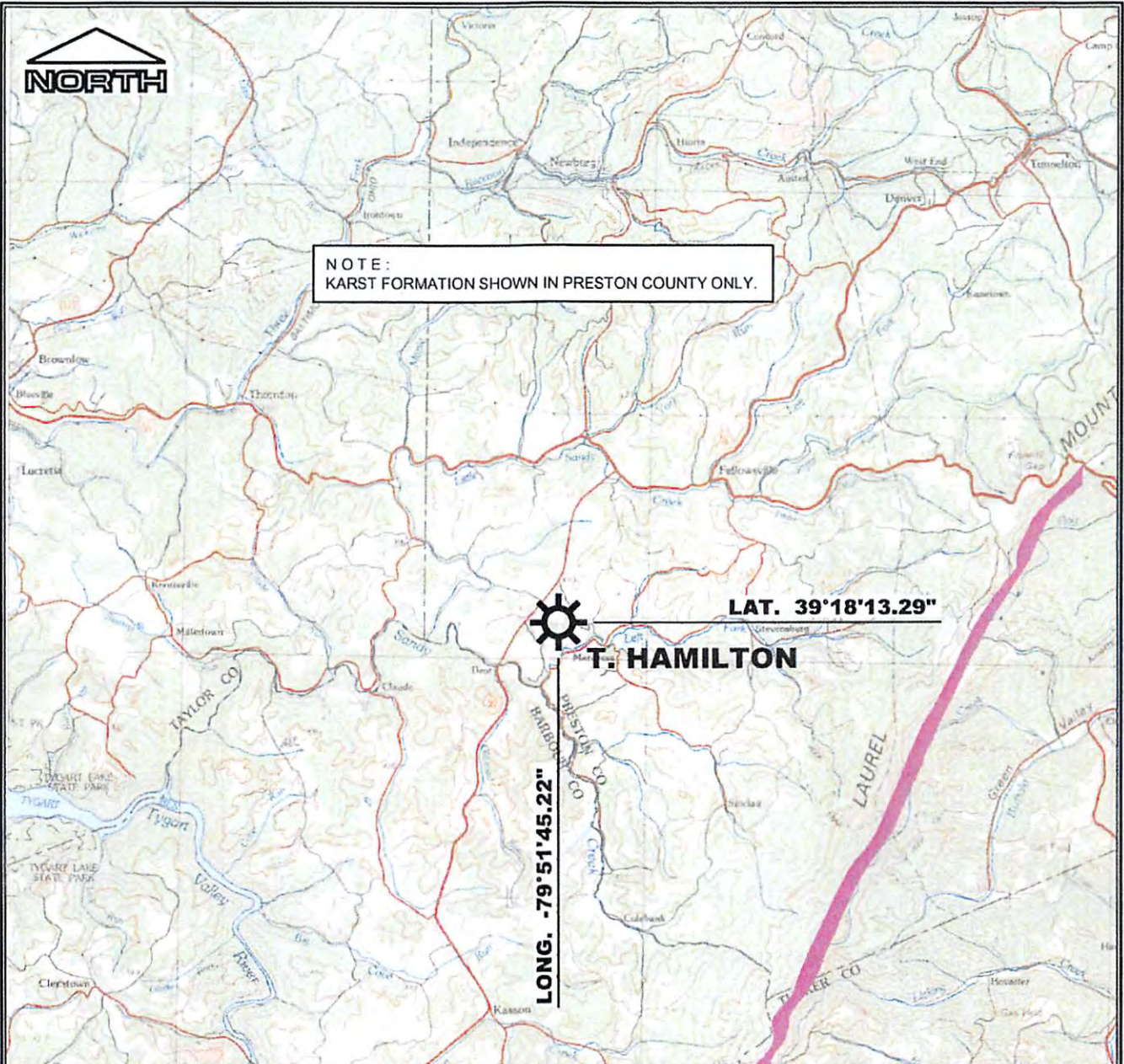


Charles H. Muncy, Jr. PE, PS  
Senior Project Manager

77-00628



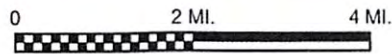
NOTE :  
KARST FORMATION SHOWN IN PRESTON COUNTY ONLY.



LAT. 39°18'13.29"


T. HAMILTON

LONG. -79°51'45.22"



SCALE : 1" = 2 MILE

**LEGEND**

 KARST FORMATION LOCATION

**REFERENCE**

BASE MAPPING :  
U.S.G.S. 30x60 QUADRANGLE,  
KINGWOOD, WEST VIRGINIA - MARYLAND, DATED 1981.

KARST AREA SHOWN AS PER  
WEST VIRGINIA GEOLOGICAL AND ECONOMIC SURVEY,  
PRESTON COUNTY KARST FORMATION, 1968.

**ARSENAL RESOURCES**

**PROPOSED T. HAMILTON WELL PAD  
KARST TERRAIN MAP**

Drawn by	SARC	5/17
Engineer	LMR / CHM	5/17
Checked by	LMR	5/17
		Date

Scale: AS SHOWN

1 of 1

Prepared by *MSES consultants, inc.*





WW-9  
(4/16)

API Number 47 - 077 - 00628  
Operator's Well No. Hamilton 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) Little Sandy Creek Quadrangle Fellowsville

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: \_\_\_\_\_

Will a synthetic liner be used in the pit? Yes  No  If so, what 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 the drilling medium and drill cuttings on location to than be taken to a landfill.

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Vertical Freshwater Horizontal Synthetic 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 Biocarbonate, 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.

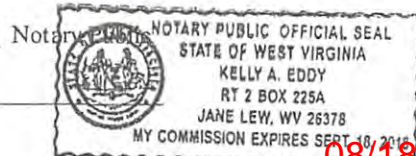
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations 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

Subscribed and sworn before me this 10th day of August, 20 17

Kelly A. Eddy  
My commission expires September 18, 2018



08/18/2017

**Arsenal Resources**

Proposed Revegetation Treatment: Acres Disturbed 6.91 Prevegetation pH 6.8 average

Lime 4 Tons/acre or to correct to pH 6.0-7.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Rye	40	Swisher Meadow Mix	100
Field Bromegrass	40		
Winter Rye	168		
Winter Wheat	180		

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: Maureen J. Kantawald

Comments: Pre-seed / mulch all disturbed areas as soon as reasonably possible per regulation. Upgrade E&S where needed per WV DEP E&S manual, if necessary.

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Office of Oil and Gas

MAY 01 2017

**WV Department of  
Environmental Protection**

Title: Inspector Date: 4/25/2017

Field Reviewed?  Yes  No



## **SITE SAFETY PLAN**

### **Hamilton 214 WELL PAD**

#### **911 Address:**

203 Hamilton Drive  
Thornton, WV 26440

*Harold Kuntz*  
4/25/2017

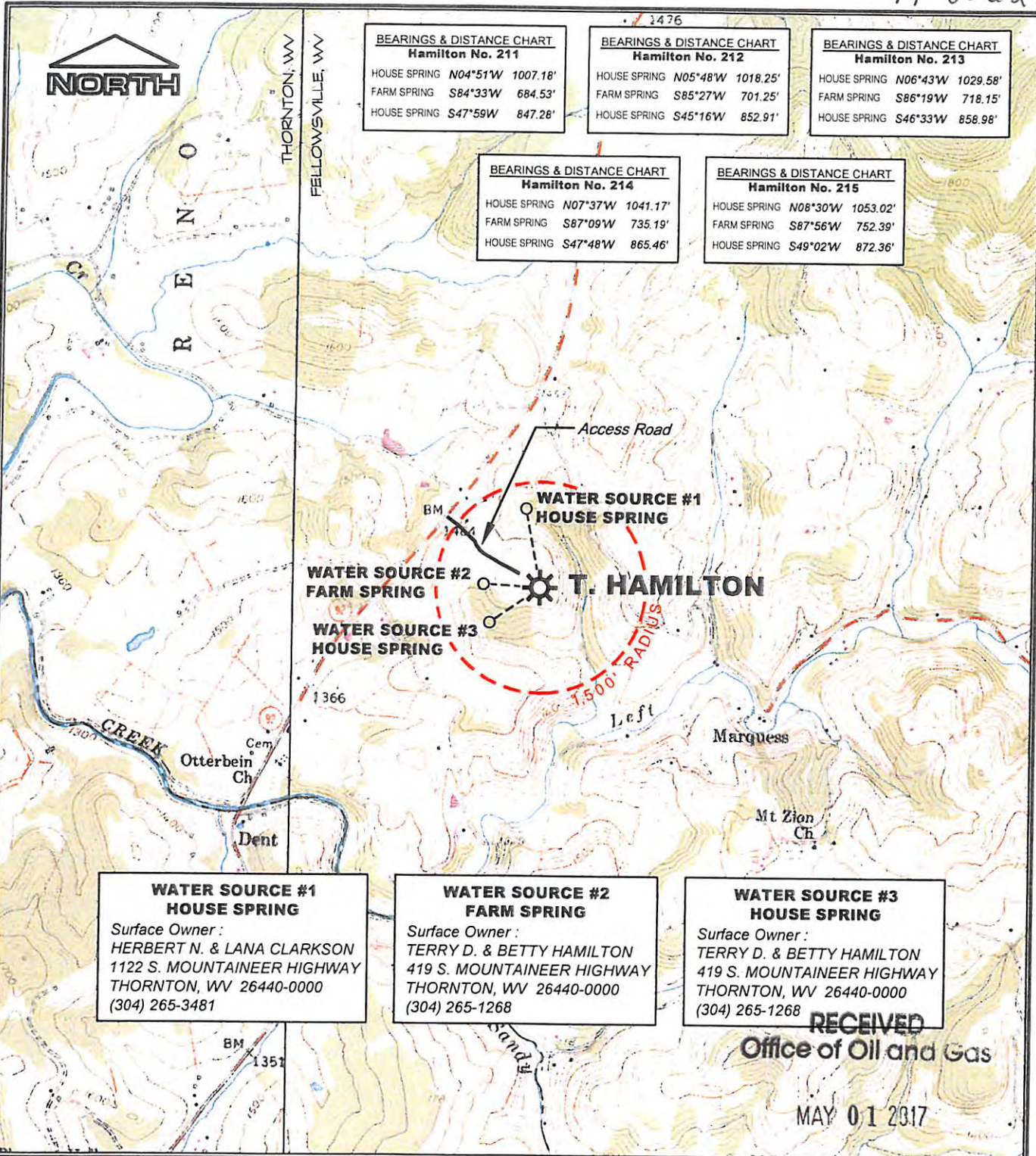
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08/18/2017

77-00628



**BEARINGS & DISTANCE CHART**  
**Hamilton No. 211**

HOUSE SPRING	N04°51'W	1007.18'
FARM SPRING	S84°33'W	684.53'
HOUSE SPRING	S47°59'W	847.28'

**BEARINGS & DISTANCE CHART**  
**Hamilton No. 212**

HOUSE SPRING	N05°48'W	1018.25'
FARM SPRING	S85°27'W	701.25'
HOUSE SPRING	S45°16'W	852.91'

**BEARINGS & DISTANCE CHART**  
**Hamilton No. 213**

HOUSE SPRING	N06°43'W	1029.58'
FARM SPRING	S86°19'W	718.15'
HOUSE SPRING	S46°33'W	858.98'

**BEARINGS & DISTANCE CHART**  
**Hamilton No. 214**

HOUSE SPRING	N07°37'W	1041.17'
FARM SPRING	S87°09'W	735.19'
HOUSE SPRING	S47°48'W	865.46'

**BEARINGS & DISTANCE CHART**  
**Hamilton No. 215**

HOUSE SPRING	N08°30'W	1053.02'
FARM SPRING	S87°56'W	752.39'
HOUSE SPRING	S49°02'W	872.36'

**WATER SOURCE #1**  
**HOUSE SPRING**

Surface Owner :  
HERBERT N. & LANA CLARKSON  
1122 S. MOUNTAINEER HIGHWAY  
THORNTON, WV 26440-0000  
(304) 265-3481

**WATER SOURCE #2**  
**FARM SPRING**

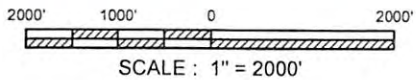
Surface Owner :  
TERRY D. & BETTY HAMILTON  
419 S. MOUNTAINEER HIGHWAY  
THORNTON, WV 26440-0000  
(304) 265-1268

**WATER SOURCE #3**  
**HOUSE SPRING**

Surface Owner :  
TERRY D. & BETTY HAMILTON  
419 S. MOUNTAINEER HIGHWAY  
THORNTON, WV 26440-0000  
(304) 265-1268

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**REFERENCE**  
U.S.G.S. 7.5' TOPOGRAPHIC QUADRANGLES :  
FELLOWSVILLE, WV 1958 (P.R. 1976)  
THORNTON, WV 1958 (P.R. 1976)

**WV Department of**  
**ARSENAL RESOURCES**  
Environmental Protection

**PROPOSED T. HAMILTON WELL**  
**SURROUNDING WATER SOURCES**

Drawn by	RLR	2/14
Engineer	DDT	2/14
Checked by	RVS	2/14
	Rev. 4/25/17	Date

Scale: AS SHOWN

1 of 1

Prepared by **MSES consultants, inc.**

08/18/2017

1,310' to Bottom Hole

BOTTOM HOLE LATITUDE 39°22'30"  
TOP HOLE LATITUDE 39°20'00"

Tax Map / Parcel	Surface Owner
A	23/1 T. & B. HAMILTON
B	23/2 H. & L. CLARKSON
C	16/36 P. LAREW
D	16/37.1 D. MATLICK
E	16/35 T. & B. HAMILTON
F	16/37.4 P. & L. CLARKSON
G	15/21 J. & L. CLARKSON
H	15/14 EDWIN C. RUNNER
I	15/8 G. & C. CLUTTER
J	15/7 W. & G. WAGNER
K	15/4 F. & P. JENNINGS
L	NO TM/P STATE OF WEST VIRGINIA
M	9/16 HERSHMAN FAMILY TRUST
N	9/14.2 JAMES E. GRAGG
O	23/1.1 D. HAMILTON

NOTE: No railroads are crossed by the proposed Hamilton 214 lateral.



WELL TIE LINES

- a - N88°01'00"W 725.73'
- b - S09°33'00"W 883.51'
- c - S32°51'03"E 1067.03'

LEGEND

- LEASE BOUNDARY
- SURFACE PROPERTY LINE
- ..... 500' BUFFER AROUND LATERAL
- BEVERLY & MORGANTOWN TURNPIKE
- ☼ EXISTING WELL

LEGEND

● 214 PROPOSED WELL & OPERATOR'S WELL NO.

ACCESS ROAD

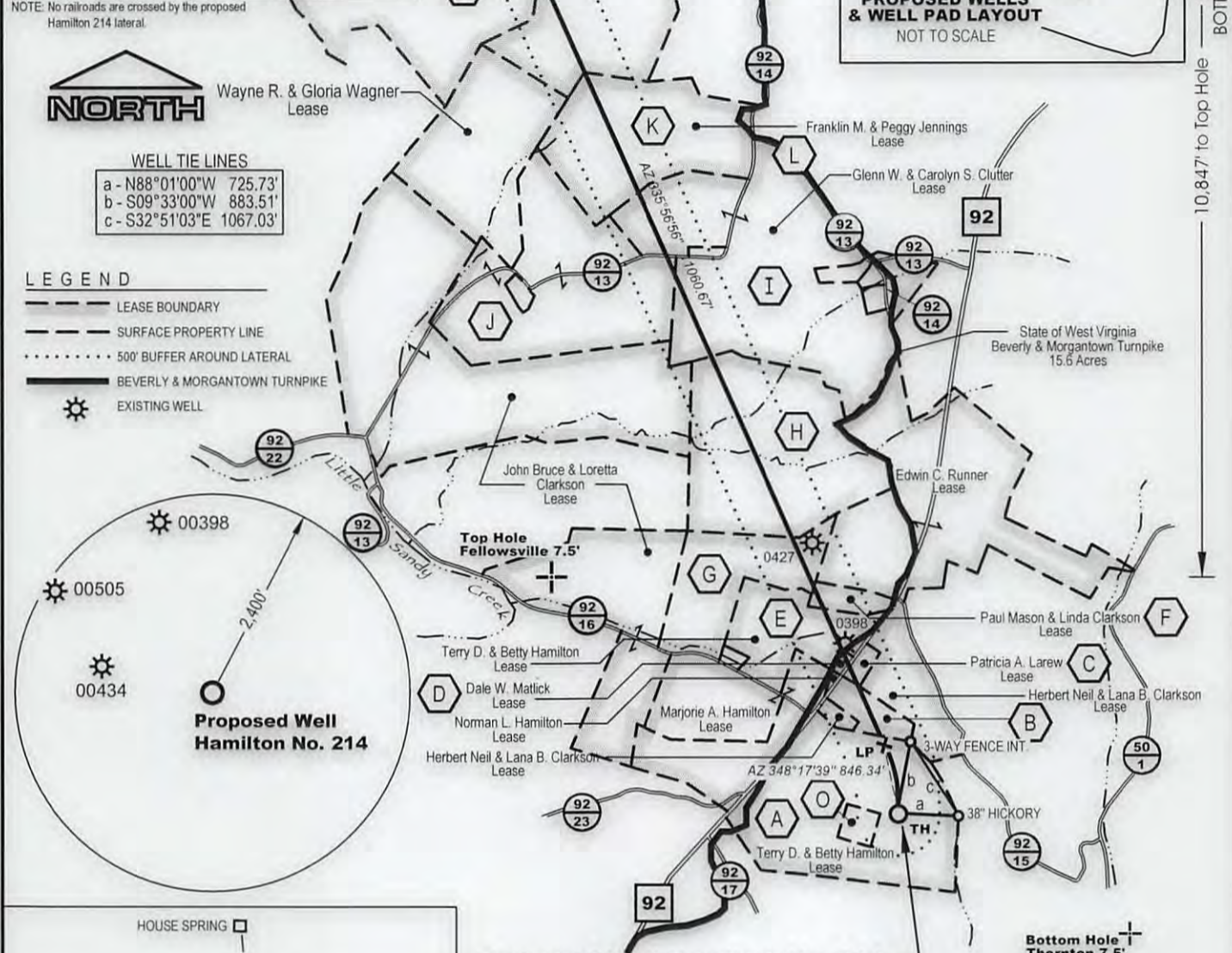


PROPOSED WELLS & WELL PAD LAYOUT NOT TO SCALE

TOP HOLE LONGITUDE 79°50'00"  
BOTTOM HOLE LONGITUDE 79°52'30"

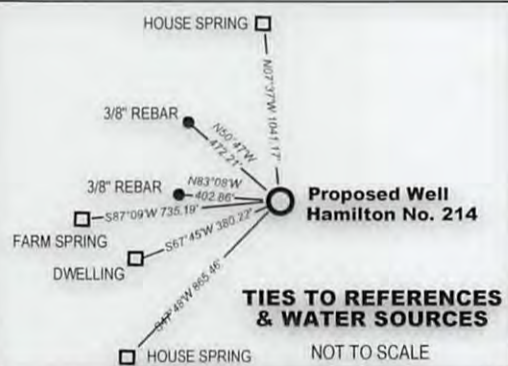
10,847' to Top Hole

15,150' to Bottom Hole



Proposed Well Hamilton No. 214

Proposed Well Hamilton No. 214  
Elev. 1562.00'



Hamilton No. 214	UTM Zone 17 nad83 (meters)	Latitude / Longitude (WGS84)
Top Hole (TH)	N4351081.696 E598078.113	N39°18'12.852" W79°51'44.959"
Landing Point (LP)	N4351334.092 E598021.449	N39°18'21.061" W79°51'47.192"
Bottom Hole (BH)	N4354388.719 E596596.836	N39°20'00.708" W79°52'45.084"



MSES consultants, inc.  
P. O. Drawer 190, Clarksburg, WV 26302-0190  
Rev. 8/11/17 (304) 624-9700

FILE NO. 13-284-Hamilton#214 Arsenal Well Plat  
SCALE 1" = 2000' DRAWN BY RLR  
MIN. DEGREE OF ACCURACY 1 in 200  
PROVEN SOURCE OF ELEVATION: GPS (SURVEY GRADE)

I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief, and that it shows all information required by law and the rules issued and prescribed by the department of environmental protection.

(SIGNED) *Charles H. Muncy, Jr.*  
R.P.E. 8137 P.S.

WVDEP  
OFFICE OF OIL & GAS  
601 57th STREET  
CHARLESTON, WV 25304



DATE APRIL 4 20 17  
OPERATOR'S WELL NO. HAMILTON NO. 214  
**47 077 00628H6A**  
STATE COUNTY PERMIT NO.  
API WELL NO.

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

LOCATION: ELEVATION ORIG. 1562' - AS-BUILT 1563' WATERSHED LITTLE SANDY CREEK  
 DISTRICT RENO COUNTY PRESTON  
 SURFACE OWNER TERRY D. & BETTY HAMILTON  
 OIL & GAS ROYALTY OWNER T. & B. Hamilton, H. N. & L. B. Clarkson, P. A. Larew, D. W. Matlick, T. & B. Hamilton, P. Mason & L. Clarkson, J. B. & L. Clarkson, H. Runner Hrs c/o E. Runner, G. W. & C. S. Clutter, F. & P. Jennings, W. R. & G. Wagner, J. E. Gragg, Steven Bolyard, D. R. & C. A. Hershman

PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
 PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  CLEAN OUT AND REPLUG   
 OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ PLUG AND ABANDON

TARGET FORMATION ONONDAGA (PILOT) - MARCELLUS (LATERAL) ESTIMATED DEPTH TVD = 7,910' (PILOT) 7,795' (LATERAL) MD 19,245.9'

WELL OPERATOR ARSENAL RESOURCES DESIGNATED AGENT WILLIAM VEIGEL  
 ADDRESS 6031 WALLACE ROAD EXTENSION #300 ADDRESS 65 PROFESSIONAL PLACE, SUITE 200  
 WEXFORD, PA 15090 BRIDGEPORT, WV 26330

QUADRANGLE FELLOWSVILLE, W V 7.5'  
NEAREST TOWN THORNTON, W V 7.5'

ACREAGE 95.06  
LEASE ACREAGE 99.06

08/18/2017

COUNTY PERMIT NO. 077

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

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

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

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

\* See Attached

**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEEP Office of Oil and Gas, including but not limited to the following:

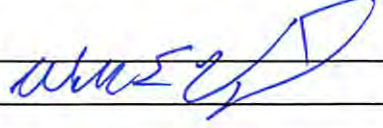
- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

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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-GA1, Hamilton #214

Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
A	Terry D. Hamilton and Betty Hamilton	Falcon Partners	0.125	680/313	224.836
	Falcon Partners	Mar Key, LLC		739/973	
B	Herbert N. Clarkson and Lana B. Clarkson	Falcon Partners	0.125	681/611	44
	Falcon Partners	Mar Key, LLC		739/973	
C	Patricia A. Larew	Mar Key, LLC	0.15	763/168	2.7
D	Dale W. Matlick	Mar Key, LLC	0.15	759/634	0.794
E	Terry D. Hamilton and Betty Hamilton	Falcon Partners	0.125	680/313	224.836
	Falcon Partners	Mar Key, LLC		739/973	
F	Paul Mason Clarkson and Linda Clarkson	Mar Key, LLC	0.15	759/626	5.16
G	John B. Clarkson and Loretta Clarkson	Falcon Partners	0.125	679/713	454.16
	Falcon Partners	Mar Key, LLC		739/973	
H	Edwin C. Runner	Falcon Partners	0.125	688/183	300.23
	Falcon Partners	Mar Key, LLC		739/973	
I	Glenn W. Clutter and Carolyn S. Clutter	R.P. Land Company, LLC	0.18	763/996	153.333
	R.P. Land Company, LLC	Mar Key, LLC		740/1	
J	Wayne R. Wagner and Gloria Wagner	R.P. Land Company, LLC	0.18	763/994	166.84
	R.P. Land Company, LLC	Mar Key, LLC		740/1	
K	Franklin M. Jennings and Peggy A. Jennings	R.P. Land Company, LLC	0.18	763/162	703.101
	R.P. Land Company, LLC	Mar Key, LLC		740/1	
L	West Virginia Department of Transportation, Division of Highways	Mar Key, LLC	0.2	790/666	77.12
M	Delmer R. Hershman and Carol A. Hershman	Magnum Land Services, LLC	0.125	685/445	220.59
	Magnum Land Services, LLC	Belmont Resources, LLC		690/741	
	Belmont Resources, LLC	Enerplus Resources (USA) Corporation		725/326	
N	Enerplus Resources (USA) Corporation	Mar Key, LLC	0.125	782/50	120
	James E. Gragg	Falcon Partners		681/635	
	Falcon Partners	Mar Key, LLC		739/973	
O	Duane K. Hamilton	Mar Key, LLC	0.15	744/131	4

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## 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			
<b>Business Purpose</b>	2111 - Mining, Quarrying, Oil & Gas Extraction - Oil and Gas Extraction - Crude Oil and Natural Gas Extraction		<b>Capital Stock</b>
<b>Charter County</b>		<b>Control Number</b>	99Q1F
<b>Charter State</b>	WV	<b>Excess Acres</b>	
<b>At Will Term</b>	A	<b>Member Managed</b>	MBR
<b>At Will Term Years</b>		<b>Par Value</b>	

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 08/18/2017

<b>Authorized Shares</b>

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

<b>Officers</b>	
Type	Name/Address
<b>Member</b>	MOUNTAINEER KEYSTONE ENERGY LLC 6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090
<b>Organizer</b>	PAUL M HERZING 560 EPSILON DR. PITTSBURGH, PA, 15238 USA
Type	Name/Address

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<b>Annual Reports</b>	MAY 01 2017
Date filed	WV Department of Environmental Protection

08/18/2017

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

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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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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People Powered. Asset Strong.

April 5, 2017

Mr. James Martin, Chief of Oil and Gas  
WV DEP  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25301

RE: Ownership of Roadways; Hamilton Pad

Mr. Martin:

In preparation of filing a permit application for the above referenced wells, the Title Department of Arsenal Resources conducted a thorough title examination to determine ownership of the oil and gas underlying all roadways crossed by the proposed wells. The findings of our examination show that some of the roadways crossed by the proposed wells are owned in fee by the West Virginia Department of Transportation, Division of Highways and that some are right of ways only. 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 as 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 our leasehold as provided in the application materials.

If you have any questions, concerns or need further information, please do not hesitate to contact me at the contact information 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: 800-428-0981  
www.arsenalresources.com

08/18/2017

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

Date of Notice Certification: 04/24/2017

API No. 47- 077 - 00628  
Operator's Well No. Hamilton 214  
Well Pad Name: Hamilton

**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	Eastings:	<u>598078.113</u>
County:	<u>Preston</u>		Northing:	<u>4351081.696</u>
District:	<u>Reno</u>	Public Road Access:		<u>Route 92</u>
Quadrangle:	<u>Fellowsville</u>	Generally used farm name:		<u>Terry D. &amp; Betty Hamilton</u>
Watershed:	<u>Little 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.

<p>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:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><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</p> <p style="padding-left: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p><b>OOG OFFICE USE ONLY</b></p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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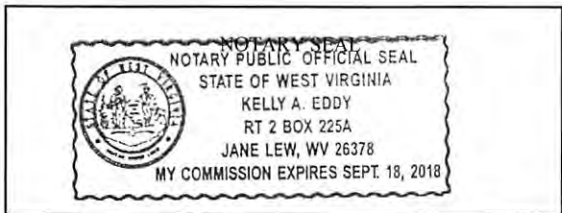
**Required Attachments:**

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> 		<u>Wexford, PA 15090</u>
Its:	<u>Designated Agent</u>	Facsimile:	<u>304-848-9134</u>
Telephone:	<u>724-940-1218</u>	Email:	<u>keddy@arsenalresources.com</u>



Subscribed and sworn before me this 26<sup>th</sup> day of April 2017  
Kelly A. Eddy Notary Public  
 My Commission Expires September 18, 2018

**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](mailto: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:** 04/26/2017 **Date Permit Application Filed:** 04/28/17

**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: Terry D. & Betty Hamilton  
Address: 419 S Mountaineer Highway  
Thomton, WV 26440  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

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

**COAL OPERATOR**  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

**SURFACE OWNER(s) (Road and/or Other Disturbance)**  
Name: Terry D. & Betty Hamilton  
Address: 419 S Mountaineer Highway  
Thomton, WV 26440  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

**SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)**  
Name: See Attached List  
Address: \_\_\_\_\_

**SURFACE OWNER(s) (Impoundments or Pits)**  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

**OPERATOR OF ANY NATURAL GAS STORAGE FIELD**  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

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\*Please attach additional forms if necessary

**WV Department of Environmental Protection**

**08/18/2017**

**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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://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 reserved 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

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WV Department of Environmental Protection  
08/18/2017

WW-6A  
(8-13)

API NO. 47-077 - 00628  
OPERATOR WELL NO. Hamilton 214  
Well Pad Name: Hamilton

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 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

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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.

08/18/2017

**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 - 60628  
OPERATOR WELL NO. Hamilton 214  
Well Pad Name: Hamilton

**Notice is hereby given by:**

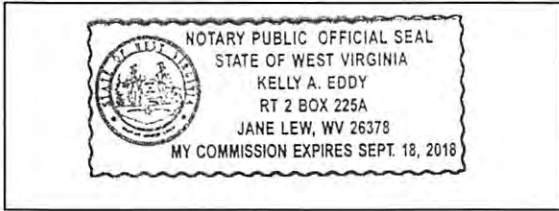
Well Operator: Arsenal Resources  
Telephone: 724-940-1218  
Email: keddy@arsenalresources.com



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

**Oil and Gas Privacy Notice:**

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



Subscribed and sworn before me this 26<sup>th</sup> day of April, 2017.

Kelly A. Eddy Notary Public

My Commission Expires September 18, 2018

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WW-6RW  
(1-12)

DUANE DILLY  
MOUNTAINEER KEYSTONE  
65 PROFESSIONAL PLACE STE 200  
BRIDGEPORT, WV 26330-1889

API NO. 47- 077 - 00618  
OPERATOR WELL NO. Hamilton # 214  
Well Pad Name: Hamilton

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**WELL LOCATION RESTRICTION WAIVER**

The well operator, Mountaineer Keystone LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

**Well Location Restrictions**

Pursuant to West Virginia Code § 22-6A-12(a), 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.

**WAIVER**

I, Duane K. Hamilton, 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 seven (7), 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>598077.06</u>
County:	<u>Preston</u>	UTM NAD 83 Northing:	<u>4351082.46</u>
District:	<u>Reno</u>	Public Road Access:	<u>WV State Route 92</u>
Quadrangle:	<u>Fellowsville, WV 7.5'</u>	Generally used farm name:	<u>Hamilton Farm</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 and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

**WELL SITE RESTRICTIONS BEING WAIVED**

\*Please check all that apply

- EXISTING WATER WELLS
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

**FOR EXECUTION BY A NATURAL PERSON**

Signature: Duane Hamilton  
Print Name: Duane Hamilton  
Date: 6/18/15

**FOR EXECUTION BY A CORPORATION, ETC.**

Company: \_\_\_\_\_  
By: \_\_\_\_\_  
Its: \_\_\_\_\_  
Signature: [Signature]  
Date: \_\_\_\_\_

Well Operator: Mountaineer Keystone, LLC  
By: Nathan Skeen  
Its: Agent

Signature: [Signature]  
Telephone: \_\_\_\_\_



Subscribed and sworn before me this 8<sup>th</sup> day of June, 2015  
Steven P. Johnson Notary Public  
My Commission Expires June 24, 2015

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 of your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

08/18/2017

BOOK : 007 PAGE 0457

BOOK : 007 PAGE 458

Linda Huggins  
PRESTON County 04:41:45 PM  
Instrument No 2145181  
Date Recorded 06/15/2015  
Document Type MISC/R  
Pages Recorded 2  
Book-Page 7-457  
Recording Fee \$5.00  
Additional \$6.00



08/18/2017

**WW-6A Attachment for the Hamilton 214**

Terry D. & Betty Hamilton ✓  
419 S Mountaineer Highway  
Thornton, WV 26440

Herbert N. Clarkson ✓  
1122 S Mountaineer Highway  
Thornton, WV 26440

Duane K. Hamilton ✓  
251 Hamilton Drive  
Thornton, WV 26440

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## WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

## Division of Highways

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

Jim Justice  
 Governor

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

May 12, 2017

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

Subject: DOH Permit for the Hamilton Pad, Preston County

Hamilton 214 Well Site

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #04-2014-0293 for the subject site to Arsenal Resources for access to the State Road for the well site located off of West Virginia Route 92 F.

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

Very Truly Yours,

Gary K. Clayton  
 Regional Maintenance Engineer  
 Central Office Oil & Gas Coordinator

Cc: Kelly Eddy  
 ARSENAL Resources  
 CH, OM, D-4  
 File

<b>WellName # Hamilton 214</b>			
<b>FRACTURING ADDITIVES</b>			
	<b>PURPOSE</b>	<b>TRADE NAME</b>	<b>CAS #</b>
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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MAY 01 2017

**WV Department of**  
**Environmental Protection**

08/18/2017



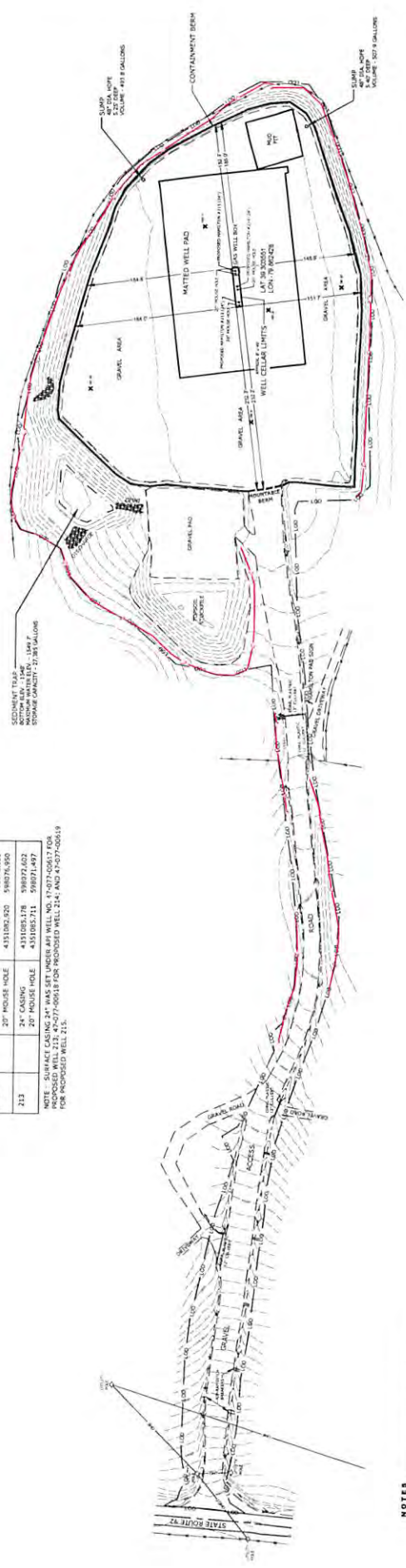
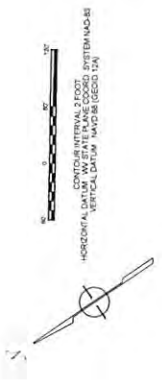
**WVDEP OOG  
ACCEPTED AS-BUILT  
8/17/2017**

- LEGEND**
- OVERHEAD ELECTRIC
  - OVERHEAD TELEPHONE
  - OVERHEAD ELECTRIC & TELEPHONE
  - FENCE
  - CONTAINMENT BERM
  - CONTINUOUS LINE
  - RIP RAP DRAINAGE DITCH
  - COMPOST FILTER SOCK (NOT FILLED BY AFTER CONSTRUCTION)
  - COMPOST SOCK (NOT FILLED BY AFTER CONSTRUCTION)
  - LIMITS OF DISTURBED
  - RIP RAP
  - 48" SLUMP WITH 4" PVC DRAIN
  - SPOT ELEVATION

**SURFACE CASING SUMMARY TABLE**

WELL #	API #	DESCRIPTION	UTM ZONE 17 N (METERS)	N	E
215	47-077	24" CASING 20" PROSE HOLE	4311079.675	598883.387	598883.371
214		24" CASING 20" PROSE HOLE	4311882.406	598978.233	598978.169
213		24" CASING 20" PROSE HOLE	4311885.178	598972.622	598971.487

NOTE: SURFACE CASING DATA WAS PROVIDED BY WELL NO. 17-077-000177 FOR PROPOSED WELL 215. 47-077-000177 FOR PROPOSED WELL 214. AND 47-077-000149 FOR PROPOSED WELL 213.

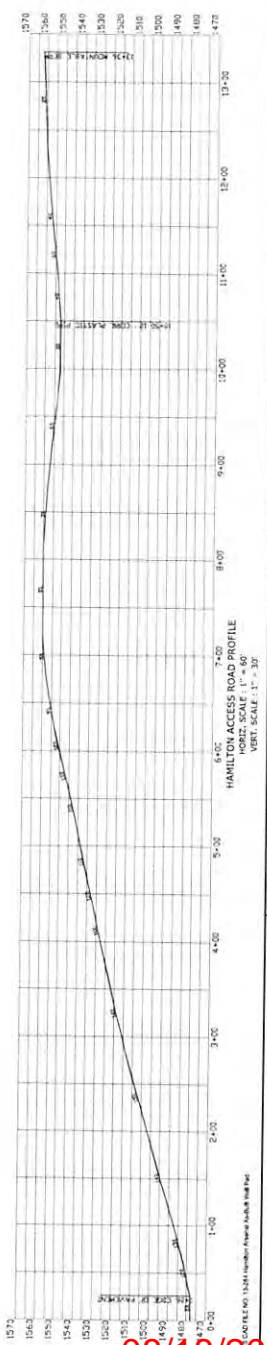


**NOTES**

- ALL WORK WAS CONTAINED INSIDE OF THE ORIGINAL LOGS.
- NO WORK WAS PERFORMED TO WIDEN ENTRANCE OF ACCESS ROAD AS DATA PROVIDED BY CONTRACTOR GAVE IMPROVED WVDPE & GAS INSPECTOR WITHOUT MODIFICATION TO THE LOGS.
- NO WORKING HAD COMMENCED ON SITE AT THE TIME OF THIS SURVEY & MAPPING (RESERVED).
- ALL DISTURBED AREAS HAVE BEEN RESEED.
- AS-BUILT SURVEY & MAPPING, SEPTEMBER 2015



CHARLES H. NANCY, JR., REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF WEST VIRGINIA, LICENSE NO. 8137  
 I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.  
 CHARLES H. NANCY, JR., P.E. 8137  
 808 EAST MAIN STREET  
 CHARLOTTE, WEST VIRGINIA 25302-0118  
 DATE: 8/17/2017



**MSES consultants, inc.**  
 environmental & engineering consultants  
 Consulting After Physics

Reno District  
 Fresno County  
 West Virginia

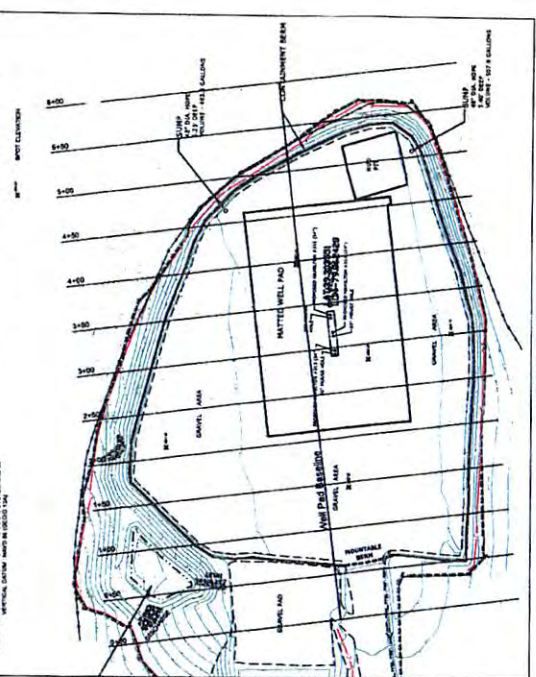
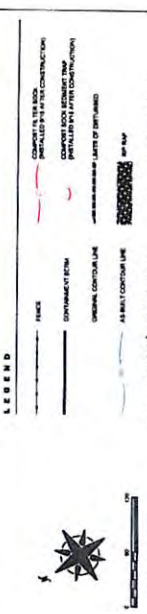
**ARSENAL RESOURCES**

AS-BUILT  
 HAMILTON WELL PAD

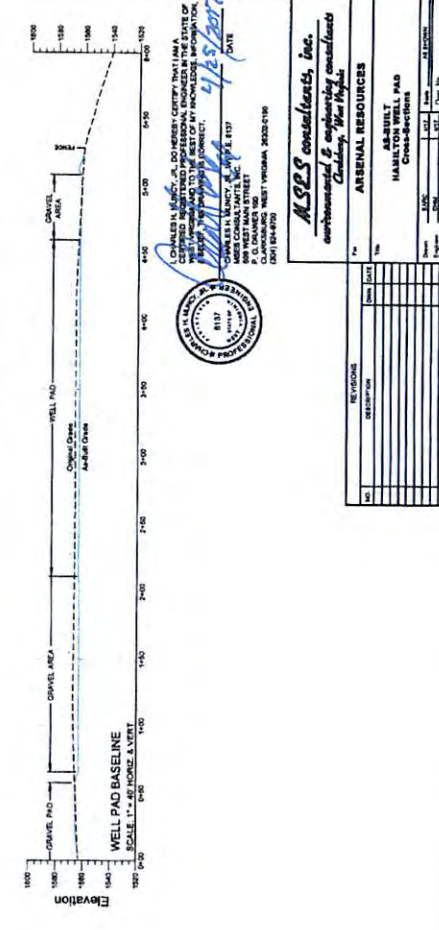
Scale: 1" = 30'  
 Date: 8/17/2017  
 1 of 1

08/18/2017

**WVDEP OOG  
ACCEPTED AS-BUILT  
8/17/2017**



**AS-BUILT SITE PLAN  
BASELINE & CROSS-SECTION LOCATIONS**



SEAL OF THE STATE OF WEST VIRGINIA  
PROFESSIONAL ENGINEER  
0137  
0000000000

DATE: 8/17/2017

CHAMBERLAIN, MURPHY, & ASSOCIATES, INC.  
1500 WEST MAIN STREET  
P.O. BOX 108000, WEST VIRGINIA 26033-0100  
(304) 844-9799

**MSRS Consultants, Inc.**  
environmental & engineering consultants  
Charmley, West Virginia

NO.	REVISIONS	DATE	BY	AS-BUILT CROSS-SECTION		
				NO.	DATE	BY
				1	8/17/2017	MSRS
				2		
				3		
				4		
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MSRS CONSULTANTS, INC.  
WEST VIRGINIA STATE NO. 02325-0100  
408120170000000000

08/18/2017

