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**west virginia** department of environmental protection

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

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
www.dep.wv.gov

December 12, 2013

**WELL WORK PERMIT**

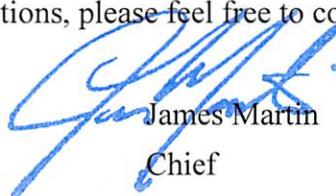
**Horizontal 6A Well**

This permit, API Well Number: 47-9502131, issued to STONE ENERGY CORPORATION, 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 all 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 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.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-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) 926-0499 ext. 1654.



James Martin  
Chief

Operator's Well No: MORRIS 1H  
Farm Name: MORRIS, BOB & KAY  
**API Well Number: 47-9502131**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 12/12/2013

**Promoting a healthy environment.**

## PERMIT CONDITIONS

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

### CONDITIONS

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1. The operator will take all measures needed to protect the surface owner assets labeled #1 and #2 on the water well map during construction of the access road.
2. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.
3. 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 fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.

API Number: 95-02131

## PERMIT CONDITIONS

9. 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.

WW-6B  
(9/13)

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

1) Well Operator: Stone Energy Corporation | 494490923 | Tyler | Ellsworth | Porters Falls  
Operator ID County District Quadrangle

2) Operator's Well Number: Morris #1H Well Pad Name: Morris

3) Farm Name/Surface Owner: Morris, Bob & Kay Public Road Access: Tyler County Route 28/1

4) Elevation, current ground: 1,095' Elevation, proposed post-construction: 1,093'

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

(b) If Gas Shallow  Deep   
Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  
Formation targeted is the Marcellus Shale which is 6,583' GL (-5,472' SL), 46' thick, and pressure between 3,100 and 4,100 psig.

8) Proposed Total Vertical Depth: 6,560' TVD @ TD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 11,650' MD @ TD

11) Proposed Horizontal Leg Length: 4,650' from LP and 5,762' from KOP

12) Approximate Fresh Water Strata Depths: Shallowest @ 75' and Deepest @ 885'

13) Method to Determine Fresh Water Depths: Show a water in flow line or when drilling soap has to added to air stream

14) Approximate Saltwater Depths: 1,820'

15) Approximate Coal Seam Depths: 880'

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

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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WW-6B  
(9/13)

18)

**CASING AND TUBING PROGRAM**

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</u>
Conductor	20"	New	LS	94.0	70'	70'	105 - CTS
Fresh Water	13.375"	New	J55	54.5	1,080'	1,080'	1,035 - CTS
Coal	13.375"	New	J55	54.5	1,080'	1,080'	1,035 - CTS
Intermediate	9.625"	New	J55	36.0	2,360'	2,360'	617 Lead - 369 Tail - CTS
Production	5.5"	New	P110	20.0		11,650'	975 Lead - 1,894 Tail - CTS
Tubing	2.375"	New	J55	4.7		6,400'	N/A
Liners	N/A						

Note: The Fresh Water/Coal casing is set close to elevation but not below elevation due to sloughing formation just below the Pittsburgh Coal seam.

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	24"	0.375"	N/A	Type 1	1.18
Fresh Water	13.375"	17.5"	0.380"	2,730 psi	Class A	1.19
Coal	13.375"	17.5"	0.380"	2,730 psi	Class A	1.19
Intermediate	9.625"	12.25"	0.352"	3,520 psi	Class A	1.26 Lead - 1.19 Tail
Production	5.5"	8.75"	0.361	12,360 psi	Class A	1.25 Lead - 1.19 Tail
Tubing	2.375"	N/A	0.190"	7,700 psi	N/A	N/A
Liners						

**PACKERS**

Kind:	N/A			
Sizes:				
Depths Set:				

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WV Department of  
Environmental Protection

*[Handwritten Signature]*  
12-12-13

WW-6B  
(9/13)

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

MIRU conductor rig and set 20" conductor into solid rock cementing back to surface. Typically the setting depth is 80'. RDMO conductor rig and MIRU top-hole rig. Drill and set 13.375" fresh water/coal casing cementing back to surface. Drill and set 9.625" intermediate casing cementing back to surface. Drill 8-3/4" production hole to just above KOP. This section will be drilled using a slant in order to maintain and reduce anti-collision concerns. Run gyro and displace with KCl fluid back to surface. RDMO top-hole rig and MIRU horizontal rig. Displace KCl fluid out of well bore with salt saturated drilling fluid. Drill to KOP and then drill curve to landing point. Continue drilling horizontal section of well bore to TD. Condition well bore at TD, TOOH, and run 5.5" production casing to TD. Cement production casing to 1000' inside of the 9.625" casing string. RDMO horizontal rig after installing night cap on top of well head.

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

MIRU coil tubing unit or service rig and clean out well bore to PBTD. Run CBL to approximately 30-60 degrees in curve back to surface. Toe prep horizontal for fracturing. RDMO coil tubing unit or service rig. MIRU stimulation equipment. Begin stimulation on first stage. Anticipated maximum treating pressure is 9000 psi. Anticipated maximum pump rate is between 85 and 90 bmp of slick-water with sand. Frac plugs will be pumped down during night-time operations. The number of stages to be pumped will be determined once the well is drilled and log information is reviewed. All other stages will be pumped as described above. Once well is fraced the coil tubing unit or service rig (with snubbing unit) will be moved back on site and the frac plugs will be drilled out and the well bore will be cleaned up. Flow back time for the well will be dependent upon fluid return and gas production. All gas will be flared until the well is capable of production.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 15.9

22) Area to be disturbed for well pad only, less access road (acres): 6.26

23) Describe centralizer placement for each casing string:

Fresh Water/Coal string will use bow spring centralizers w/ one just above guide shoe and then every 2nd jt. to surface. Intermediate string will use bow spring centralizers w/ one just above the guide shoe, one just above the float collar and then on every 3rd jt. to surface. One straight vane rigid centralizer will be placed as close as practical to the surface. Production string will use alternating left/right rigid centralizers on every 4th jt. from TD to 500' above KOP and on every 3rd jt. from 500' above KOP to top of slant. Bow spring centralizers every 3rd jt. will be used from this point to top of cement.

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

Fresh Water/Coal cement is typically Class A w/ 0.25 pps Cello-Flake and 1.0% to 3.0% CaCl2. Intermediate cement is a lead/tail blend with the lead being Class A w/ 10% Salt and 0.25 pps Cello-Flake. Tail is Class A w/ 0.25 pps Cello-flake and 1.0% to 3.0% CaCl2. Production cement is a lead/tail blend with the lead being HES's GASSTOP blend w/ 0.8% Retarder and tail being HES's HALCEM blend w/ 0.65% Retarder and 0.1% Dispersant or SLB with lead/tail with the lead being Class A w/ 10% Salt or Class A w/ FlexSeal and the tail being Class A w/ 0.2% Dispersant, 0.4% Fluid Loss, 0.2% Anti-Foam, 0.15% Retarder, and 0.2% Anti-Settling Agent.

25) Proposed borehole conditioning procedures:

Fresh Water/Coal section will be done by circulating air through the drill string at TD between 30 and 90 minutes or until the well bore clears of cuttings. Intermediate section will be done by circulating air and/or stiff foam through the drill string at TD between 30 and 120 minutes or until the well bore clears of cuttings. Production section will be done by circulating drilling fluid through the drill string at TD between 120 to 720 minutes (a minimum of 3 bottoms up until the shakers are clear of cuttings.)

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\*Note: Attach additional sheets as needed.

*SOZ*

95-02131

Well: Morris #1H  
 State: West Virginia  
 County: Tyler  
 District: Ellsworth  
 Prospect: Mary South  
 Location: Surface: (E) 512,547 (N) 4,381,415 (UTM NAD83 ZONE 17)  
 PBHL: (E) 511,471 (N) 4,382,510 (UTM NAD83 ZONE 17)  
 PTD: 11,650' MD / 6570' TVD

# PROPOSED HORIZONTAL

Revision: 26-Sept-13

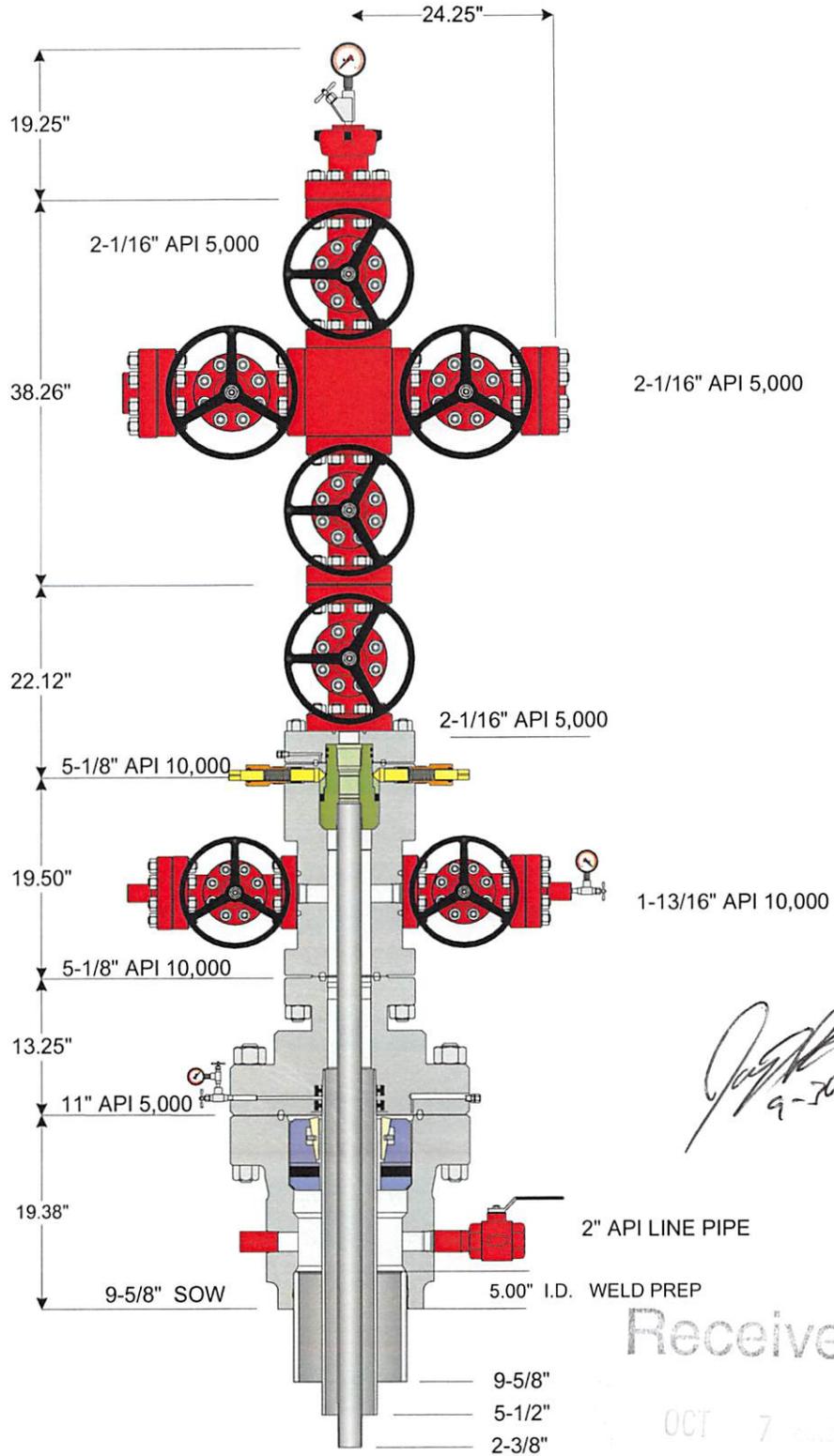
Permit Number: 47-095-0XXXX  
 Permit Issued:  
 As Built Ground Elevation: 1094'  
 Kelly Bushing: 18'  
 Rig:  
 Spud Date:  
 TD Date:  
 Rig Release Date:

HOLE SIZE	PILOT HOLE FORMATION TOPS	WELLBORE DIAGRAM	CASING & CEMENTING DATA DIRECTIONAL DATA	MW & FLUID TYPE	HOLE DEV.	
Pre-Set Conductor	58' KB (40' BGL)		<b>CONDUCTOR PIPE</b> 20" x 3/8" wall L/S PE @ 58' (set in bedrock & grouted to surface)		Vertical	
17-1/2" Hole (Hammer)	Shallowest FW 75' TVD Pittsburgh Coal 888' TVD Deepest FW 885' TVD 1080' TVD		<b>SURFACE CASING</b> 13-3/8" 54.5# J-55 STC @ 1080' MD/TVD Set through fresh water zones Set through coal zones Cemented to surface	Air / Mist	Vertical	
12-1/4" Hole (Rock Bit)	Salt Water 1820' TVD RED BEDS Little Lime 1985' TVD Big Lime 2015' TVD Big Injun Sandstone 2115' TVD Base of Big Injun 2215' TVD 2360' TVD		<b>INTERMEDIATE CASING</b> 9-5/8" 36.0# J-55 LTC @ 2360' MD/TVD Set through potential salt water zones Set below base of Big Injun Cement to surface	Stiff Foam	Vertical	
8-3/4" Hole (PDC)	Berea Sandstone 2583' TVD Gordon Sandstone 2817' TVD			Air / Mist	Slant	
8-3/4" Hole from Top Hole TD to LP (PDC Bit)	Rhinestreet Shale 6179' TVD Middlesex Shale 6305' TVD Geneseo Shale 6397' TVD Tully Limestone 6442' TVD			KOP @ 5888'	WBM in Curve	
8-3/4" Hole in Lateral (PDC)	Marcellus Shale 6584' TVD			Landing Point (LP) @ 7220' MD / 6610' TVD ~90.5° angle ~330.0° azimuth	WBM in Lateral	~90.5°
	Onondaga Limestone 6630' TVD			TD @ 11,650' MD / 6570' TVD PRODUCTION CASING 5-1/2" 20.0# P-110 CDC @ 11,650' Top of Cement @ ~1360' (1000' inside 9-5/8")		

Office of Oil and Gas  
WV Dept. of Environmental Protection

95-02131

NOTE: THIS DRAWING IS NOT TO SCALE. THE DIMENSIONS REFLECTED ON THE DRAWING ARE ESTIMATED MEASUREMENTS AND FOR REFERENCE ONLY.



*Signature*  
9-20-17

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OCT 7

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WV Dept. of Environmental Protection

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Customer: STONE ENERGY	Project: 46705	Quote: 99565 v 3
Tender, Project or Well: 2011- 2012 CONVENTIONAL MARCELLUS	Date: 07-17-2011	Drawn By: RF



95-02131

Form WW-9

Operator's Well No. Morris #1H

**Stone Energy Corporation**

Proposed Revegetation Treatment: Acres Disturbed 15.9 Prevegetation pH \_\_\_\_\_

Lime 2.0 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20 or Equivalent

Fertilizer amount 500 - 750 lbs/acre

Mulch 0.50 to 0.75 + Straw Tons/acre

**Seed Mixtures**

**Temporary**

**Permanent**

Seed Type lbs/acre  
Marcellus Mix 10.0

Seed Type lbs/acre  
Marcellus Mix 10.0

White or Ladino Clover 10.0

White or Ladino Clover 10.0

Orchard Grass 10.0

Orchard Grass 10.0

Winter Rye 50.0

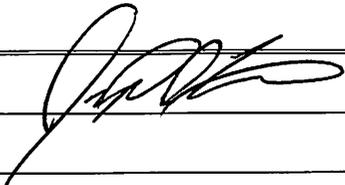
Winter Rye 50.0

**Attach:**

Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: \_\_\_\_\_



Comments: \_\_\_\_\_

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Office of Oil and Gas  
WV Dept. of Environmental Protection

Title: Inspector

Date: 9-30-13

Field Reviewed?  Yes

No



## WW-9 ADDENDUM

### Drilling Medium Anticipated for This well

- Vertical section of well bore, down to KOP, will be drilled on air and/or a combination of air and drilling soap.
- From KOP through the curve section and horizontal section of well bore will be drilled on a brine-water based mud system.

### Additives to be Used While Drilling

- Common additives when air drilling: KCl (CAS No. 1302-78-9 & 14808-60-7), soda ash (CAS No. 497-19-8), shale stabilizer (CAS No. 67-48-1 & 7732-1835), drilling soap (CAS No. 111-76-2), air hammer/motor lubricant.
- Common water based additives for mud drilling: NaCl (CAS No. 7647-14-5), KCl (CAS No. 7447-40-7), barite (CAS No. 13462-86-7 & 14808-60-7), starch (CAS No. 9005-25-8), PAC (CAS No. 9004-32-4), xanthum gum (CAS No. 11138-66-2), PHPA (CAS No. 64742-47-8), polysaccharide (CAS No. 11138-66-2), sulfonated asphaltic material (CAS No. 269-212-0 & 238-878-4), aluminum silicate (CAS No. 37287-16-4), gilsonite (CAS No. 12002-43-6), graphite (CAS No. 14808-60-7 & 7782-42-5), shale stabilizer (CAS No. 67-48-1 & 7732-18-5), fluid loss control polymers (CAS No. 9004-34-6), viscosity control polymers (CAS No. 11138-66-2 & 107-22-2), soda ash (CAS No. 497-19-8), sodium bicarbonate (CAS No. 144-55-8), NaOH (CAS No. 1310-73-2, 7647-14-5, & 7732-18-5), lime (CAS No. 1305-62-0), gypsum (CAS No. 778-18-9), citric acid (CAS No. 77-92-9), biocide (CAS No. 52-51-7 or 7732-18-5 + 67-56-1 + 141-43-5), CaCO<sub>3</sub> (CAS No. 471-34-1), cellulose fibers (CAS No. 14808-60-7), nut plug (CAS No. 9004-34-6 & 14808-60-7), cross-linking polymers (CAS No. 107-22-2 & 11138-66-2), other LCMs, surfactants (CAS No. 64-17-5), ROP enhancer/lubricant (CAS No. 8002-13-9), beads, corrosion inhibitor (CAS No. 7732-18-5), aluminum stearate (CAS No. 300-92-5), defoamer (CAS No. 246-771-9).

MSDS are available upon request.

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**WW-9 ADDENDUM**

**Drill Cuttings Disposal Method**

- Closed loop drilling system will be incorporated. No waste pits will be constructed. All drill cuttings are put through a drier system and hauled to and disposed of at approved and permitted landfills.

**Landfills or Offsite Names and Permit Numbers**

Wetzel County Sanitary Landfill  
Rt. 1, Box 156A  
New Martinsville, WV 26155  
SWF-1021 / WV01909185

Brooke County Sanitary Landfill  
Colliers, WV 26035  
SWF-1013 / WV0109029

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95-02131



## Well Site Safety Plan

Morris Well Pad  
Ellsworth District, Tyler County

Morris 1H

A handwritten signature in black ink, followed by the date "9-30-13" written below it.

Stone Energy Corporation  
6000 Hampton Center, Suite B  
Morgantown, West Virginia 26505  
(304) 225-1600

Initial Preparation: September 18, 2013

Morris Well Site Safety Plan

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WV Dept. of Environmental Protection



## Water Management Plan: Primary Water Sources



WMP-01562

API/ID Number:

047-095-02131

Operator:

Stone Energy Corporation

Morris #1H

### Important:

For each proposed primary water source (including source intakes for purchased water sources) identified in your water management plan, and summarized herein, DEP has made an evaluation concerning water availability over the specified date range. DEP's assessment is based on the following considerations:

- Statistical analysis of historical USGS stream gauge data (transferred to un-gauged locations as necessary);
- Identification of sensitive aquatic life (endangered species, mussels, etc.);
- Quantification of known existing demands on the water supply (Large Quantity Users);
- Minimum flows required by the Army Corps of Engineers; and
- Designated stream uses.

Based on these factors, DEP has provided, for each intake location (and origination point for purchased water), a reference gauge location and discharge flow reading which must be surpassed prior to withdrawals. Additionally, DEP has established a minimum passby flow at the withdrawal location which must also be surpassed prior to withdrawals. These thresholds are considered terms of the permit and are enforceable as such.

**DEP is aware that some intake points will be used for mutiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interepreted as total withdrawal limits for each location over the specified date range regardless of how many wells are supported by that intake.**

For all purchased water intakes, determinations of water availability are made at the original source intake location. It is the responsibility of the Oil and Gas Operator, not the seller, to cease withdrawal of water from the seller when flows are less than the minimum gauge reading at the stream gauge referenced by the Water Management Plan in order to protect stream uses.

Note that the determinations made herein are based on the best available data, but it is impossible to predict water availability in the future. While the DEP has carefully established these minimum withdrawal thresholds, it remains the operator's responsibility to protect aquatic life at all times. Approval to withdrawal is contingent upon permission from the land owner. It is the responsibility of the operator to secure and maintain permission prior to any withdrawals.

The operator is reminded that 24-48 hours prior to withdrawing (or purchasing) water, DEP must be notified by email at [DEP.water.use@wv.gov](mailto:DEP.water.use@wv.gov).

APPROVED NOV 15 2013

## Source Summary

WMP-01562

API Number:

047-095-02131

Operator:

Stone Energy Corporation

Morris #1H

## Stream/River

● Source **Ohio River @ The Spielers Club** Wetzel Owner: **The Spielers Club**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
9/1/2014	9/1/2015	6,100,000		39.709677	-80.826384

Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): **833** Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: Refer to the specified station on the National Weather Service's Ohio River forecast website: <http://www.erh.noaa.gov/ohrfc//flows.shtml>

## Source Detail

WMP- 01562

API/ID Number: 047-095-02131

Operator: Stone Energy Corporation

Morris #1H

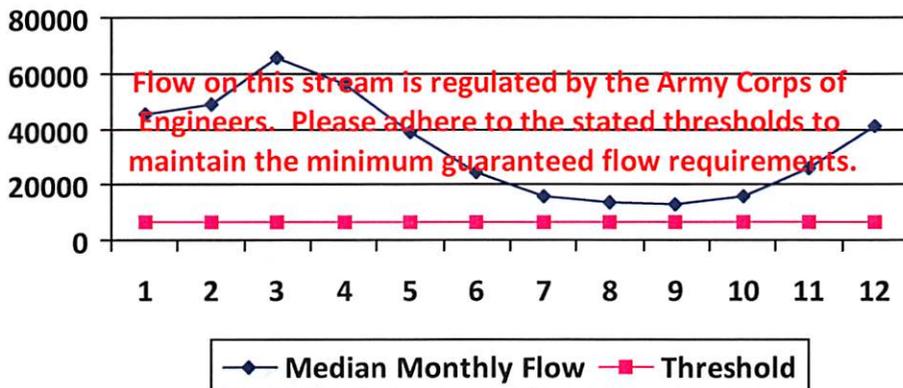
Source ID:	28566	Source Name	Ohio River @ The Spielers Club The Spielers Club	Source Latitude:	39.709677
				Source Longitude:	-80.826384
HUC-8 Code:	5030201	Anticipated withdrawal start date:	9/1/2014		
Drainage Area (sq. mi.):	25000	County:	Wetzel	Anticipated withdrawal end date:	9/1/2015
<input type="checkbox"/> Endangered Species?	<input checked="" type="checkbox"/> Mussel Stream?	Total Volume from Source (gal): 6,100,000			
<input type="checkbox"/> Trout Stream?	<input type="checkbox"/> Tier 3?	Max. Pump rate (gpm): 833			
<input checked="" type="checkbox"/> Regulated Stream?	Ohio River Min. Flow	Max. Simultaneous Trucks: 0			
<input checked="" type="checkbox"/> Proximate PSD?	Grandview-Doolin PSD	Max. Truck pump rate (gpm): 0			
<input checked="" type="checkbox"/> Gauged Stream?					

Reference Gaug 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.) 25,000.00 Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	1.86
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
<hr/>	
Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.



## Water Management Plan: Secondary Water Sources



WMP- 01562	API/ID Number	047-095-02131	Operator:	Stone Energy Corporation
Morris #1H				

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

### Multi-site impoundment

Source ID:	28567	Source Name	Pribble Freshwater Impoundment		Source start date:	9/1/2014
					Source end date:	9/1/2015
Source Lat:	39.685144	Source Long:	-80.820002	County	Wetzel	
Max. Daily Purchase (gal)		Total Volume from Source (gal):	6,100,000			
DEP Comments:						

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-277

WMP-01562

API/ID Number 047-095-02131

Operator:

Stone Energy Corporation

Morris #1H

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

### Recycled Frac Water

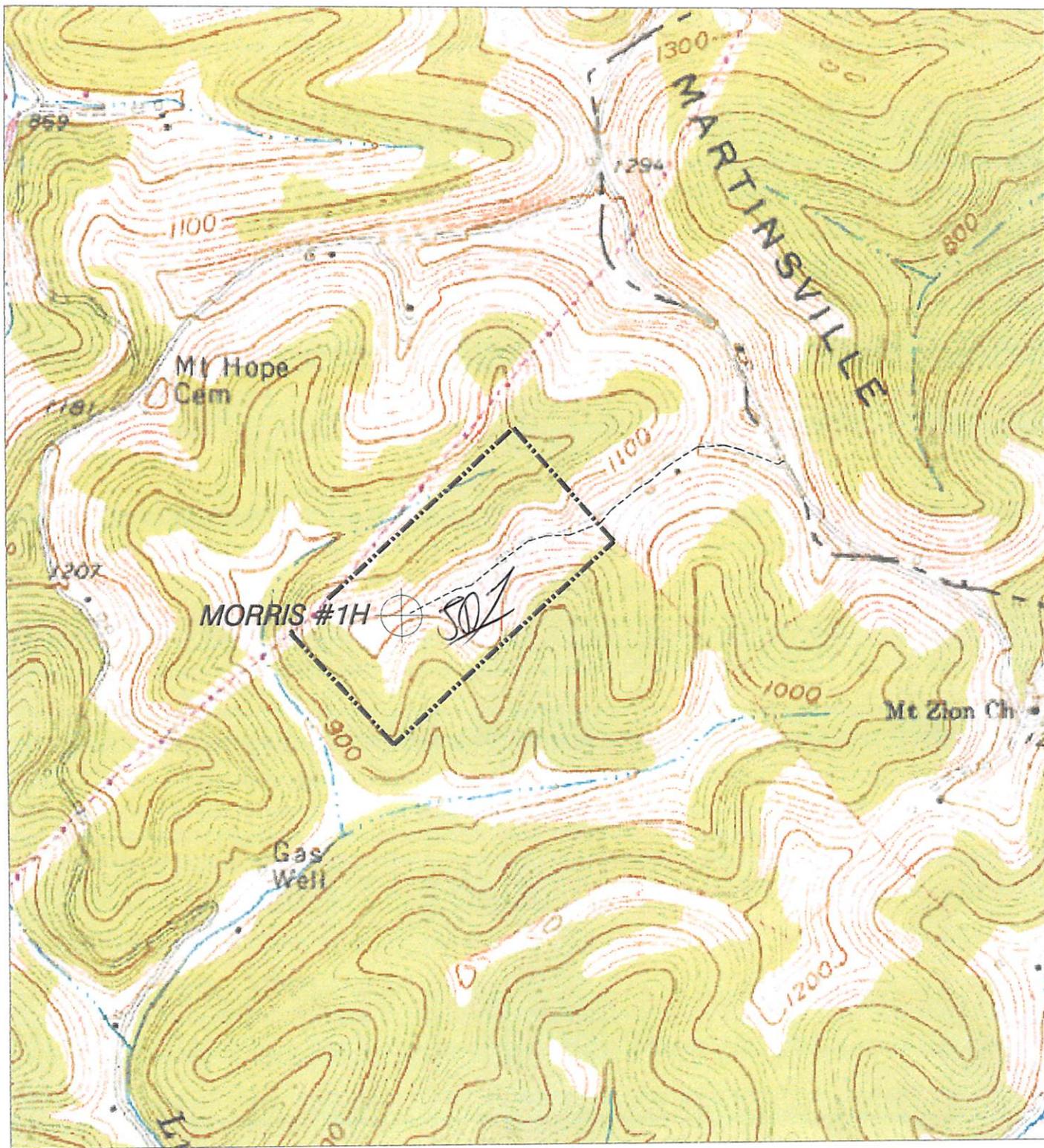
Source ID:	28568	Source Name	Various	Source start date:	9/1/2014
				Source end date:	9/1/2015
Source Lat:		Source Long:		County	
Max. Daily Purchase (gal)		Total Volume from Source (gal):		200,000	
DEP Comments:					

# Stone Energy Corporation Morris #1H

95-02131

Page 1 of 1

Form W-9



## ***HUPP Surveying & Mapping***

P.O. BOX 647 GRANTSVILLE, WV 26147  
PH: (304) 354-7035 E-MAIL: hupp@frontiernet.net

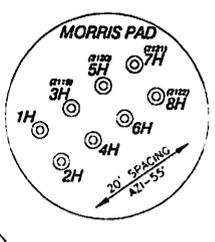
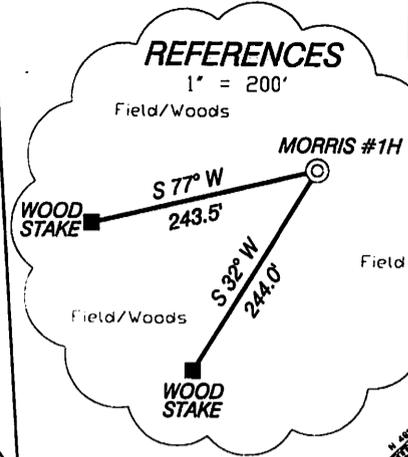
1" = 1000'  
Porters Falls 7.5'

Stone Energy Corp.  
P.O. Box 52807  
Lafayette, LA 70508

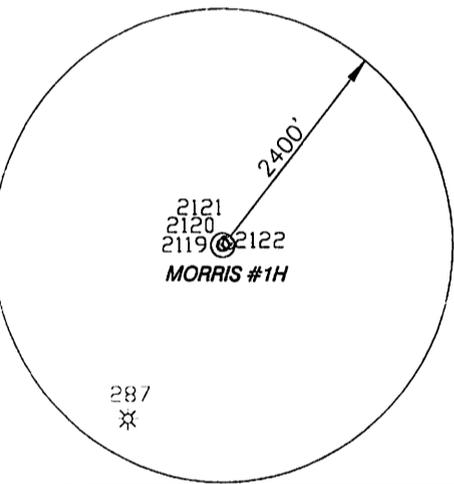
**MORRIS #1H BOTTOM HOLE**

STATE PLANE COORDINATES		
NORTH ZONE-NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17
(N) 400720	38.58217	METERS 4382510
(E) 1614892	80.86659	511471

# MORRIS #1H



- NOTES ON SURVEY**
- NO DWELLINGS WITHIN 625' WERE FOUND.
  - NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
  - TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27.
  - WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
  - SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN MARCH, 2013 AND INFORMATION PROVIDED BY STONE ENERGY CORPORATION.
  - WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.



**MORRIS #1H LANDING POINT**

STATE PLANE COORDINATES		
NORTH ZONE-NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17
(N) 397004	39.58206	METERS 4381389
(E) 1617055	80.85871	512148

**MORRIS #1H SURFACE HOLE**

STATE PLANE COORDINATES		
NORTH ZONE-NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17
(N) 397066	39.58228	METERS 4381415
(E) 1618365	80.85407	512547

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
 DATE SEPTEMBER 26, 2013  
 OPERATORS WELL NO. MORRIS #1H  
 API WELL NO. 47-095-02131H6A  
 STATE LA COUNTY TYLER PERMIT 02131H6A

P.S. 834  
  
**HUPP Surveying & Mapping**  
 P.O. Box 647 Grantsville, WV 26147  
 (304) 354-7035 EMAIL: hupp@frontiernet.net

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W2128 (BK 57-12)  
 PROVEN SOURCE OF ELEVATION SG-GPS (OPUS) SCALE 1" = 1000'

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

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

LOCATION : ELEVATION 1,095' WATERSHED LYNNCAMP RUN  
 DISTRICT ELLSWORTH COUNTY TYLER QUADRANGLE PORTERS FALLS 7.5'  
 SURFACE OWNER BOB & KAY MORRIS ACREAGE 50.8±  
 ROYALTY OWNER BOB & KAY MORRIS, et al LEASE ACREAGE 255.30±  
 PROPOSED WORK : LEASE NO. \_\_\_\_\_  
 DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER \_\_\_\_\_  
 PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION MARCELLUS  
 ESTIMATED DEPTH TVD 6,570' MD 11,650'

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR  
 ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 6000 HAMPTON CENTER SUITE B MORGANTOWN WV 26505

COUNTY NAME  
 PERMIT