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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

Austin Caperton , Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Tuesday, March 06, 2018  
WELL WORK PERMIT  
Horizontal 6A / Drilling Deeper

HG ENERGY II APPALACHIA, LLC  
5260 DUPONT ROAD

PARKERSBURG, WV 26101

Re: Permit approval for KST5CHS  
47-033-05816-00-00

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: KST5CHS  
Farm Name: MCDONALD, JAMES IVAN  
U.S. WELL NUMBER: 47-033-05816-00-00  
Horizontal 6A / Drilling Deeper  
Date Issued: 3/6/2018

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.

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### 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.

## 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).

4703305816DD

WW-6B  
(04/15)

API NO. 47- \_\_\_\_\_  
OPERATOR WELL NO. KST5 CHS  
Well Pad Name: KST5

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

1) Well Operator: HG Energy II Appalachia, L 494519932 Harrison Union West Milford  
Operator ID County District Quadrangle

2) Operator's Well Number: KST5 CHS Well Pad Name: KST5

3) Farm Name/Surface Owner: James Ivan McDonald Public Road Access: State County Road 19/18

4) Elevation, current ground: 1134' Elevation, proposed post-construction: 1134'

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

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

*SDW  
9/20/2017*

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus at 6853'/6935' and 51' in thickness. Anticipated pressure at 4314#.

8) Proposed Total Vertical Depth: 6900'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: ~~47,720'~~ 18,133' *see attached*

11) Proposed Horizontal Leg Length: ~~10,457.9'~~ 10,388'

12) Approximate Fresh Water Strata Depths: 135'

13) Method to Determine Fresh Water Depths: Offset well data

14) Approximate Saltwater Depths: 1570', 2355'

15) Approximate Coal Seam Depths: 80', 390', 1060', 1440'

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

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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**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
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Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_

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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	20"	New	J-55	94	114' *Conductor Already Set	114'	*Already grouted in, CTS
Fresh Water	13 3/8"	NEW	J-55	54.5	500'	500'	CTS
Coal							
Intermediate	9 5/8"	NEW	J-55	40	2500'	2500'	CTS
Production	5 1/2"	NEW	P-110	20	18133'	18133'	CTS
Tubing							
Liners							

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	20"	24"	.438	2110		Class A	Yield = 1.22, CTS
Fresh Water	13 3/8"	17 1/2"	.380	2730	1200	Class A	yield = 1.20, CTS
Coal							
Intermediate	9 5/8"	12 1/4"	.395	3950		Class A	CTS
Production	5 1/2"	8 1/2"	.361	12640	10000	Class A	20% excess yield = 1.19, tail yield 1.24
Tubing							
Liners							

**PACKERS**

Kind:	None			
Sizes:	None			
Depths Set:	None			

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

Drill the vertical depth to the Marcellus at an estimated total vertical depth of approximately 6900 feet. Drill horizontal leg - stimulate and be capable of producing from the Marcellus Formation. Should we encounter an unanticipated void in the coal, we will install a minimum of 20' of casing below the void but not more than 100' below the void, set a basket and grout to surface.

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

The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals. See attached list. Maximum pressure not to exceed 10,000 psi.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.3 acres(this is a built pad, no further disturbance anticipated)

22) Area to be disturbed for well pad only, less access road (acres): 11.5 acres (this is a built pad, no further disturbance anticipated)

23) Describe centralizer placement for each casing string:

Conductor casing - No centralizers will be used with conductor casing.  
Freshwater - Bow Springs (over collars) on first 2 joints then every third joint to 100' from surface  
Intermediate - Bow Springs (over collars) on first 12 joints (or up to 300' above storage) then every third joint to 100' from surface  
Production - Run 1 spiral centralizer every 5 joints from the top of the curve to surface. Run 1 spiral centralizer every 3 joints from the 1st 5.5' long joint to the top of the curve.

\*\*\*See Casing Schematic\*\*\*



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

Conductor - "Already grouted in" Grouted In: Class A (PNE-1) 15.6 ppg, Yield: 1.22 cut/sk, CTS  
Fresh Water - 15.6 ppg PNE-1 + 3% bwoc CaCl<sub>2</sub>, 40% Excess, Yield = 1.20 / CTS  
Intermediate - Lead: 15.4 ppg PNE-1 + 2.5% bwoc CaCl<sub>2</sub>, 40% Excess / Tail: 15.9 ppg PNE-1 + 2.5% bwoc CaCl<sub>2</sub>, zero% Excess, CTS  
Production - Lead: 14.5 ppg POZ-PNE-1 + 0.3% bwoc R3 + 1% bwoc EC1 + 0.75 gal/sk FP13L + 0.3% bwoc MPA170, Tail: 14.8 ppg PNE-1 + 0.35% bwoc R3 + 0.75 gal/sk FP13L + 50% bwoc ASCA1 + 0.5% bwoc, MPA170, 20% Excess, Lead Yield=1.19, Tail Yield=1.94, CTS

\*\*\*See Casing Schematic\*\*\*



25) Proposed borehole conditioning procedures:

Conductor - Once at casing setting depth, ensure hole is clean at TD  
Fresh Water - Circulate & condition @ TD w/ Air. RIH w/ casing & fill w/ Fresh Water. Circulate a minimum of 1 hole volume, plus 30 bbls of 6% bentonite Gel/Sol of poly latex, then clear casing w/ Fresh Water prior to pumping cement.  
Intermediate - Circulate & condition hole/mud at TD. Circulate a minimum of one hole volume or until hole is clean prior TOOH. (do not exceed 17sec. trip speed) When RIH w/ casing, fill w/ mud every 5 or 8 joints. (do not exceed 17sec. run speed) Once casing is landed, C&C w/ mud for no less than 6hrs prior to pumping cement.  
Production - Once on bottom/TD with casing, circulate at max allowable pump rate for at least 2x bottoms up, or until returns and pump pressures indicate the hole is clean. Circulate a minimum of one hole volume prior to pumping cement.

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\*Note: Attach additional sheets as needed.

**KSTS Well Pad  
Cement Additives**

**Material Name**      **Material Type**      **Material Description**

Premium NE-1      Portland Cement      Premium NE-1 is a portland cement with early compressive strength properties.

CAS #		
Ingredient name	%	CAS number
Portland cement	90 - 100	65997-15-1
Calcium oxide	1 - 5	1305-78-8
Magnesium oxide	1 - 5	1309-48-4
Crystalline silica: Quartz (SiO2)	0.1 - 1	14808-60-7

Bentonite      Extender      Commonly called gel, it is a clay material used as a cement extender and to control excessive free water.

Ingredient name	%	CAS number
bentonite	90 - 100	1302-78-9
Crystalline silica: Quartz (SiO2)	5 - 10	14808-60-7

Calcium Chloride      Accelerator      A powdered, flaked or pelletized material used to decrease thickening time and increase the rate of strength development.

Ingredient name	%	CAS number
Calcium chloride	90 - 100	10043-52-4

Cello Flake      Lost Circulation      Graded (3/8 to 3/4 inch) cellophane flakes used as a lost circulation material.

Ingredient name	%	CAS number
No hazardous ingredient		

FP-13L      Foam Preventer      FP-13L is a clear liquid organic phosphate anti-foaming agent used in cementing operations. It is very effective minimizing air entrapment and preventing foaming tendencies of latex systems.

Ingredient name	%	CAS number
Tributyl phosphate	90 - 100	126-73-8

Granulated Sugar      Retarder      Used to retard cement returns at surface. A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures.

Ingredient name	%	CAS number
Sucrose	90 - 100	57-50-1

EC-1      Gas Migration      Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration.

Ingredient name	%	CAS number
Calcium magnesium oxide	90 - 100	37247-91-9

Poz (Fly Ash)      Base      A synthetic pozzolan, (primarily Silicon Dioxide). When blended with cement, Pozzolan can be used to create lightweight cement slurries used as either a filler slurry or a sulfate resistant completion cement.

Ingredient name	%	CAS number
No hazardous ingredient		

R-3      Retarder      A low temperature retarder used in a wide range of slurry formulations to extend the slurry thickening time.

Ingredient name	%	CAS number
Crystalline silica: Quartz (SiO2)	5 - 10	14808-60-7
Calcium oxide	1 - 5	1305-78-8

S-5      Surfactant      Used to water wet casing and formation to facilitate cement bonding.

Ingredient name	%	CAS number
Organic acid salt	40 - 50	Trade secret.

Ingredient name	%	CAS number
2-Butoxyethanol	20 - 30	111-76-2
Proprietary surfactant	10 - 20	Trade secret.
D-Glucopyranose, oligomeric, C10-16-alkyl glycosides	5 - 10	110615-47-9
Alkylarylsulfonate amine salt	1 - 5	Trade secret.
Polyoxyalkylenes	0.1 - 1	Trade secret.

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**List of Frac Additives by Chemical Name and CAS #****KST5 Well Pad (ASH,BHS,CHS,DHS,EHS,FHS)**

Chemical Name	CAS #	Multiple CAS #'s
Pro Shale Slik 405	Mixture	68551-12-2 7647-14-5 12125-02-9 64742-47-8
Pro Hib II	Mixture	68412-54-4 68607-28-3 107-21-1 111-76-2 67-56-1 107-19-7
Silica Sand and Ground Sand	Mixture	14808-60-7 1344-28-1 1309-37-1 13463-67-7
Hydrochloric Acid 22 DEG BE	7647-01-0	
PROGEL - 4.5	64742-96-7	
BIO CLEAR 2000	Mixture	25322-68-3 10222-01-2
SCALE CLEAR SI 112	107-21-1	
PROBREAK 4	Mixture	57-50-1 107-21-1
Sulfamic Acid	5329-14-6	
PRO - Flow - 102-N	Mixture	67-63-0 68439-45-2 2687-96-9
PROGEL - 4	9000-30-0	

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**KST5C**  
**Marcellus Shale Horizontal**  
**Harrison County, WV**

WELLBORE DIAGRAM		HOLE	CASING	GEOLOGY	TOP	BASE	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS	
		24"	20" 94# J-55	Conductor	0	114	AIR	Grouded In: Class A (PNE-1) 15.6 ppg, Yield: 1.22 cut/sk, CTS *Already Grouded In*	N/A	Once at casing setting depth, ensure hole is clean at TD	Conductor casing = 0.438" wall thickness Burst=2110 psi	
		<i>*Conductor already set*</i>										
		17.5"	13-3/8" 54.5# J-55 BTC	Fresh Water	0	135	AIR	15.6 ppg PNE-1 + 3% bwoc CaCl 40% Excess Yield=1.20 / CTS	Bow Springs (over collars) on first 2 joints then every third joint to 100' from surface	Circulate & condition @ TD w/ Air. RIH w/ casing & fill w/ Fresh Water. Circulate a minimum of 1 hole volume, plus 30 bbls of 6% bentonite Gel/50# of poly flake, then clear casing w/ Fresh Water prior to pumping cement.	Surface casing = 0.350" wall thickness Burst=2730 psi	
			Surface Casing	0	500							
			Coal(s)	80, 390, 1080, 1440								
		12.25"	9-5/8" 40# J-55 BTC	Little Lime / Big Lime / Injun	1459 / 1500 / 1575	1474 / 1575 / 1672	AIR (to 100' above storage) then Salt Polymer mud (to 150' below *storage*)	Lead: 15.4 ppg PNE-1 + 2.5% bwoc CaCl 40% Excess / Tail: 15.9 ppg PNE-1 + 2.5% bwoc CaCl zero% Excess. CTS	Bow Springs (over collars) on first 12 joints (or up to 300' above storage) then every third joint to 100' from surface	Circulate & condition hole/mud at TD. Circulate a minimum of one hole volume or until hole is clean prior TOOH. (do not exceed 1/sec. trip speed) When RIH w/ casing, fill w/ mud every 5 or 6 joints. (do not exceed 1/sec. run speed) Once casing is landed, C&C w/ mud for no less than 6hrs prior to pumping cement.	Casing to be ran minimum of 150' below storage. Intermediate casing = 0.395" wall thickness Burst=3950 psi	
			*Gantz* / 50 Foot / 30 Foot	1852 / 1976 / 2054	1914 / 1985 / 2104							
			Gordon Stray / Gordon / Fifth	2119 / 2162 / 2361	2162 / 2239 / 2391							
			Bayard	2416	2434							
			Intermediate Casing	0	2500			CTS				
		8.5" Vertical	5-1/2" 20# P-110 HC CDC HTQ				9.0ppg SOBM	Lead: 14.5 ppg POZ/PNE-1 + 0.3% bwoc R3 + 1% bwoc EC1 + 0.75 gal/sk FP13L + 0.3% bwoc MPA170 Tail: 14.8 ppg PNE-1 + 0.35% bwoc R3 + 0.75 gal/sk FP13L + 50% bwoc ASCA1 + 0.5% bwoc MPA170 20% Excess Lead Yield=1.19 Tail Yield=1.94 CTS	Run 1 spiral centralizer every 5 joints from the top of the curve to surface.	Once on bottom/TD with casing, circulate at max allowable pump rate for at least 2x bottoms up, or until returns and pump pressures indicate the hole is clean. Circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.351" wall thickness Burst=12640 psi Note: Actual centralizer schedules may be changed due to hole conditions	
		8.5" Curve		Benson	4376	4410	11.5ppg-12.5ppg SOBM					
				Cashagua	8274							
				Genesec	6644	6688						
				Tully Limestone	6688	6795						
				Hamilton	6766	6853						
				Marcellus	6853	6935						
		8.5" Lateral		TMD / TVD	18133	6900	11.5ppg-12.5ppg SOBM					
				Onondaga / Huntersville Chert	6935 / 6967	6967 / ---						

LP @ 6900' TVD / 7745' BOREHOLE  
 8.5" Hole - Cemented Long String  
 5-1/2" 20# P-110 HC CDC HTQ  
 +/-10388' ft Lateral  
 TD @ +/-6900' TVD +/-18133' MD  
 X=centralizers

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WW-9  
(4/16)

API Number 47 - \_\_\_\_\_ - \_\_\_\_\_  
Operator's Well No. KST5 CHS

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name HG Energy II Appalachia, LLC OP Code 494519932

Watershed (HUC 10) Middle West Fork Creek Quadrangle West Milford WV 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: Closed loop - no utilization of a pit

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 See Attached Sheet )
- Reuse (at API Number At next anticipated well )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain \_\_\_\_\_)

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9/20/2017*

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air/Water based mud through intermediate string then SOB

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

Additives to be used in drilling medium? Water, soap, KCl, barite

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

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

-Landfill or offsite name/permit number? Please see attached sheet

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.

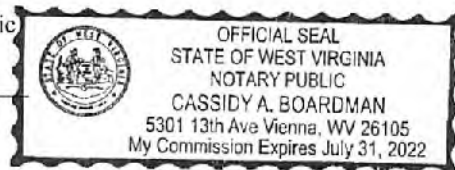
Company Official Signature Diane White  
Company Official (Typed Name) Diane White  
Company Official Title Accountant

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Subscribed and sworn before me this 19th day of September, 2017

Cassidy A. Boardman Notary Public

My commission expires 7/31/2022



Operator's Well No. KST5 CHS

HG Energy II Appalachia, LLC

Proposed Revegetation Treatment: Acres Disturbed 16.3 (pad built, no further disturbance anticipated) Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20 or equal

Fertilizer amount 500 lbs/acre

Mulch Hay or Straw @ 2 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	40	Tall Fescue	40
Ladino Clover	5	Ladino Clover	5

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: [Signature]

Comments: Pre-seed and mulch all cut area, maintain E&S standards during entire operation.

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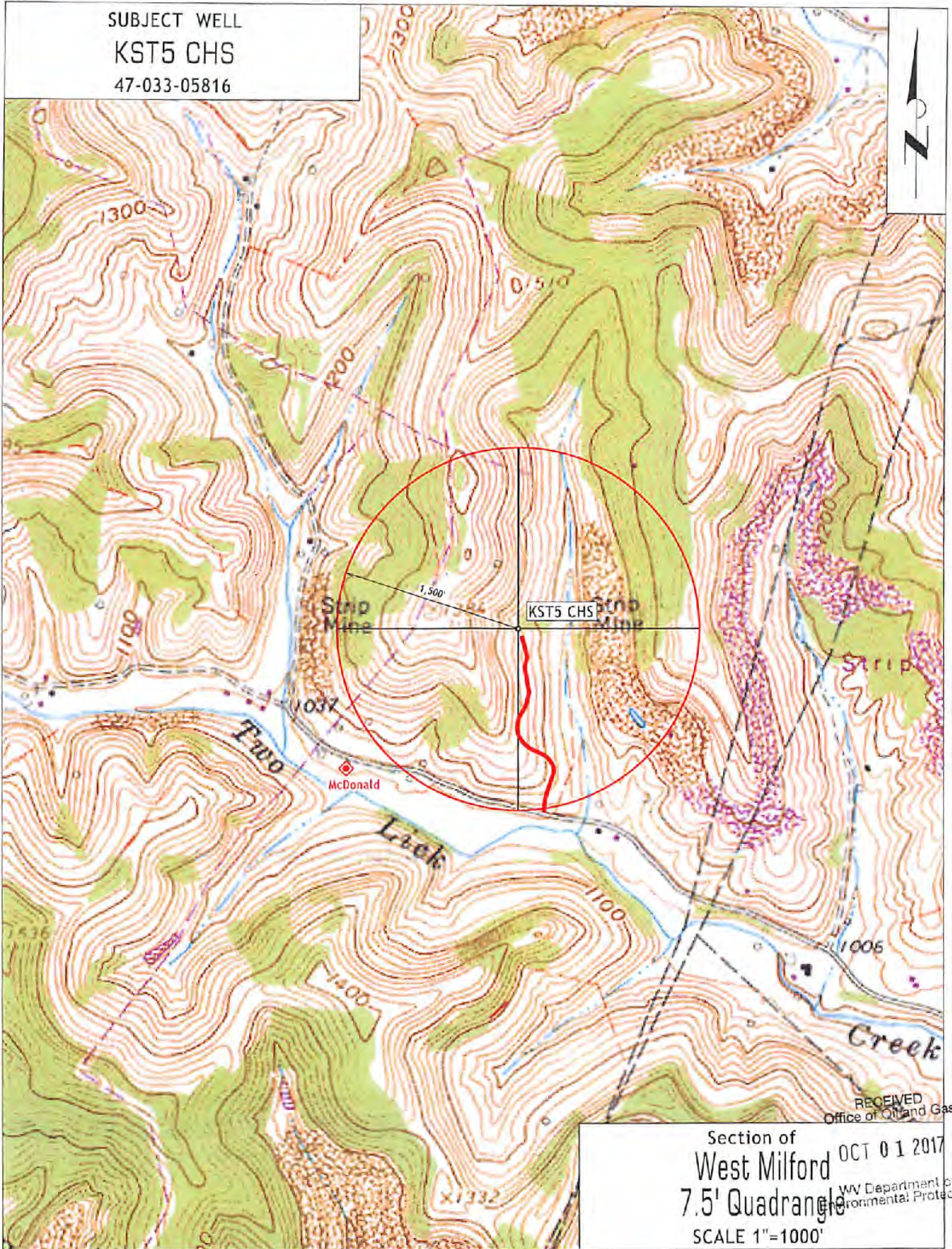
WW Department of  
Environmental Protection

Title: OOG Inspector Date: 9/20/2017

Field Reviewed? (  ) Yes (  ) No



SUBJECT WELL  
KST5 CHS  
47-033-05816



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Section of  
West Milford  
7.5' Quadrangle  
SCALE 1"=1000'

WV Department of  
Environmental Protection



Reclamation Plan For:

**KST5 PAD**



Wade Dickinson  
- Surface

- KST5 AHS (47-033-05814)
- KST5 BHS (47-033-05815)
- KST5 CHS (47-033-05816)
- KST5 DHS (47-033-05817)
- KST5 EHS (47-033-05818)
- KST5 FHS (47-033-05819)

Gabions

Prod.  
Pad

James McDonald  
- Surface



**KST5 PAD**

350' of 5-8% Grade

300' of 0-5% Grade

1,500' of  
Existing Stoned  
Access Road

850' of 12-15% Grade

Tank  
Grade

**NOTE**  
REFER TO THE WVDEP  
EROSION AND SEDIMENT CONTROL  
FIELD MANUAL VER. MAY 2012 FOR  
BMPs CONTROLLING EROSION AND  
SEDIMENT FROM SOIL-DISTURBING  
OPERATIONS.

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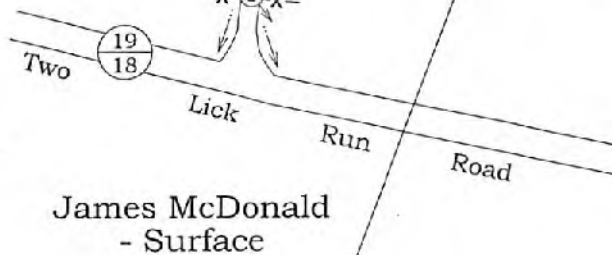
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David Allman  
- Surface

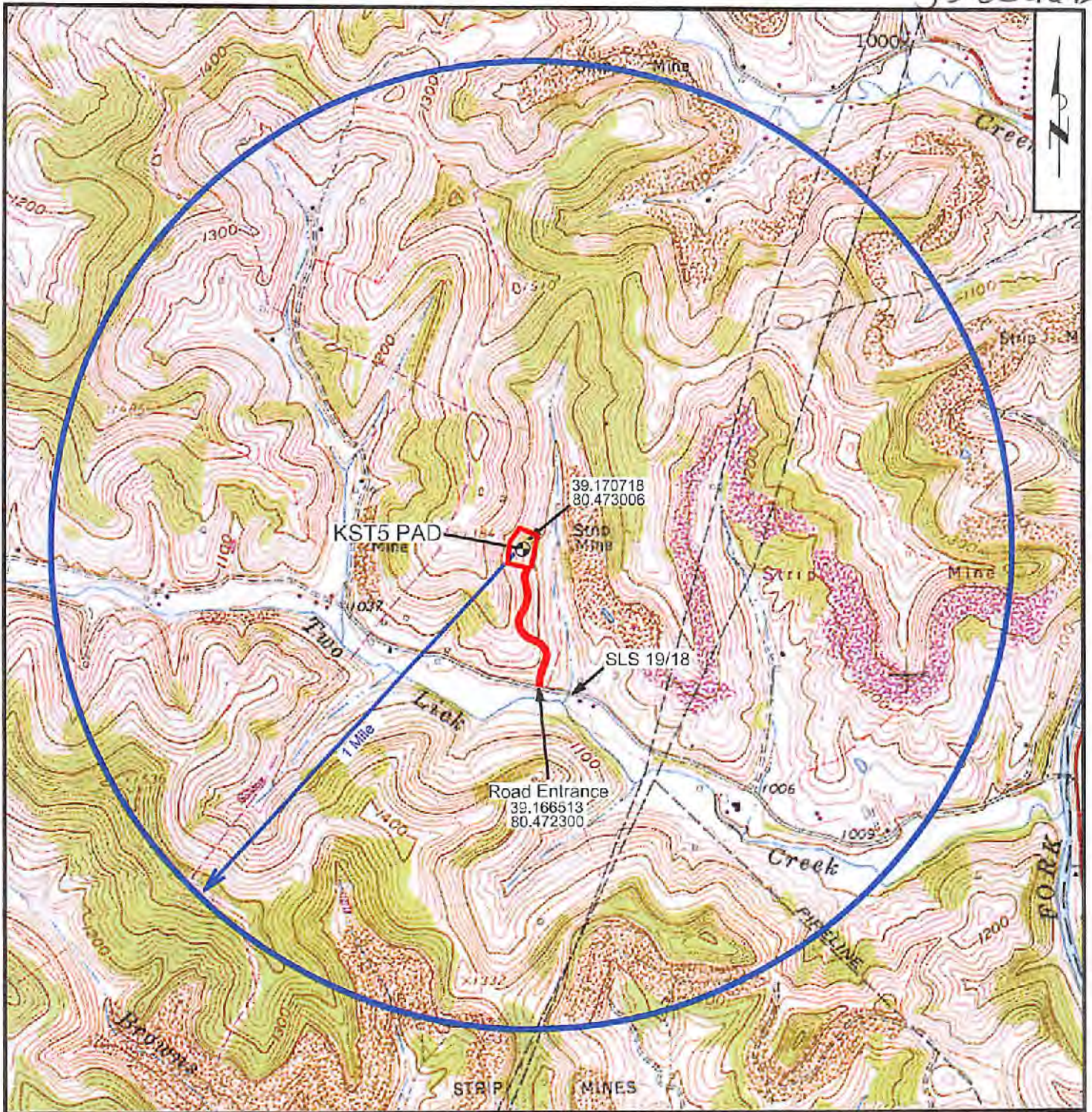
Notes:

- REQUESTED PERMIT IS FOR DRILLING NEW HORIZONTAL WELL.
- ALL ACCESS ROADS ARE EXISTING AND WILL BE MAINTAINED TO WVDEP STANDARDS.
- ONLY MINIMAL EARTHWORK WILL BE REQUIRED TO COMPLETE PROPOSED WELL WORK. SEE ENGINEERED DRAWING THAT ACCOMPANIES THIS PERMIT PACKAGE FOR ADDITIONAL DETAIL.
- ALL DISTURBED AREAS WILL BE RE-VEGETATED AS OUTLINED ON FORM WW-9.
- MAINTAIN SEDIMENT BARRIERS AND DRAINAGE STRUCTURES.
- ALL ROAD GRADES <5% EXCEPT AS NOTED.
- NO DRILL PIT WILL BE CONSTRUCTED AND A CLOSED LOOP SYSTEM WILL BE UTILIZED TO HANDLE DRILL CUTTINGS.
- DRAWING NOT TO SCALE.



James McDonald  
- Surface





WELL SITE SAFETY PLAN FOR:

KST5 PAD

Union District, Harrison County, W.Va.

TOPOGRAPHIC MAP

West Milford 7.5' Quadrangle

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SCALE: 1" = 1,500'



## Cuttings Disposal/Site Water

### Cuttings Haul off Company:

Eap Industries, Inc. DOT # 0876278  
1575 Smith Two State Rd. Atlasburg, PA 15004  
1-888-294-5227

Waste Management  
200 Rangos Lane  
Washington, PA 15301  
724-222-3272

Environmental Coordination Services & Recycling (ECS&R)  
3237 US Highway 19  
Cochranon, PA 16314  
814-425-7773

### Disposal Locations:

Apex Environnemental, LLC Permit # 06-08438  
11 County Road 78  
Amsterdam, OH 43903  
740-543-4389

Westmoreland Waste, LLC Permit # 100277  
111 Conner Lane  
Belle Vernon, PA 15012  
724-929-7694

Sycamore Landfill Inc, Permit #R30-079001 05-2010  
4301 Sycamore Ridge Road  
Hurricane, WV 25526  
304-562-2611

Max Environnemental Technologies, Inc. Facility Permit # PAD004835146 / 301071  
233 Max Lane  
Yukon, PA 25968  
724-722-3500

Max Environnemental Technologies, Inc. Facility Permit # PAD05087072 / 301359  
200 Max Drive  
Bulger, PA 15019  
724-796-1571

Waste Management Kelly Run Permit # 100663  
1901 Park Side Drive  
Elizabeth, PA 15037  
412-384-7569

Waste Management South Hills (Arnoni) Permit # 100592  
3100 Hill Road  
Library, PA 15129  
724-348-7013  
412-384-7569

Waste Management Arden Permit # 100172  
200 Rangos Lane  
Washington, PA 15301  
724-222-3272

Waste Management Meadowfill Permit # 1032  
1488 Dawson Drive  
Bridgeport, WV 26330

Brooke County Landfill Permit # SWF-103-87 / WV 0109029  
Rd 2 Box 410  
Colliers, WV 26035  
304-748-0014

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Wetzel County Landfill Permit # SWF-1021-97 / WV 0109185  
 Rt 1 Box 156A  
 New Martinsville, WV 26035  
 304-455-3800

Energy Solutions, LLC Permit # UT 2300249  
 423 West 300 South  
 Suite 200  
 Salt Lake City, UT 84101

Energy Solutions Services, Inc. Permit # R-73006-L24  
 1560 Bear Creek Road  
 Oak Ridge, TN 37830

Northern A-1 Environmental Services Permit ID MID020906814  
 3947 US 131 North, PO Box 1030  
 Kalkaska, MI 49646  
 231-258-9961

**Water Haul off Companies:**

Dynamic Structures, Clear Creek DOT # 720485  
 3790 State Route 7  
 New Waterford, OH 44445  
 330-892-0164

Nabors Completion & Production Services Co.  
 PO Box 975682  
 Dallas, TX 75397-5682

Select Energy Services, LLC  
 PO Box 203997  
 Dallas, TX 75320-3997

Nuverra Environmental Solutions  
 11942 Veterans Memorial Highway  
 Masontown, WV 26542

Mustang Oilfield Services LLC  
 PO Box 739  
 St. Clairsville, OH 43950

Wilson's Outdoor Services, LLC  
 456 Cracraft Road  
 Washington, PA 15301

**Disposal Locations:**

Solidification  
 Waste Management, Arden Landfill Permit # 100172  
 200 Rangos Lane  
 Washington, PA 15301  
 724-225-1589

Solidification/Incineration  
 Soil Remediation, Inc. Permit # 02-20753  
 6065 Arrel-Smith Road  
 Lowelville, OH 44436  
 330-536-6825

Adams #1 (Buckeye Brine, LLC)  
 Permit # 34-031-2-7177  
 23986 Airport Road  
 Coshocton, OH 43812  
 740-575-4484  
 512-478-6545

CMS of Delaware Inc. DBA CMS Oilfield Serv  
 301 Commerce Drive  
 Moorestown, NJ 08057

Force, Inc.  
 1380 Rte. 286 Hwy. E, Suite 303  
 Indiana, PA 15701

Solo Construction  
 P.O. Box 544  
 St. Mary's, WV 26170

Equipment Transport  
 1 Tyler Court  
 Carlisle, PA 17015

Myers Well Service, -----  
 2001 Ballpark Court  
 Export, PA 15632

Burns Drilling & Excavating  
 618 Crabapple Road P.O. Box  
 Wind Ridge, PA 15380

Nichlos 1-A (SWIW #13)  
 Permit # 3862  
 300 Cherrington Pkwy, Suite 200  
 Coraopolis, PA 15108  
 412-329-7275

Groselle (SWIW #34)  
 Permit # 4096  
 Rt. 88  
 Garrettsville, OH  
 713-275-4816

Kemble 1-D Well  
 Permit # 8780  
 7675 East Pike  
 Norwlich, Oh 43767  
 614-648-8898  
 740-796-6495

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Adams #2 (Buckeye Brine, LLC)  
2205 Westover Road  
Austin Tx 78703  
Permit # 34-031-2-7178  
740-575-4484  
512-478-6545

Adams #3 (Buckeye Brine, LLC)  
Permit #34-031-2-7241-00-00  
2630 Exposition, Suite 117  
Austin, TX 78703  
512-478-6545

Mozena #1 Well (SWIW # 13)  
Permit # 34-157-2-5511-00-00  
5367 E. State Street  
Newcomerstown, OH 43832  
740-763-3966

Goff SWD #1 (SWIW # 27)  
Permit # 34-119-2-8776-000  
300 Cherrington Pkwy, Suite 200  
Coraopolis, PA 15108  
412-329-7275

SOS D#1 (SWIW #12)  
Permit # 34-059-2-4202-00-00  
Silcor Oilfield Services, Inc.  
2939 Hubbard Road  
Youngstown, PH 44505

Dudley #1 UIC (SWIW #1)  
Permit # 34-121-2-2459-00-00  
Select Energy Services, LLC  
7994 S. Pleasants Hwy  
St. Marys, WV 26170  
304-665-2652

OH UIC #1 Bu keye UIC Barnesville 1 & 2  
CNX Gas Company, LLC  
1000 Consol Energy Drive  
Permit # 34-013-2-0609-00-00  
Permit # 34-013-2-0614-00-00  
304-323-6568

US Steele 11385  
Permit # 47-001-00561  
200 Evergreen Drive  
Waynesburg, PA 15730  
304-323-6568

Chapln #7 UIC (SWIW #7)  
Permit # 34-083-2-4137-00-00  
Elkhead Gas & Oil Company  
12163 Marne Rd. NE  
Newark, OH 43055  
740-763-3966

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# HG Energy II Appalachia, LLC

## Site Safety Plan

**KST 5 Well Pad  
2 Lick Run Road  
Harrison County, WV**

**August 2017: Version 1**

**For Submission to  
West Virginia Department of Environmental Protection,  
Office of Oil and Gas**

**HG Energy II Appalachia, LLC**

**5260 Dupont Road**

**Parkersburg, WV 26101**

*SDW*  
*9/20/2017*

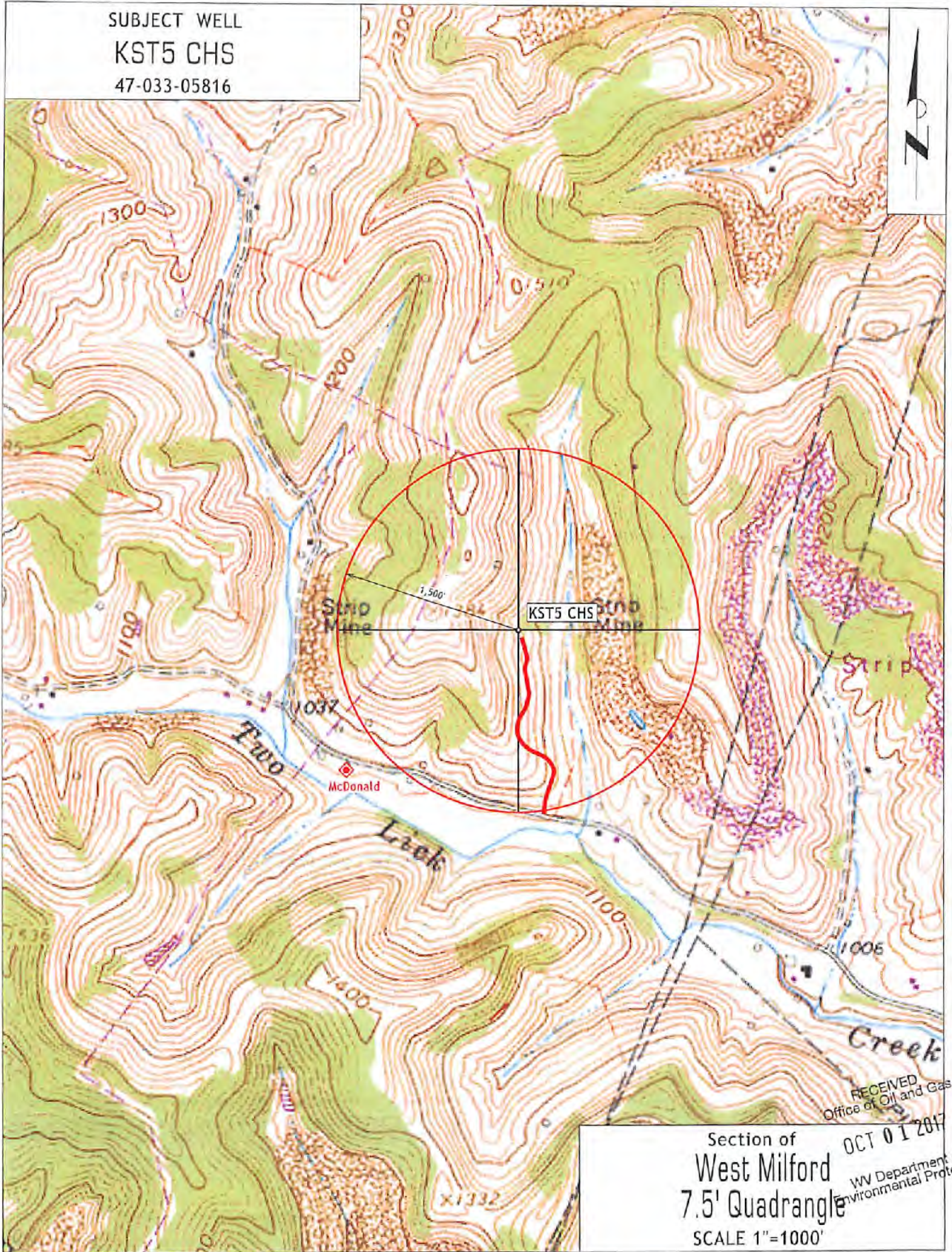
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SUBJECT WELL  
KST5 CHS  
47-033-05816



Section of  
West Milford  
7.5' Quadrangle  
SCALE 1"=1000'

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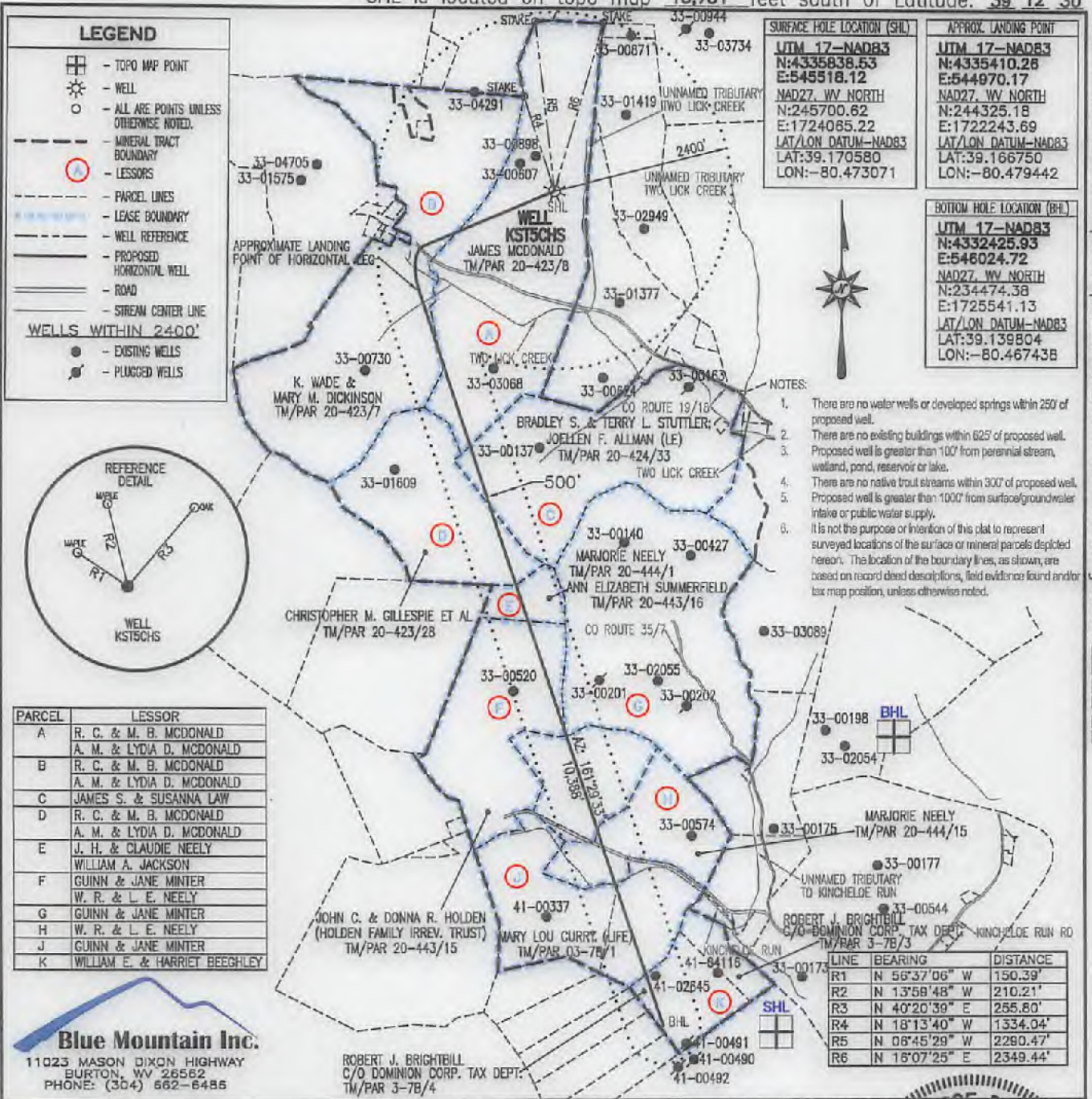
OCT 01 2017

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BHL is located on topo map 9,784 feet south of Latitude: 39°10'00"  
 SHL is located on topo map 13,751 feet south of Latitude: 39°12'30"

BHL is located on topo map 2,582 feet west of Longitude: 80°27'30"  
 SHL is located on topo map 4,178 feet west of Longitude: 80°27'30"



PARCEL	LESSOR
A	R. C. & M. B. MCDONALD
B	A. M. & LYDIA D. MCDONALD
C	R. C. & M. B. MCDONALD
D	A. M. & LYDIA D. MCDONALD
E	JAMES S. & SUSANNA LAW
F	R. C. & M. B. MCDONALD
G	A. M. & LYDIA D. MCDONALD
H	J. H. & CLAUDIE NEELY
I	WILLIAM A. JACKSON
J	GUINN & JANE MINTER
K	W. R. & L. E. NEELY
L	GUINN & JANE MINTER
M	W. R. & L. E. NEELY
N	GUINN & JANE MINTER
O	WILLIAM E. & HARRIET BEEGLEY

FILE #: KST5CHS  
 DRAWING #: KST5CHS  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/2500  
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: George D. Six  
 R.P.E.: \_\_\_\_\_ L.L.S.: P.S. No. 2000

**GEORGE D. SIX**  
 LICENSED  
 No. 2000  
 STATE OF WEST VIRGINIA  
 PROFESSIONAL SURVEYOR

PLACE SEAL HERE

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304

DATE: JANUARY 03, 2018  
 OPERATOR'S WELL #: KST5CHS  
 API WELL #: 47 33 05816DD  
 STATE COUNTY PERMIT

Well Type:  Oil  Waste Disposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: MIDDLE WEST FORK CREEK ELEVATION: 1,134±  
 COUNTY/DISTRICT: HARRISON / UNION QUADRANGLE: WEST MILFORD, WV 7.5'  
 SURFACE OWNER: JAMES IVAN MCDONALD ACREAGE: 176.000±  
 OIL & GAS ROYALTY OWNER: R. C. MCDONALD & M. B. MCDONALD; A. M. MCDONALD & LYDIA D. MCDONALD ACREAGE: 1328.95±

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,900± TMD: 18,133±  
 WELL OPERATOR HG ENERGY II APPALACHIA, LLC DESIGNATED AGENT DIANE C. WHITE  
 Address 5260 DUPONT ROAD Address 5260 DUPONT ROAD  
 City PARKERSBURG State WV Zip Code 26101 City PARKERSBURG State WV Zip Code 26101



WW-6A1  
(3/13)

Operator's Well No. \_\_\_\_\_

**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 Sheets\*\***

**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:           HG Energy II Appalachia, LLC            
 By:           Diane White     Diane White            
 Its:           Agent          

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HG Energy II Appalachia, LLC  
KST5 CHS

LEGACY LEASE NUMBER	TAX MAP	LEASE NUMBER	GRANTOR/LESSOR	GRANTEE/LESSEE	ROYALTY	DEED BOOK	PAGE
FK026553	17-20-0423-0008-0000, 17-20-0423-0007-0000	Q100462000	R C MCDONALD, M.B. MCDONALD; A.M. MCDONALD AND LYDIA MCDONALDET AL	HOPE NATURAL GAS COMPANY	NOT LESS THAN 1/8	237	94
			HOPE NATURAL GAS COMPANY	CONSOLIDATED GAS SUPPLY CORPERATION	MERGER/NAME CHANGE	903	179
			CONSOLIDATED GAS SUPPLY CORPERATION	CONSOLIDATED GAS TRANSMISSION CORPERATION	ASSIGNMENT	1136	250
			CONSOLIDATED GAS TRANSMISSION CORPERATION	CNG GAS TRANSMISSION CORPERATION	MERGER/NAME CHANGE	51	795
			CNG GAS TRANSMISSION CORPERATION	DOMINION TRANSMISSION, INC	MERGER/NAME CHANGE	58	362
			DOMINION TRANSMISSION, INC	CNX GAS COMPANY, LLC	FARMOUT AGREEMENT	1522	33
			CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	LIMITED PARTIAL ASSIGNMENT	1543	1235
			CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	ASSIGNMENT	1584	942
			NOBLE ENERGY, INC	HG ENERGY II APPALACHIA, LLC	ASSIGNMENT	TBD	TBD
FK014275	17-20-0423-0009-0000, 17-20-0423-0010-0000	Q101151000	J M THRASH AND EMMA THRASH, HIS WIFE AND M.L. NUTTER AND MYRTLE NUTTER	HOPE NATURAL GAS COMPANY	NOT LESS THAN 1/8	183	73
			HOPE NATURAL GAS COMPANY	CONSOLIDATED GAS SUPPLY CORPERATION	MERGER/NAME CHANGE	903	179
			CONSOLIDATED GAS SUPPLY CORPERATION	CONSOLIDATED GAS TRANSMISSION CORPERATION	ASSIGNMENT	1136	250
			CONSOLIDATED GAS TRANSMISSION CORPERATION	CNG GAS TRANSMISSION CORPERATION	MERGER/NAME CHANGE	51	795
			CNG GAS TRANSMISSION CORPERATION	DOMINION TRANSMISSION, INC	MERGER/NAME CHANGE	58	362
			DOMINION TRANSMISSION, INC	CNX GAS COMPANY, LLC	FARMOUT AGREEMENT	1522	33
			CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	LIMITED PARTIAL ASSIGNMENT	1543	1235
			CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	ASSIGNMENT	1584	942
			NOBLE ENERGY, INC	HG ENERGY II APPALACHIA, LLC	ASSIGNMENT	TBD	TBD
FK052937	17-20-0424-0033-0000, 17-20-0424-0033-0001, 17-20-0424-0033-0002, 17-20-0424-0033-0003, 17-20-0424-0033-0004, 17-20-0424-0033-0005, 17-20-0424-0033-0006, 17-20-0424-0033-0007	Q100433000	JAMES S. LAW AND SUSANNA LAW	RESERVE GAS COMPANY	NOT LESS THAN 1/8	234	201
			RESERVE GAS COMPANY	HOPE NATURAL GAS COMPANY	MERGER/NAME CHANGE	SEC. OF STATE WEBSITE	
			HOPE NATURAL GAS COMPANY	CONSOLIDATED GAS SUPPLY CORPERATION	MERGER/NAME CHANGE	903	179
			CONSOLIDATED GAS SUPPLY CORPERATION	CONSOLIDATED GAS TRANSMISSION CORPERATION	ASSIGNMENT	1136	250
			CONSOLIDATED GAS TRANSMISSION CORPERATION	CNG GAS TRANSMISSION CORPERATION	MERGER/NAME CHANGE	51	795
			CNG GAS TRANSMISSION CORPERATION	DOMINION TRANSMISSION, INC	MERGER/NAME CHANGE	58	362
			DOMINION TRANSMISSION, INC	CNX GAS COMPANY, LLC	FARMOUT AGREEMENT	1522	33
			CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	LIMITED PARTIAL ASSIGNMENT OF FARMOUT	1543	1235
			CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	ASSIGNMENT	1584	942
NOBLE ENERGY, INC	HG ENERGY II APPALACHIA, LLC	ASSIGNMENT	TBD	TBD			
FK052752	17-20-0443-0015-0000, 17-20-0444-0018-0001, 17-20-0444-0018-0000, 17-20-0444-0016-0000, 17-20-0444-0017-0000, 21-03-0078-0001-0000	Q100381000	GUINN MINTER AND JANE MINTER	RESERVE GAS COMPANY	NOT LESS THAN 1/8	174	203
			EDWARD G. SMITH AND JESSIE B. SMITH	RESERVE GAS COMPANY	FEE CONVEYANCE	77	264
			RESERVE GAS COMPANY	HOPE NATURAL GAS COMPANY	FEE CONVEYANCE	508	573
			HOPE NATURAL GAS COMPANY	CONSOLIDATED GAS SUPPLY CORPERATION	MERGER/NAME CHANGE	903	179
			CONSOLIDATED GAS SUPPLY CORPERATION	CONSOLIDATED GAS TRANSMISSION CORPERATION	ASSIGNMENT	1136	250
			CONSOLIDATED GAS TRANSMISSION CORPERATION	CNG GAS TRANSMISSION CORPERATION	MERGER/NAME CHANGE	51	795
			CNG GAS TRANSMISSION CORPERATION	DOMINION TRANSMISSION, INC	MERGER/NAME CHANGE	58	362
			DOMINION TRANSMISSION, INC	CNX GAS COMPANY, LLC	FARMOUT AGREEMENT	1522	33
			DOMINION TRANSMISSION, INC	CNX GAS COMPANY, LLC	AMENDMENT TO FARMOUT AGREEMENT	1524	491
CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	LIMITED PARTIAL ASSIGNMENT OF FARMOUT	1543	1235			
CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	ASSIGNMENT	1584	942			
NOBLE ENERGY, INC	HG ENERGY II APPALACHIA, LLC	ASSIGNMENT	TBD	TBD			
FK052896 FK108080	17-20-0444-0001-0000, 17-20-0444-0002-0000, 21-03-0078-0001-0000, 17-20-0444-0023-0000, 17-20-0444-0024-0000, 17-20-0444-0025-0000	Q101020000	GUINN MINTER AND JANE MINTER	RESERVE GAS COMPANY	NOT LESS THAN 1/8	174	203
			RESERVE GAS COMPANY	HOPE NATURAL GAS COMPANY	FEE CONVEYANCE	508	573
			HOPE NATURAL GAS COMPANY	CONSOLIDATED GAS SUPPLY CORPERATION	MERGER/NAME CHANGE	903	179
			CONSOLIDATED GAS SUPPLY CORPERATION	CONSOLIDATED GAS TRANSMISSION CORPERATION	ASSIGNMENT	1136	250
			CONSOLIDATED GAS TRANSMISSION CORPERATION	CNG GAS TRANSMISSION CORPERATION	MERGER/NAME CHANGE	51	795
			CNG GAS TRANSMISSION CORPERATION	DOMINION TRANSMISSION, INC	MERGER/NAME CHANGE	58	362
			DOMINION TRANSMISSION, INC	CNX GAS COMPANY, LLC	FARMOUT AGREEMENT	1522	33
			CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	LIMITED PARTIAL ASSIGNMENT OF FARMOUT	1543	1235
			CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	ASSIGNMENT	1584	942
NOBLE ENERGY, INC	HG ENERGY II APPALACHIA, LLC	ASSIGNMENT	TBD	TBD			
FK013939	17-20-0444-9999-0002, 17-20-0444-0019-0011	Q100459000	A W RHODES AND MARY RHODES	HOPE NATURAL GAS COMPANY	NOT LESS THAN 1/8	175	162
			HOPE NATURAL GAS COMPANY	CONSOLIDATED GAS SUPPLY CORPERATION	MERGER/NAME CHANGE	903	179
			CONSOLIDATED GAS SUPPLY CORPERATION	CONSOLIDATED GAS TRANSMISSION CORPERATION	ASSIGNMENT	1136	250
			CONSOLIDATED GAS TRANSMISSION CORPERATION	CNG GAS TRANSMISSION CORPERATION	MERGER/NAME CHANGE	51	795
			CNG GAS TRANSMISSION CORPERATION	DOMINION TRANSMISSION, INC	MERGER/NAME CHANGE	58	362
			DOMINION TRANSMISSION, INC	CNX GAS COMPANY, LLC	FARMOUT AGREEMENT	1522	33
			CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	LIMITED PARTIAL ASSIGNMENT OF FARMOUT	1543	1235
			CNX GAS COMPANY, LLC	NOBLE ENERGY, INC	ASSIGNMENT	1584	942
			NOBLE ENERGY, INC	HG ENERGY II APPALACHIA, LLC	ASSIGNMENT	TBD	TBD

WV Department of Environmental Protection  
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 Office of Oil and Gas

33-0581000





**HG Energy, LLC**  
5260 Dupont Road  
Parkersburg, WV 26101  
(304) 420-1100 - Office  
(304) 863-3172 - Fax

33-05846 D D

September 21, 2017

Laura Adkins  
WV DEP  
Division of Oil & Gas  
601 57<sup>th</sup> Street  
Charleston, WV 25304

RE: Drilling Under Roads – KST5 CHS  
Union District, Harrison County  
West Virginia

Dear Ms. Adkins:

HG Energy II Appalachia, LLC, has the right to drill, stimulate and produce wells that are drilled under the County and State Roads as designated on the plats.

Should you have any questions or desire further information, please contact me at [dwhite@hgenergyllc.com](mailto:dwhite@hgenergyllc.com) or 304-420-1119.

Very truly yours,

*Diane White*

Diane C. White

Enclosures

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

Date of Notice Certification: 09/21/2017

API No. 47- 033-05816 DD  
Operator's Well No. KST5 CHS  
Well Pad Name: KST5

**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>545518.1</u>
County: <u>Harrison</u>		Northing: <u>4335838.5</u>
District: <u>Union</u>	Public Road Access: <u>CR 19/18</u>	
Quadrangle: <u>West Milford WV 7.5'</u>	Generally used farm name: <u>James Ivan McDonald</u>	
Watershed: <u>Middle West Fork 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 checked="" 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 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 align="center"><input checked="" 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.

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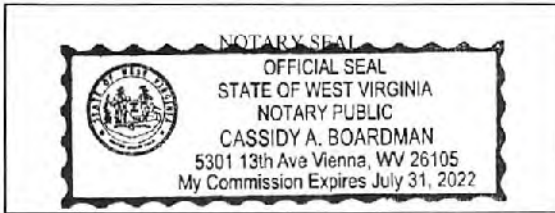
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**Certification of Notice is hereby given:**

THEREFORE, I Diane White, 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>HG Energy II Appalachia, LLC</u>	Address:	<u>5260 Dupont Road</u>
By:	<u>Diane White <i>Diane White</i></u>		<u>Parkersburg, WV 26101</u>
Its:	<u>Agent</u>	Facsimile:	<u>304-863-3172</u>
Telephone:	<u>304-420-1119</u>	Email:	<u>dwhite@hgenergyllc.com</u>



Subscribed and sworn before me this 21<sup>st</sup> day of September 2017.

Cassidy A. Boardman Notary Public

My Commission Expires 7/31/2022

**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:** 09/19/2017 **Date Permit Application Filed:** 09/21/2017

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.

Notice is hereby provided to:

SURFACE OWNER(s)

Name: James I. McDonald  
Address: 7416 Good Hope Pike  
Lost Creek, WV 26385

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

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

Name: Same as Above  
Address: \_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments/Pits)

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: NA  
Address: \_\_\_\_\_

COAL OPERATOR

Name: NA  
Address: \_\_\_\_\_

WATER PURVEYOR(s)

Name: NA  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: Dominion Transmission Inc. - Ronald Walden  
Address: 445 West Main Street  
Clarksburg, WV 26301

\*Please attach additional forms if necessary

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WW-6A  
(5-12)

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API NO. 47-033-0581617  
OPERATOR WELL NO. KET5 CHS  
Well Pad Name: KST5

**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 also 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.

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).

**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.

**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.

**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 wellpad 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.

**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

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.**

**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.

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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.

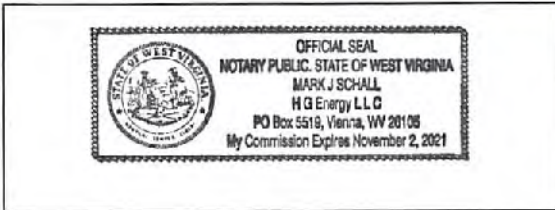
**Notice is hereby given by:**

Well Operator: HG Energy II Appalachia, LLC  
Telephone: 304-420-1119  
Email: dwhite@hgenergyllc.com

Address: 5260 Dupont Road  
Parkersburg, WV 26101  
Facsimile: 304-863-9127

**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).



Subscribed and sworn before me this 26 day of 9, 2017.  
[Signature] Notary Public  
My Commission Expires 11/2/2021

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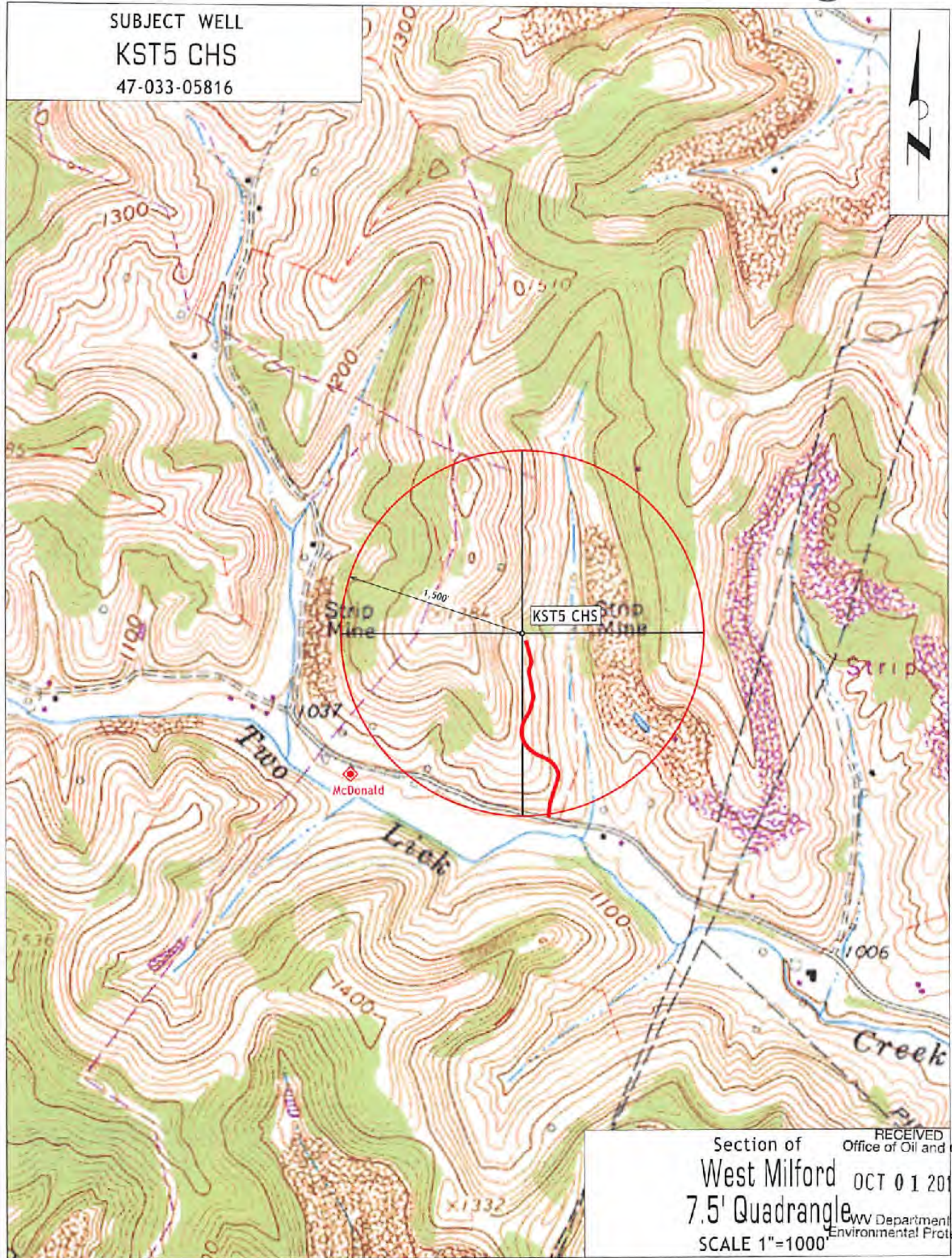
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33-05816D1

SUBJECT WELL  
KST5 CHS  
47-033-05816



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Section of  
West Milford  
7.5' Quadrangle  
SCALE 1"=1000'



**HG Energy, LLC**  
Certified Mail Receipt  
KST5 CHS  
WW-6A4W Notice of Intent to Drill Waiver

- See Attached Waiver -

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

**WAIVER**

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.

**Surface Owner Waiver:**

I, JAMES I. McDONALD, hereby state that I have read the notice provisions listed above and hereby waive the notice requirements under West Virginia Code § 22-6A-16(b) for the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	_____
County:	<u>Harrison</u>		Northing:	_____
District:	<u>Union-Outside</u>	Public Road Access:		_____
Quadrangle:	_____	Generally used farm name:		_____
Watershed:	_____			

Name: JAMES I. McDONALD  
Address: 7416 GOOD HOPE PIKE  
LOST CREEK, WV 26385

Signature: *James I. McDonald*  
Date: 8-28-17

**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).

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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: 08/30/2017 Date Permit Application Filed: 09/11/2017

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

CERTIFIED MAIL RETURN RECEIPT REQUESTED  HAND DELIVERY

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: James McDonald Name: \_\_\_\_\_  
Address: 7416 Good Hope Road Address: \_\_\_\_\_  
Lost Creek, WV 26385

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: West Virginia UTM NAD 83 Easting: 545518.1  
County: Harrison Northing: 4335838.5  
District: Union Public Road Access: Two Lick Run (CR19/10)  
Quadrangle: West Milford, WV 7.5' Generally used farm name: R. C. McDonald  
Watershed: Middle West Fork Creek

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 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 Operator: HG Energy II Appalachia, LLC Address: 5260 Dupont Road  
Telephone: 304-420-1119 Parkersburg, WV 26101  
Email: dwhite@hgenergyllc.com Facsimile: 304-863-3172

Oil and Gas Privacy Notice:

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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

Earl Ray Tomblin  
Governor

Paul A. Mattox, Jr., P. E.  
Secretary of Transportation/  
Commissioner of Highways

September 20, 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 KST5HS Well Pad, Harrison County 47-033-05814

Dear Mr. Martin,

This well site will be accessed from Permit #04-2014-0458 reissued to HG Energy, LLC for access to the State Road for a well site located off of Harrison County 19/18 SLS.

The operator has signed a DISTRICT WIDE 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, P.E.  
Regional Maintenance Engineer  
Central Office O&G Coordinator

Cc: Matt McGuire  
HG Energy, LLC  
CH, OM, D-4  
File

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**List of Frac Additives by Chemical Name and CAS #****KST5 Well Pad (ASH,BHS,CHS,DHS,EHS,FHS)**

<b>Chemical Name</b>	<b>CAS #</b>	<b>Multiple CAS #'s</b>
Pro Shale Slik 405	Mixture	68551-12-2
		7647-14-5
		12125-02-9
		64742-47-8
Pro Hib II	Mixture	68412-54-4
		68607-28-3
		107-21-1
		111-76-2
		67-56-1
		107-19-7
Silica Sand and Ground Sand	Mixture	14808-60-7
		1344-28-1
		1309-37-1
		13463-67-7
Hydrochloric Acid 22 DEG BE	7647-01-0	
PROGEL - 4.5	64742-96-7	
BIO CLEAR 2000	Mixture	25322-68-3
		10222-01-2
SCALE CLEAR SI 112	107-21-1	
PROBREAK 4	Mixture	57-50-1
		107-21-1
Sulfamic Acid	5329-14-6	
PRO - Flow - 102-N	Mixture	67-63-0
		68439-45-2
		2687-96-9
PROGEL - 4	9000-30-0	

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AP167305914  
 AP167305915  
 AP167305916  
 AP167305917  
 AP167305918  
 AP167305919



**HG ENERGY II APPALACHIA, LLC**  
 5260 DuPont Road  
 Parkersburg, WV 26101

**WVDEP O&G  
 ACCEPTED AS-BUILT**  
 12/12/2017



LOCATION MAP  
 NOT TO SCALE

**T INFORMATION**

**OWNER:**  
 ES IVAN McDONALD  
 MAP/PARCEL 20-423-S  
 AL PROPERTY AREA: 176.00 17- ACRES

**ROYALTY OWNER:**  
 S H S. McDONALD, A H. McDONALD & LYDIA McDONALD  
 MAP/PARCEL 20-423-S  
 AL PROPERTY AREA: 176.00 17- ACRES

**CATION:**  
 KST5HS SITE IS LOCATED NORTH OF TWO LICK ROAD  
 APPROXIMATELY 1,500 FEET EAST OF THE INTERSECTION OF COUNTY  
 RT 35/2 & COUNTY ROUTE 1918.

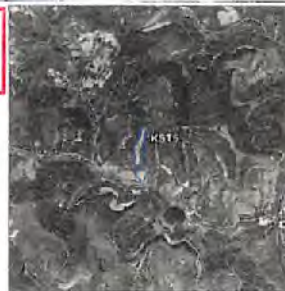
**ICE PERMIT:**  
 COMPANY WILL OBTAIN AN ENCROACHMENT PERMIT FROM MM-099  
 OF WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF  
 IS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

**UTILITY:**  
 UTILITY OF WEST VIRGINIA WAS NOTIFIED FOR THE LOCATING OF  
 S PRIOR TO THIS PROJECT DESIGN (TICKET NO. 1640502887) IN  
 H. MISS UTILITY WILL BE CONTACTED PRIOR TO THE START OF THE  
 F.

**PLAIN NOTE:**  
 DROPPED LIMITS OF DISTURBANCE FOR THIS PROJECT ARE NOT LOCATED  
 600 ZONE, PER THE FLOOD INSURANCE RATE MAP (FIRM) NUMBER  
 20240D.

DRAWING WAS CREATED ON 22x34 PAPER. 11x17 DRAWINGS  
 ARE HALF SCALE. REFER TO SCALE BAR FOR PROPER SCALING.

SHEET INDEX		SHEET INDEX	
NUMBER	DRAWING NAME	DRAWING NUMBER	DRAWING NAME
	COVER SHEET	2	ROAD & PAD PROFILES
	GENERAL NOTES	3	RECLAMATION PLAN (1 OF 4)
	GENERAL NOTES	4	RECLAMATION PLAN (2 OF 4)
	1/2 MILE BOUNDARY OVERVIEW	10	RECLAMATION PLAN (3 OF 4)
	EXISTING CONDITIONS	6	RECLAMATION PLAN (4 OF 4)
	OVERALL SITE PLAN	17	CONSTRUCTION DETAILS
	OVERALL SITE PLAN W/ DR (HG)	18	CONSTRUCTION DETAILS
	SECTION 871 (18 W/ DR (HG))	19	CONSTRUCTION DETAILS



LOCATION MAP  
 NOT TO SCALE  
 SCALE: 1"=100'

**KST5HS WELL SITE**

**PAD CENTER LOCATION**

NAD 83 - LAT: N 39° 10' 14.53"; LONG: W 80° 28' 22.27"  
 NAD 27 - LAT: N 39° 10' 14.20"; LONG: W 80° 28' 22.94"  
 UTM NAD 83 ZONE 17 - N: 4335852.248; E: 545536.849

**ENTRANCE LOCATION**

NAD 83 - LAT: N 39° 09' 59.05"; LONG: W 80° 28' 20.09"  
 NAD 27 - LAT: N 39° 09' 58.72"; LONG: W 80° 28' 21.57"  
 UTM NAD 83 ZONE 17 - N: 4335375.359; E: 545591.936

UNION DISTRICT,  
 HARRISON COUNTY, WEST VIRGINIA

DATE: JULY 11, 2014

Electronic Version of These Plans May Be Viewed at: Q/OIL GAS/SAY FILES/REVIEWS

**Blue Mountain Inc.**  
 Engineers and Land Surveyors  
 11923 Mason Dixon Hwy  
 Burton, WV 26362-9636  
 (304) 662-6486



**ENVIRONMENTAL NOTES**

A WETLAND DELINEATION WAS PERFORMED ON DECEMBER 17-19, 2013 BY BLUE MOUNTAIN INC. TO REVEAL THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION. THE JANUARY 10, 2014 REPORT FOR KST5HS, WHICH WAS PREPARED BY BLUE MOUNTAIN INC. SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE REPORT DOES NOT IN ANY WAY REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USAGE OF WVDEP. IT IS STRONGLY RECOMMENDED THAT THE AFORESAIDED SERVICES BE CONSULTED IN AN EFFORT TO OBTAIN COPIES OF THE DELINEATION DESCRIBED BY THE REPORT 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 NOTES**

A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED IN THE FIELD BY RETTER ASSOCIATES, INC. ON FEBRUARY 22-23, 2014. THE REPORTS PREPARED BY RETTER ASSOCIATES, INC. DATED MARCH 17, 2014, REFLECT THE RESULTS OF THE SUBSURFACE INVESTIGATION. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT FOR ADDITIONAL INFORMATION AS NEEDED.

**RESTRICTIONS**

1. THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300' OF THE PAD & LOD
2. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000' OF THE PAD AND LOD
3. THERE ARE NO EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' OF THE WELLS BEING DRILLED
4. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625' OF CENTER OF THE PAD
5. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625' OF THE CENTER OF THE PAD.

**CERTIFICATION**

I DO HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE ENGINE AND SURVEYOR CONTROL PLAN AND SITE RESTRICTION PLAN AND POST CONSTRUCTION SHIPS ARE TRUE AND CORRECT, MERELY ACTUAL FIELD CONDITIONS AND ARE IN ACCORDANCE WITH THE WEST VIRGINIA CODE AND THE DEPARTMENT'S RULES AND REGULATIONS. I AM AWARE THAT THERE ARE PENALTIES FOR THIS TYPE OF VIOLATION.

**Blue Mountain Inc.**  
 Engineers and Land Surveyors  
 11923 Mason Dixon Hwy  
 Burton, WV 26362-9636  
 (304) 662-6486

**HG ENERGY II APPALACHIA, LLC**  
 5260 DuPont Road  
 Parkersburg, WV 26101



SEARCHED \_\_\_\_\_ INDEXED \_\_\_\_\_

FILED \_\_\_\_\_

REC'D BY \_\_\_\_\_

DATE \_\_\_\_\_

OFFICE OF O&G DIV

WV Department of Environmental Protection

10/1/2017

**WVDEP O&G**  
**ACCEPTED AS-BUILT**  
 12/12/2017

Wd

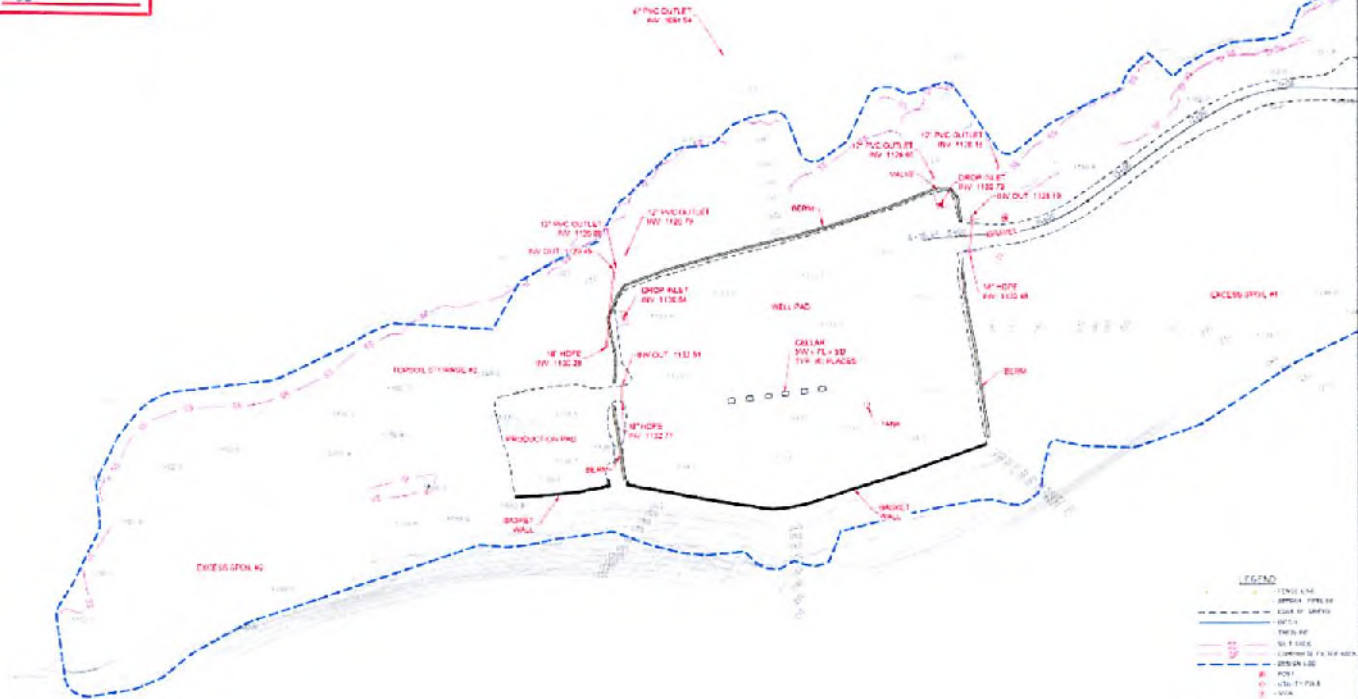
**Blue Mountain Inc.**  
 Engineers and Land Surveyors  
 1000 S. MAIN ST.  
 CHARLOTTE, WV 25301  
 (304) 263-2500

1320 EASTFORD ROAD  
 HAZEL SPRING, WV 25326

**ASTS SITE**  
**AS-BUILT**



REVISED  
 DATE: 12/12/2017



**LEGEND**  
 (---) 12\"/>



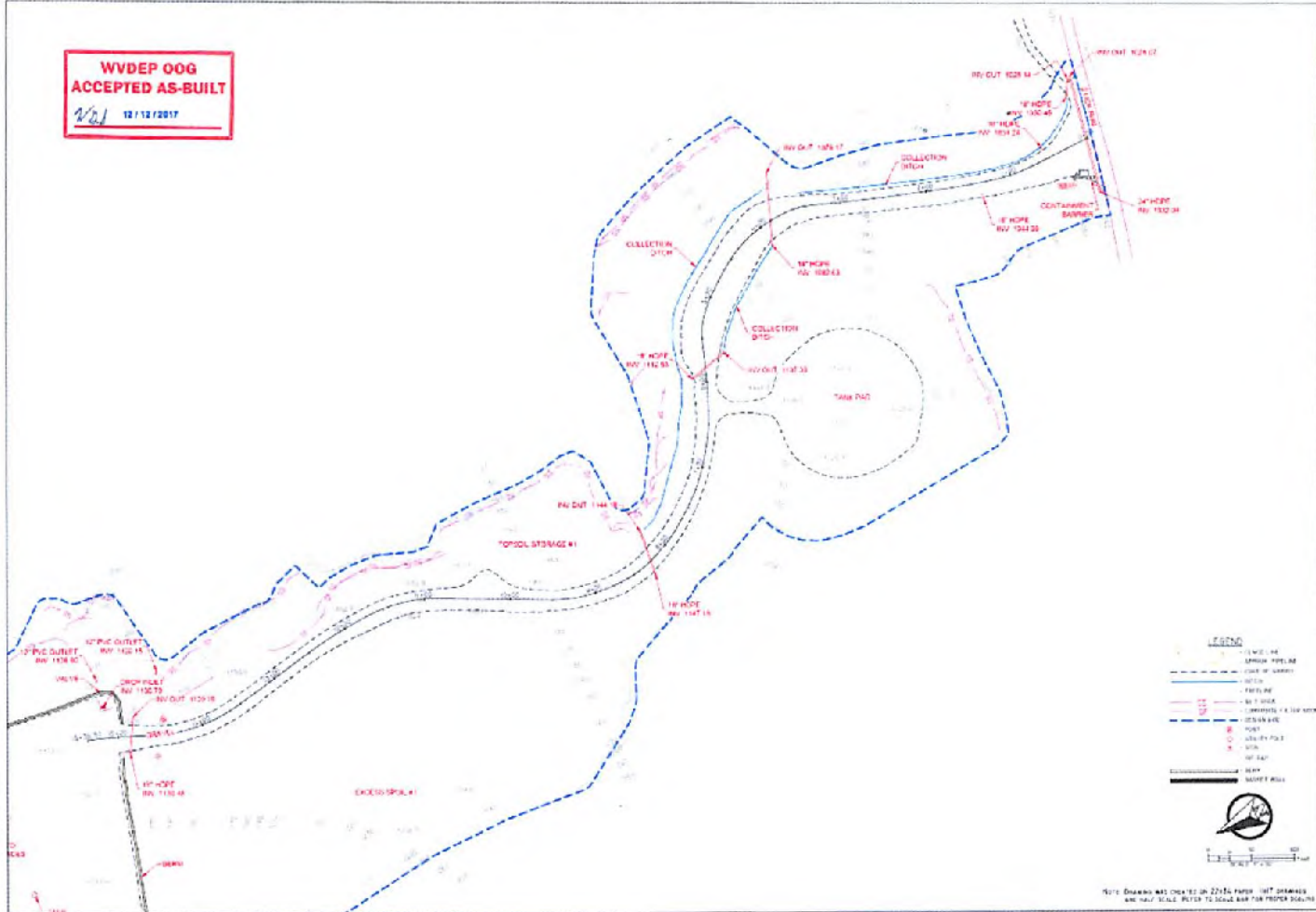
NOTE: DRAWING WILL ONLY BE USED ON THIS PROJECT. OTHER DRAWINGS ARE NOT VALID. REFER TO TITLE SHEET FOR NUMBER LISTING.

DATE: 12/12/2017  
 DESIGNED BY: JLD  
 CHECKED BY: JLD  
 DRAWN BY: JLD  
 PROJECT NO: 1320  
 SHEET: 1 OF 6



**WVDEP OOG  
ACCEPTED AS-BUILT**

*V2/* 12/12/2017



NOTE: DRAWING WAS CHECKED ON 2/23/18 PAPER. NOT DRAWING AND THIS SCALE. REFER TO SCALE BAR FOR PROPER DIMENSIONS.

**Blue Mountain Inc.**  
Engineers and Land Surveyors  
1435 WEST PARKWAY  
PO BOX 282  
CHARTERSVILLE, WV 26036

101 MILLERS ABBEY ROAD, LLC  
1200 BARBENT ROAD  
MARTINSBURG, WV 25701

**KSTS SITE  
AS-BUILT**

ENERGY

PROJECT NO.   
DATE: 12/12/2017

DRAWN BY:   
CHECKED BY:   
DATE: 12/12/2017

**SHEET 2 OF 1**

WVDEP 008  
ACCEPTED AS-BUILT  
12/13/2017



NOTE: DRAWING MATERIALS TO BE STAINLESS STEEL (NOT COAL)  
SEE HALF SCALE NOTES TO TITLE FOR FURTHER DETAILS.

Blue Mountain Inc.  
Programs and Land Services  
1100 MARKET STREET, SUITE 200  
GREENSBORO, NC 27403  
PH: 336.368.3500  
FAX: 336.368.3505

MST'S SITE  
AS-BUILT

HG ENERGY

REVISIONS

NO.	DESCRIPTION

DRAWN BY  
CHECKED BY  
DATE

SCALE: 1" = 100'

DATE: 12/13/2017

SHEET 3 OF 5



**WVDEP 00G  
ACCEPTED AS-BUILT**  
12/12/2017



NOTE: DRAWING WAS PRINTED IN 2017. THIS DRAWING AND THIS STAMP REFER TO TODAY AND NOT PROJECT DATES.

**Blue Mountain Inc.**  
Engineering and Construction  
1000 W. 10th Street  
Martinsburg, WV 26150  
(304) 263-2222

100 ENERGY SERVICES LLC  
1300 PARKWAY ROAD  
HARRISBURG, WV 26106

**KSTS SITE  
AS-BUILT**

REVISIONS

NO.	DATE	DESCRIPTION
1	12/12/2017	AS-BUILT

PROJECT NO: 17-0001-010-01

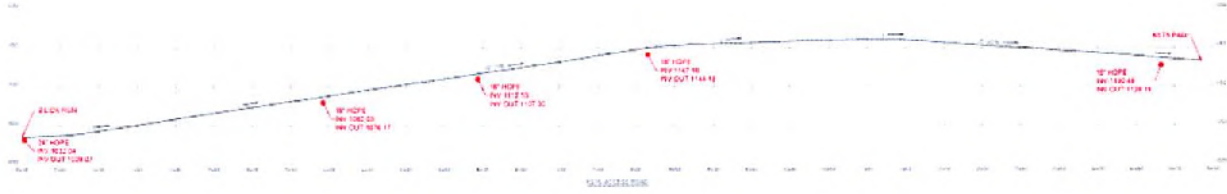
DATE: 12/12/2017  
DRAWN BY: J. HARRIS  
CHECKED BY: J. HARRIS  
SCALE: AS SHOWN

SHEET 1 OF 1

17-0001-010-01

WVDEP O&G  
ACCEPTED AS-BUILT

Vad 12/13/2017



NOTE: DRAWING WAS PREPARED ON 27x36 PAPER. UNIT DIMENSIONS AND HALF SCALE. REFER TO SCALE BAR FOR FURTHER INFO.



MARINE COUNTY  
PUBLIC WORKS DEPARTMENT  
HARRISBURG, PA 17110

KSTS SITE  
AS-BUILT



REVISED

DATE

BY

REASON

DATE

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