

west virginia department of environmental protection

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

July 31, 2013

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-10302907, 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: SMITH #5H

Farm Name: SMITH, SONNY & CHARLOTTE

API Well Number: 47-10302907

Permit Type: Horizontal 6A Well

Date Issued: 07/31/2013

PERMIT CONDITIONS

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

CONDITIONS

- 1. 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.
- 2. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the fill material shall be within plus or minus 2% (unless soil test results show a greater range of moisture content is appropriate and 95% compaction can still be achieved) of the optimum moisture content as determined by the standard proctor density test, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. Each lift must meet 95% compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. 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.
- 3. 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.
- 4. 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.
- 5. 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.
- 6. 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.
- 7. 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.

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

			_		10.3	16	.509
1) Well Operator:	STONE E	NERGY CORPORAT	TON	494490923	Wetzel	Magnolia	New Martinsville
,				Operator ID	County	District	Quadrangle
2) Operator's Well	Number:	SMIT	ГН #5	H	Well Pad Nam	e:SMI	TH
3 Elevation, curren	t ground:	1,335'	Elev	ation, proposed	post-construc	tion:	1,321'
	Other _	■ Oil					
(b) I		Shallow Horizontal		Deep 			
5) Existing Pad? Ye	es or No:	No					
6) Proposed Target The well is to be drilled in thickness of 56° and a rock	the Marcellus Sh	nale formation. Depth is expec					s expected to have a
7) Proposed Total V	/ertical De	pth: 6,690' TVD)				
8) Formation at Total				SHALE			
9) Proposed Total M		• — —		OHALL			
10) Approximate Fr		•		Shallowest and 1	114' Deenest		
11) Method to Deter		•		iceable flow from		en having to s	tart soaning
12) Approximate Sa		•	1100	iocabio now nom	now line or with	in naving to s	tart soaping
13) Approximate Co		•					
14) Approximate De		•	ine, ka	arst, other):	None Antici	nated	
15) Does land conta	•	•	-		No		
16) Describe propos		•		ording to approved engi		conductor rig and	set 20" conductor into
		nductor rig. MIRU Top Hole Ri					
and set 9.625" casing thro	ough sait water z	ones. Cement to surface. Cor	ntinue dril	lling to KOP. RDMO Top	Hole Rig and MIRU I	lorizontal Rig. Drill	curve and lateral to TD.
Set 5.5" production casing	and cement 10	00' back into 9.625" casing. Ri	DMO Hor	rizontal Rig.			
in the lateral section. Stimbore. Run tubing into well	ent. Run CBL fro nulate each individual bore using snub	ating methods in de om approximately 30 degrees in dual stage using sand laden s bing equipment to aid in fluid in attached Frac Chemical Adde	in the cur lick water recovery	r. RDMO Completion Equand clean up well bore.	uipment. MIRU service Once completion active	e rig or coil tubing u ities have been finis	init and clean out well
18) Total area to be	disturbed,	including roads, sto	ockpil	e area, pits, etc,	(acres):		14.22
19) Area to be distu	rbed for w	ell pad only, less ac	cess r	oad (acres):		Receivi 70,30	h _e
				DWH	Of	ice o.	
				4-23-13			
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20)

CASING AND TUBING PROGRAM

ТҮРЕ	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	LS	94.0	40'	40'	38 CTS
Fresh Water	13.375"	New	J55	54.0	1,280'	1,280'	1,214 CTS
Coal	13.375"	New	J55	54.0	1,280'	1,280'	1,214 CTS
Intermediate	9.625"	New	J55	36.5	2,600'	2,600'	693 Lead - 381 Tail CTS
Production	5.5"	New	P110	20.0		10,600'	1075 Lead - 1439 Tail TOC @ 1600'
Tubing	2.375"	New	J55	4.7		6,500'	N/A
Liners							

Note: The fresh water/coal string will be set above sea level and cemented to surface. This setting depth is due to a rubble zone just below the Pittsburgh coal seam.

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
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	Lead 1.26 - Tail 1.19
Production	5.5"	8.75"	0.361"	12,360 psi	Class A	Lead 1.25 - Tail 1.23
Tubing	2.375"	N/A	0.190"	7,700 psi	N/A	N/A
Liners						

PACKERS

		Calved Gas
Kind:	N/A	Office of Oil o
Sizes:		
Depths Set:		

- 21) Describe centralizer placement for each casing string.

 of bow spring centralizers with one (1) being placed above guide shoe and one (1) every second joint to surface for a total of 16 bow spring centralizers will be run.
 - Intermediate string will incorporate the use of bow spring centralizers with one (1) being placed above the guide shoe, one (1) above the float collar, and one (1) every third joint to surface. One (1) rigid centralizer will be placed near the surface. A total of 22 bow spring centralizers will be run.
 - Production string will incorporate the use of alternating left and right hand spiral centralizers with one (1) every fourth joint from TD to KOP, one (1) every third joint from KOP to top of nudge or slant, and one (1) bow spring centralizers placed on every third joint to TOC. A total of 54 Spiral and 9 Bow Spring will be be run.
- 22) Describe all cement additives associated with each cement type.

 Fresh Water/Coal string will be cemented using a slurry of Class A cement with 0.10 lb/sx Cello flake, 0.20% BWOB Anti-Foam, and 1.0% BWOB CaCl2
 Intermediate string will be cemented using a Lead and Tail slurry; Lead is Class A cement with 0.20 gps Accelerator, 0.07 gps Dispersant, 0.10 gps Anti-Foam, 4.0% BWOB Expanding Agent, and 0.50% BWOB Gas Control Agent.

 Tail is Class A cement with 1.0% BWOB CaCl2, 0.1 lb/sx Cello-Flake, and 0.2% BWOB Anti Foam.
 -Production string will be cemented using a Lead and Tail slurry; Lead is Class A cement with 0.10 gps Dispersant, 0.10 gps Anti-Foam, 0.05 gps Retarder, 4.0% BWOB Expanding Agent, and 0.50% BWOB Gas Control Agent.

 Tail is Class A cement with 0.90% BWOB Dispersant, 0.30% BWOB Fluid Loss, 0.20% BWOB Anti-Foam, and 0.60% BWOB Retarder.
- 23) Proposed borehole conditioning procedures.
 - Fresh Water/Coal section will be conditioned by circulating air through the drill sting at TD for between 30 to 60 minutes until well bore is clean of cuttings.
 - Intermediate section will be conditioned by circulating air and/or stiff foam through drill string at TD for between 30 to 120 minutes until well bore is clear of cuttings.
 - Production section will be conditioned by circulating drilling fluid through the drill string at TD for between 60 to 720 minutes until shakers are clear of cutting and drill string pulls free of bottom.

*Note: Attach additional sheets as needed.

DAH 4-27-13

Ottice of Oll ? Case

API No. 47 -	103	-02907
Operator's Well	No.	SMITH #5H

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

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name	STONE	ENERGY CORPO	ORATION	OP Code	494	1490923	
Watershed	Tributary of D	Doolin Run	Quadrangle _	N	New Martins	ville	
Elevation	1,335'	County	Wetzel	District_	Ma	agnolia	
Description of anti	cipated Pit Waste: _	The	re will not be a waste pi	t constructed o	on this well si	ite	
Do you anticipate	using more than 5,00	0 bbls of water to	complete the proposed	well work?	y'es _ ✓	No	
Will a synthetic lin	ner be used in the pit?	N/A	If so, what mil.?	N/A			
Proposed Disposal	Method For Treated Land Applica						
			Permit Number_ Hunter I	Disposal 2D0859	721, 34-121-24	4037, 34-121-24	4086)
-			ack will be stored in tanks a				
-	Off Site Disp Other (Expla		m WW-9 for disposal lo	cation)			
-If oil bas Additives to be use	ed, what type? Synthed? See Attached WW	netic, petroleum, e -9 Addendum					rine fluid
			tal drilling rigs will incorpora				4-23
			oved offsite, etc. Appro		ed of site landii		
			rill be used? Cement, lin County Sanitary Landfill (SV		9185)		
-Landini	or orisite name/perim	t number:			,		
on August 1, 2005 provisions of the p or regulation can le I certify application form a the information, I submitting false in Company Official	, by the Office of Oil ermit are enforceable ead to enforcement ac- under penalty of law and all attachments the believe that the info	and Gas of the Web law. Violationstion. That I have persected and that, basemation is true, a the possibility of the possibili	Timothy P. M	nt of Environn tion of the gen am familiar w ose individuals I am aware	nental Protect neral permit a with the info	etion. I under and/or other a rmation subn y responsible	rstand that the applicable law mitted on this for obtaining
Company Official	Title		Land Coor	rdinator			
						Pulck	Best A
		172	0 4			Office Co	
Subscribed and sw	orn before me this	173 day	of Upul	, 2	0 13		
Da	rulle of	Inoduly		Notar	y Public		
My commission ex	pires	5/18/2021	00000				
			NEST DA	OFFICIAL	SEAL	~	

Property Boundary	Diversion	
Road ============	Spring	○
Existing Fence ———————————————————————————————————	Wet Spot	~
Planned Fence////	Drain Pipe w/ size in inches	~ ~
Stream		12)
Open Ditch	Waterway —	
Rock	Cross Drain	
North N	Artificial Filter Strip XXXXXXXXXX	*****************
	Pit: Cut Walls	minns Million
Buildings	Pit: Compacted Fill Walls	man market
Water Wells Drill Sites	Area for Land Application of Pit Waste	
Proposed Revegetation Treatment: Acres Disturbed 14	1.22 Prevegetation pH	
Lime 2.0 Tons/acre or to correct to pH	6.5	
•		
Fertilizer (10-20-20 or equivalent)500 - 750lbs/ac	re (500 lbs minimum)	
Mulch 0.50 to 0.75 TPA + Straw Tons/acre	;	
Seed I	Mixtures	
Area I	Area	
Area I Seed Type lbs/acre	Area Seed Type	II lbs/acre
Seed Type lbs/acre	Seed Type	lbs/acre
Seed Type lbs/acre Marcellus Mix 100.0	Seed Type Marcellus Mix	100.0
Seed Type lbs/acre Marcellus Mix 100.0 White or Ladino Clover 10.0	Seed Type Marcellus Mix White or Ladino Clover	100.0 10.0
Seed Type Ibs/acre Marcellus Mix 100.0 White or Ladino Clover 10.0 Orchard Grass 40.0	Seed Type Marcellus Mix White or Ladino Clover Orchard Grass Winter Rye	100.0 10.0 40.0
Seed Type Ibs/acre Marcellus Mix 100.0 White or Ladino Clover 10.0 Orchard Grass 40.0 Winter Rye 50.0 Attach: Drawing(s) of road, location,pit and proposed area for land application. Photocopied section of involved 7.5' topographic sheet.	Seed Type Marcellus Mix White or Ladino Clover Orchard Grass Winter Rye	100.0 10.0 40.0 50.0
Seed Type Ibs/acre Marcellus Mix 100.0 White or Ladino Clover 10.0 Orchard Grass 40.0 Winter Rye 50.0 Attach: Drawing(s) of road, location,pit and proposed area for land application. Photocopied section of involved 7.5' topographic sheet.	Seed Type Marcellus Mix White or Ladino Clover Orchard Grass Winter Rye ation.	1bs/acre 100.0 10.0 40.0 50.0
Seed Type Ibs/acre	Seed Type Marcellus Mix White or Ladino Clover Orchard Grass Winter Rye ation.	100.0 10.0 40.0 50.0
Seed Type lbs/acre Marcellus Mix 100.0 White or Ladino Clover 10.0 Orchard Grass 40.0 Winter Rye 50.0 Attach: Drawing(s) of road, location,pit and proposed area for land application of involved 7.5' topographic sheet.	Seed Type Marcellus Mix White or Ladino Clover Orchard Grass Winter Rye ation.	1bs/acre 100.0 10.0 40.0 50.0



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. 1138-66-2), 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), CaCO₃ (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 & 1138-66-2), 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.

DMH 4-23-13 Office of Oil & Gas



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

A-53-13 DW11



west virginia department of environmental protection



Water Management Plan: Secondary Water Sources



WMP-01350

API/ID Number

047-103-02907

Operator:

Stone Energy Corporation

Smith #5H

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: 20571 Source Name

Pribble Freshwater Impoundment

Source start date:

8/1/2014

Source end date:

8/1/2015

Source Lat:

39.685144

Source Long:

-80.820002

County

Wetzel

Max. Daily Purchase (gal)

Total Volume from Source (gal):

4,655,000

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

APPROVED JUL 3 1 2013

WMP-01350 API/ID Number 047-103-02907 Operator: Stone Energy Corporation

Smith #5H

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: 20572 Source Name Bowyers Pad

Source start date: 8/1/2014

Source end date:

8/1/2015

Source Lat: Source Long: County

Max. Daily Purchase (gal) Total Volume from Source (gal): 245,000

DEP Comments:

10302907 Existing Access Road 1000' Water Sampling Radius Possible Water Sources Page 1 of 1 •# DA17 Corporation 3000, 70508 Stone Energy Corp. Smith #5H Water Lafayette, LA Stone Energy 2000, PO Box New Martinsville Quad = 1000SCALE: 1-INCH = 1000-FEET Form W-9

