



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

April 20, 2015

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-10303056, 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: STARKWEATHER 5H
Farm Name: STARKWEATHER, HEATH & CH/
API Well Number: 47-10303056
Permit Type: Horizontal 6A Well
Date Issued: 04/20/2015

Promoting a healthy environment.

04/24/2015

PERMIT CONDITIONS

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

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) 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. 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.
8. 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.
9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

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

1) Well Operator: Stone Energy Corporation 494490923 Wetzel Green Porters Falls
Operator ID County District Quadrangle

5 554

2) Operator's Well Number: Starkweather #5H Well Pad Name: Starkweather

3) Farm Name/Surface Owner: Starkweather, Heath & Charmaine Public Road Access: Wetzel County Route 20/1

4) Elevation, current ground: 1,280' Elevation, proposed post-construction: 1,262'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No No

DMH
10-1-14

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target formation is the Marcellus Shale @ 6,903' TVD (-5,627' SS), 50' thick, w/ anticipated pressure of 3,800 to 4,400 psig

8) Proposed Total Vertical Depth: 6,890' TVD @ TD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 13,800' MD @ TD

11) Proposed Horizontal Leg Length: 6,320' from LP and 7,583' from KOP

12) Approximate Fresh Water Strata Depths: Shallowest @ 85' and Deepest @ 1,057'

13) Method to Determine Fresh Water Depths: Depth of bit w/show of fluid at flowline or when drilling soap is injected

14) Approximate Saltwater Depths: 2,302'

15) Approximate Coal Seam Depths: 572', 917', 1,052'

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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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	L/S	94.0	80'	80'	77 - CTS
Fresh Water/Coal	13.375"	New	J55	54.5	1,250'	1,250'	1,141 - CTS
Intermediate 1	9.625"	New	J55	36.0	2,625'	2,625'	Tail 1,065 CTS
Intermediate 2							
Production	5.5"	New	P110	20.0		13,800'	3,110 - TOC @ 2,125'
Tubing	2.375"	New	J55	4.7		6,700'	N/A
Liners							

Note: The Fresh Water/Coal string will be set just above Sea Level. In no instance will the casing be set below Sea Level. This setting depth is necessary due to a rubble zone 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"	0.375"	N/A	Type 1	1.18
Fresh Water/Coal	13.375"	17.5"	0.380"	2,730	HalCem	1.24
Intermediate 1	9.625"	12.25"	0.352"	3,520	HalCem	1.21Tail
Intermediate 2						
Production	5.5"	8.75"	0.361	12,360	VariCem	1.21
Tubing	2.375"	N/A	0.190"	7,700	N/A	N/A
Liners						

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PACKERS

Kind:				
Sizes:				
Depths Set:				

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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 separation and reduce anti-collision concerns. Run gyro and displace with KCI fluid back to surface. RDMO top-hole rig and MIRU horizontal rig. Displace KCI 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 mud-log information is reviewed. All other stages will 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): 11.4

22) Area to be disturbed for well pad only, less access road (acres): 8.0

23) Describe centralizer placement for each casing string:

-Fresh Water/Coal string will use bow spring centralizers with one above guide shoe and then every second joint to surface.
 -Intermediate string will use bow spring centralizers with one being placed above the guide shoe, one above the float collar and one on every third joint to surface. One rigid centralizers be placed as close as possible to the surface.
 -Production string will use left/right rigid spiral centralizers one on every 4th joint from TD to KOP and then one on every third joint from KOP to TOC.

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

-Fresh Water casing will be cemented using "Halcem" cement which is a proprietary blend of Class "A". Additives include up to 2% CaCl₂ and 0.25 lbs/sx of Pol-E-Flake.
 -Intermediate casing will be cemented using "Halcem" cement which is a proprietary blend of Class "A". Additives include up to 2% CaCl₂ and 0.25 lbs/sx of Pol-E-Flake.
 -Production casing will be cemented with VariCem cement which is a proprietary blend.

25) Proposed borehole conditioning procedures:

-Fresh Water/Coal section will be conditioned by circulating air/mist through the drill string at TD for between 30 to 60 minutes until well bore is clear of cuttings.
 -Intermediate section will be conditioned by circulating air/stiff foam through the 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 (minimum of three bottoms up) until shakers are clear of cuttings and the drill string pulls free off of bottom.

*Note: Attach additional sheets as needed.



4710303056

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), 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 & 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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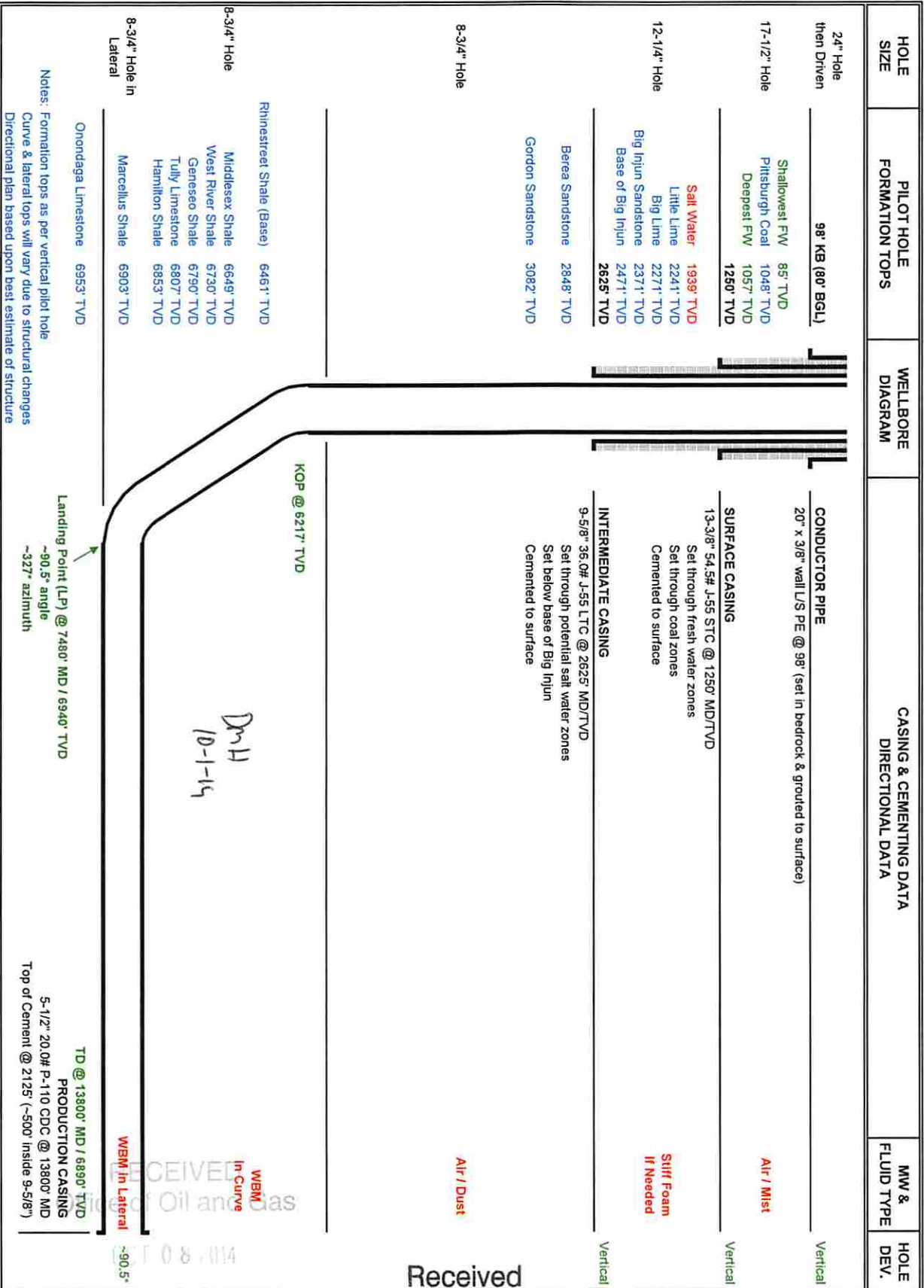
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STONE ENERGY - PROPOSED HORIZONTAL

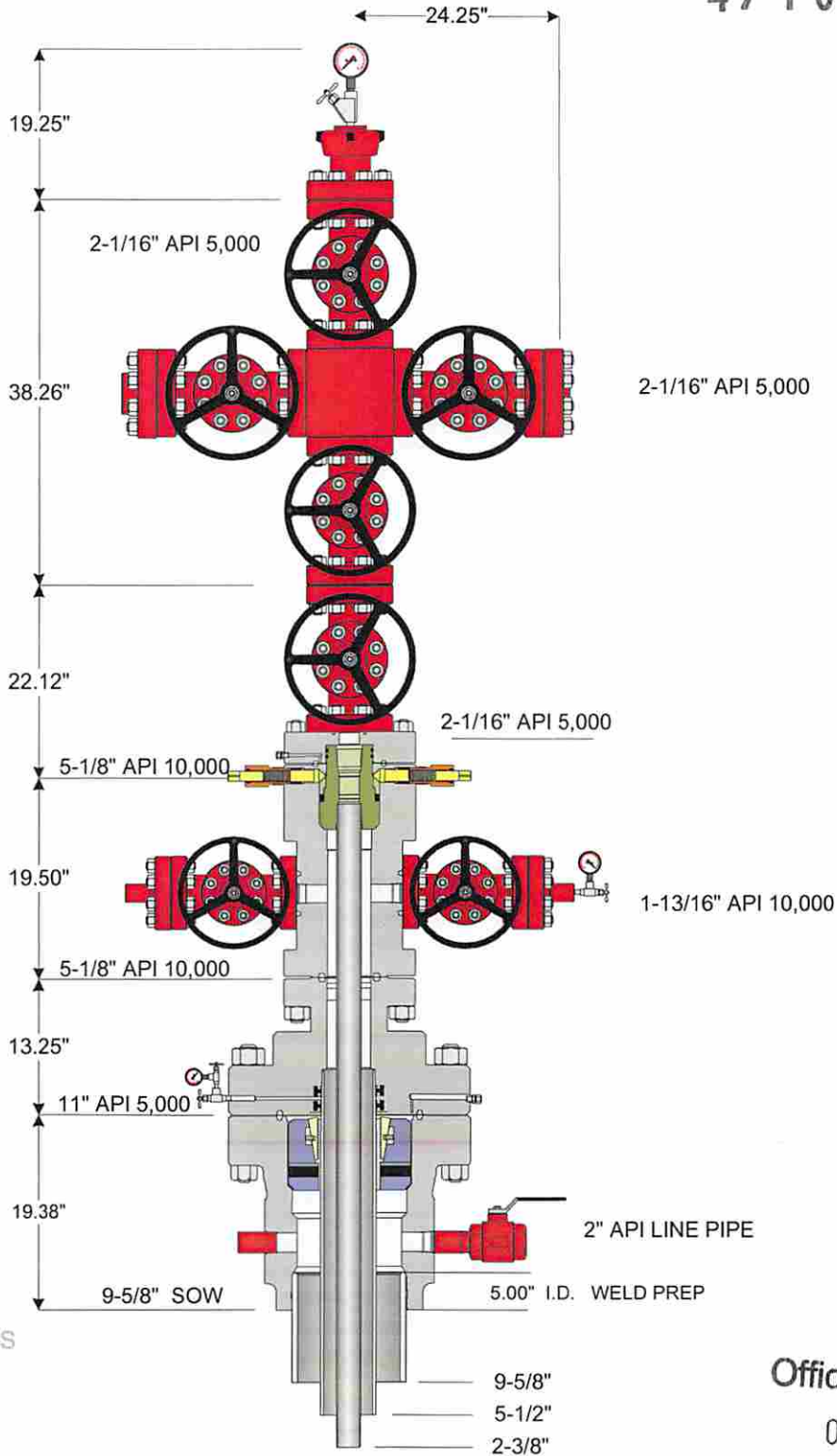
Well: Starkweather #5H
 State: West Virginia
 County: Wetzel
 District: Green
 Prospect: Mary
 Location: Surface: North = 4,380,618 East = 518,194 (UTM NAD 83)
 PBHL: North = 4,382,411 East = 517,080 (UTM NAD 83)
 PTD: 13800' MD / 6890' TVD

Revision: 5-May-2014
 Permit Number: 47-103-
 Permit Issued: 1258'
 Post Construction Ground Elevation: 18'
 Kelly Bushing:
 Rig:
 Spud Date:
 TD Date:
 Rig Release Date:



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

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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 04/24/2015

WW-9
(9/13)

API Number 47 - 103 - **4710303056**
Operator's Well No. Starkweather #5H

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

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FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Stone Energy Corporation OP Code 494490923

Watershed (HUC 10) Fishing Creek Quadrangle Porters Falls

Elevation 1,262' County Wetzel District Green

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: All waste material will be land filled at a permitted facility

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 2D0859721, 34-167-29618, 34-167-29577, 34-121-24086)
- Reuse (at API Number _____ Flow back fluids will be stored and used on additional stimulations)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: A closed loop system will be used for both top hole and horizontal sections

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air, Air/Soap, Brine Water

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

Additives to be used in drilling medium? See attached WW-9 Addendum

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) N/A

-Landfill or offsite name/permit number? Wetzel Co. Sanitary Landfill (SWF-1021/WV109185), Brooke Co. LF (SWPU 14-04-16)

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 *RLC*

Company Official (Typed Name) Roger L. Cutright

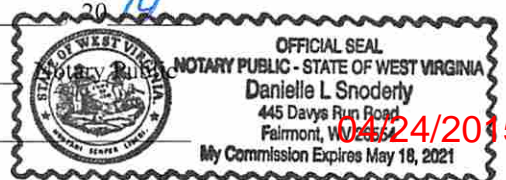
Company Official Title Land Manager/Special Counsel

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Subscribed and sworn before me this 2nd day of October

Danielle L. Snoddy

My commission expires 5/18/2021



4710303056

Form WW-9

Operator's Well No. Starkweather #5H

Stone Energy Corporation

Proposed Revegetation Treatment: Acres Disturbed 11.4 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 TPA + Straw Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Marcellus Mix	100.0	Marcellus Mix	100.0
White or Ladino Clover	10.0	White or Ladino Clover	10.0
Orchard Grass	40.0	Orchard Grass	40.0
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: [Signature]

Comments: _____

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Title: Oil + Gas Inspector

Date: 10-1-14

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Field Reviewed? Yes No

04/24/2015

4710303056



Well Site Safety Plan

Starkweather 5H

Green District, Wetzel County

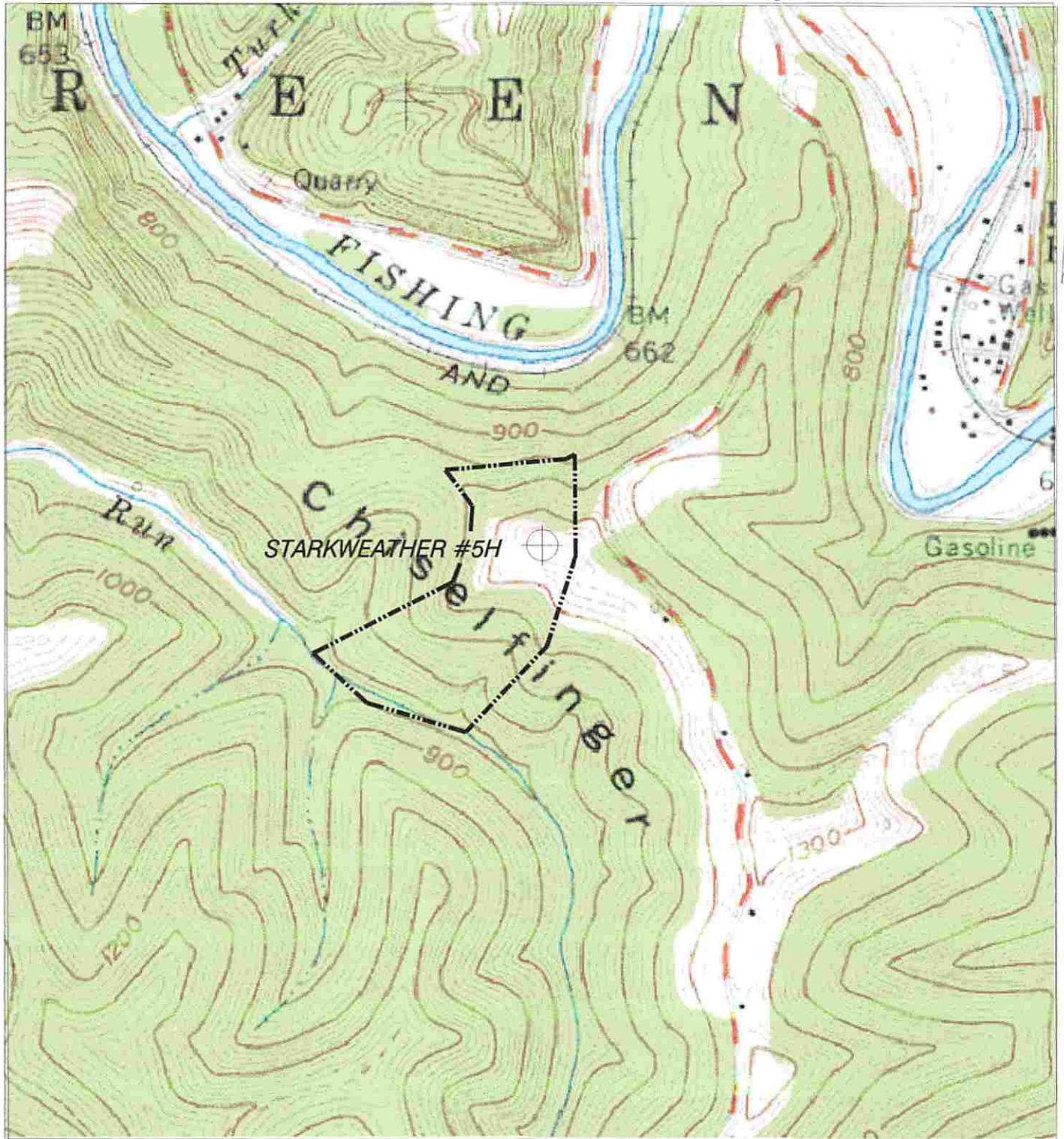
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Stone Energy Corporation
6000 Hampton Center
Suite B
Morgantown, West Virginia 26505
(304)225-1600

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Stone Energy Corporation STARKWEATHER #5H ⁴⁷¹⁰³⁰³⁰⁵⁶



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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

04/24/2015

STARKWEATHER #5H

STARKWEATHER #5H BOTTOM HOLE

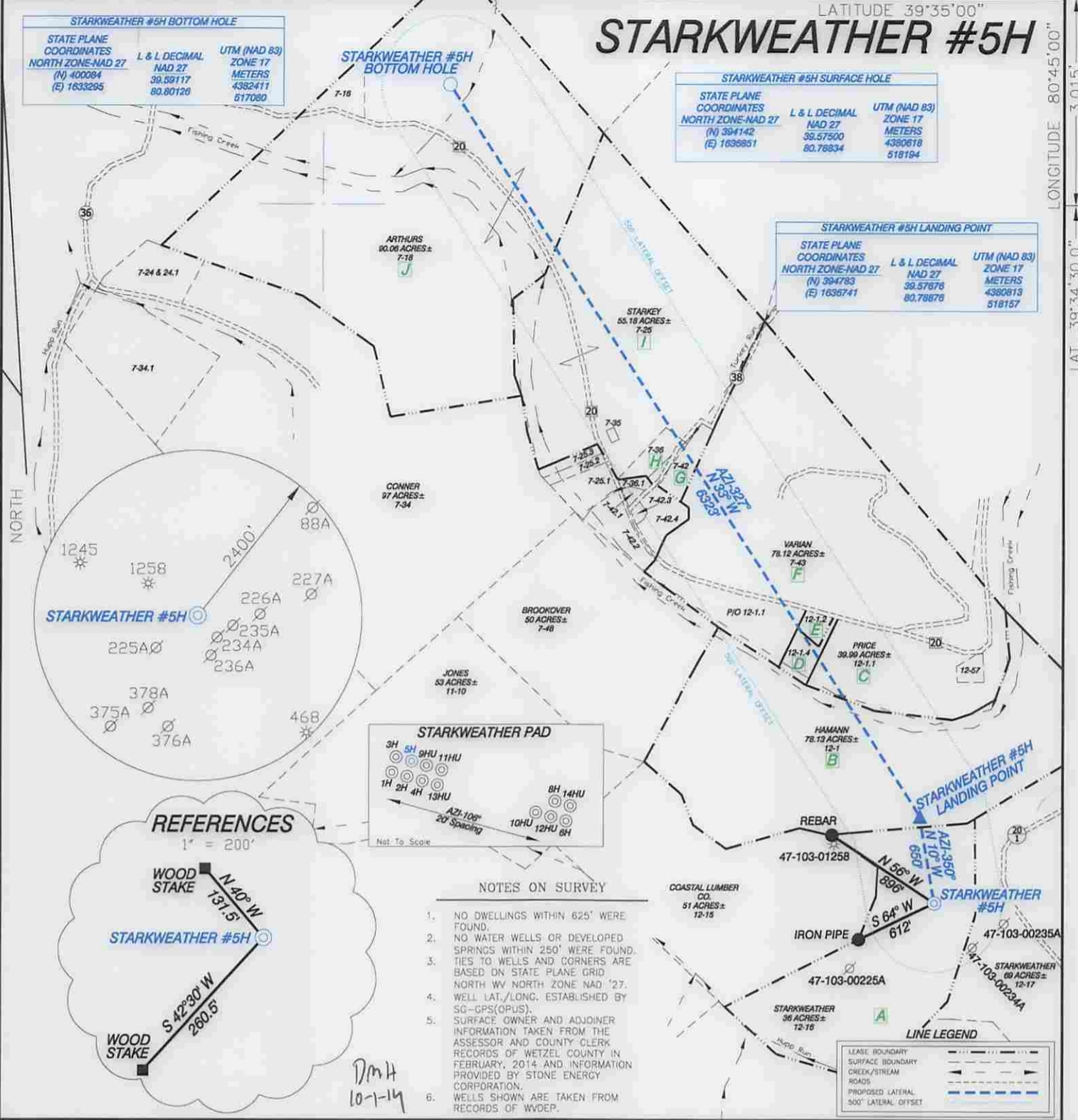
STATE PLANE COORDINATES		
NORTH ZONE-NAD 27	L & L DECIMAL	UTM (NAD 83)
(N) 400084	NAD 27	ZONE 17
(E) 1633295	39.59117	METERS
	80.80120	4382411
		517080

STARKWEATHER #5H SURFACE HOLE

STATE PLANE COORDINATES		
NORTH ZONE-NAD 27	L & L DECIMAL	UTM (NAD 83)
(N) 394142	NAD 27	ZONE 17
(E) 1636851	39.57500	METERS
	80.78834	4380618
		518194

STARKWEATHER #5H LANDING POINT

STATE PLANE COORDINATES		
NORTH ZONE-NAD 27	L & L DECIMAL	UTM (NAD 83)
(N) 394783	NAD 27	ZONE 17
(E) 1636741	39.57676	METERS
	80.78676	4380813
		518157



REFERENCES

1" = 200'



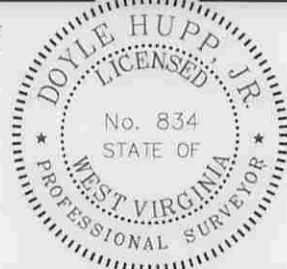
NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH W/ NORTH ZONE NAD '27.
4. WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN FEBRUARY, 2014 AND INFORMATION PROVIDED BY STONE ENERGY CORPORATION.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WDEP.

LINE LEGEND

LEASE BOUNDARY	---
SURFACE BOUNDARY	---
CREEK/STREAM	---
ROADS	---
PROPOSED LATERAL	---
500' LATERAL OFFSET	---

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 AUGUST 18, 20 14

OPERATORS WELL NO. STARKWEATHER #5H

API WELL NO. 47-103-0225A

STATE WV COUNTY PUTNAM PERMIT 0365646A

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. W2173 (BK 59-35)
 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 LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION : ELEVATION 1,280' WATERSHED FISHING CREEK
 DISTRICT GREEN COUNTY WETZEL QUADRANGLE PORTERS FALLS 7.5'

SURFACE OWNER HEATH & CHARMAINE STARKWEATHER ACREAGE 36±
 ROYALTY OWNER HEATH & CHARMAINE STARKWEATHER, et al LEASE ACREAGE 382.30± **04/24/2015**

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 6,890' MD 13,800'

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

**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 List				

**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

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The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

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Well Operator: Stone Energy Corporation
 By: [Signature]
 Its: Land Manager/Special Counsel

Stone Energy
1300 Fort Pierpont Dr. Suite 201
Morgantown WV 26508



September 15, 2014

Office of Oil and Gas
601 57th St., SE
Charleston, WV 25304

RE: TAX MAP 7, PARCEL 18, AND TAX MAP 12, PARCEL 15, LOCATED IN
GREEN DISTRICT, WETZEL COUNTY, WV

To Whom It May Concern:

In an effort to satisfy the requirements of West Virginia Code Chapter 22, Article 6, Section 8(c), Stone now submits this letter as proof of an unrecorded agreement between Stone Energy Corporation ("Stone") and Chesapeake Appalachia, LLC ("Chesapeake") in regard to those certain leases by and between Chesapeake and the following lessors, all of which are subject to a minimum 1/8 royalty:

1) As to Tax Map 7, Parcel 18:

- a. George M. Arthurs and Lisa K. Arthurs, recorded in Lease Book 100A, at page 295;
- b. George Neason Myers, recorded in Lease Book 101A, at page 51;
- c. Delberta Mae Myers Shade Lowe, recorded in Lease Book 101A, at page 48;
- d. Lionel C. Bohrer, recorded in Lease Book 100A, at page 884;
- e. Roland F. Bohrer and Betty J. Bohrer, recorded in Lease Book 100A, at page 928;
- f. Duane A. Bohrer and Kathleen J. Bohrer, recorded in Lease Book 100A, at page 931;
- g. Patricia L. Metts, recorded in Lease Book 100A, page 934; and
- h. Sandra K. Nixon, recorded in Lease Book 101A, at page 979.

2) As to Tax Map 12, Parcel 15:

- a. BRC Working Interest Company, assignment recorded in Lease Book 103A, at page 470.

All of the aforementioned leases are of record in the County Clerk's Office of Wetzel County, West Virginia.

Respectfully Submitted,

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Office of Oil & Gas

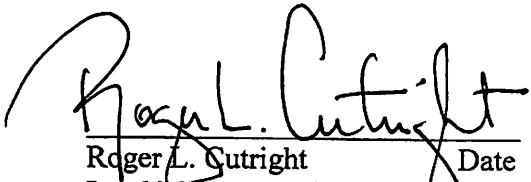
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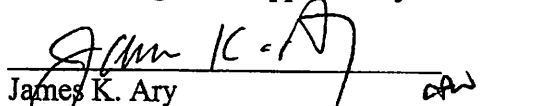
WV Department of
Environmental Protection

04/24/2015



Roger L. Cutright Date
Land Manager and Special Counsel
Stone Energy Corporation
cutrightrl@stoneenergy.com
304-225-1789 (Direct)

Acknowledged and approved by:


James K. Ary
Vice President - Land ASW
Chesapeake Energy Corporation, Manager

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**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6, Section 8(d)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page	Map/Parcel	Code
Charmaine Starkweath, et ux	Stone Energy Corporation	1/8	135A/13	5-12-16	A
Stone Energy	Stone Energy Corporation	1/8	150A/324	5-12-1	B
Stone Energy	Stone Energy Corporation	1/8	150A/324	5-12-1.1	C
Stone Energy	Stone Energy Corporation	1/8	150A/324	5-12-1.4	D
Stone Energy	Stone Energy Corporation	1/8	150A/324	5-12-1.2	E
Stone Energy	Stone Energy Corporation	1/8	150A/324	5-7-43	F
Stanley Pittman	Stone Energy Corporation	1/8	152A/292	5-7-42	G
William Kocher	Stone Energy Corporation	1/8	152A/586	5-7-42	G
Roy W. & Carla J. Harrison	Stone Energy Corporation	1/8	125A/218	5-7-36	H
Stone Energy Corp	Stone Energy Corporation	1/8	437/760	5-7-36	H
William Clair Kocher	Stone Energy Corporation	1/8	152A/586	5-7-36	H
Stanley Dale Pittman	Stone Energy Corporation	1/8	152A/292	5-7-36	H
Larry Cochran	Stone Energy Corporation	1/8	153A/788	5-7-36	H
Cora George	Stone Energy Corporation	1/8	149A/562	5-7-36	H
Lloyd Arnold Cochran	Stone Energy Corporation	1/8	150A/256	5-7-36	H
Beulah Idell Akers	Stone Energy Corporation	1/8	150A/252	5-7-36	H
Patty Gaye Barcus	Stone Energy Corporation	1/8	150A/236	5-7-36	H
Ruth Ellen Clark	Stone Energy Corporation	1/8	153A/792	5-7-36	H
Mary Elizabeth Clark Simer	Stone Energy Corporation	1/8	153A/768	5-7-36	H
Stone Energy Corp	Stone Energy Corporation	1/8	439/437	5-7-25	I
Stone Energy Corp	Stone Energy Corporation	1/8	437/760	5-7-25	I
Ella Smith	Stone Energy Corporation	1/8	140A/941	5-7-25	I
George Moore	Stone Energy Corporation	1/8	140A/943	5-7-25	I
Jean Y Newman	Stone Energy Corporation	1/8	140A/945	5-7-25	I
Dorothy M. Adams	Stone Energy Corporation	1/8	140A/949	5-7-25	I
Donald E. Mearns	Stone Energy Corporation	1/8	140A/947	5-7-25	I
Margaret Bonner	Stone Energy Corporation	1/8	145A/423	5-7-25	I
Estelle May Moses	Stone Energy Corporation	1/8	141A/761	5-7-25	I
Chesapeake Appalachia, LLC	Stone Energy Corporation	1/8	Unrecorded Assignment	5-7-18	J

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:

Well Operator Stone Energy Corporation
 By [Signature]
 Title Land Manager/Special Counsel

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MEMORANDUM OF LEASE

This Memorandum of Lease is made and entered into on the 2 day of June, 2014, by and between William C. Schamp, as Lessor, and Stone Energy Corporation, 625 East Kaliste Saloom Road Lafayette, LA 70508, c/o Land Department, a Delaware corporation licensed to do business in West Virginia as a foreign corporation, as Lessee.

Whereas, by that Oil and Gas Lease dated June 2, 2014, Lessor agreed to lease to Lessee and Lessee agreed to lease from Lessor certain oil and gas rights in that certain parcel or tract of land situate in Green District, Wetzel County, West Virginia, containing 97 acres, more or less, and being part of Map 7, Parcel(s) 34 and also the same real property interest and estate that was conveyed to Lessor by that certain _____ Book dated the _____ day of _____, _____ and placed of record in the Clerk's Office of Wetzel County, West Virginia in _____ Book _____, at page _____ provided however that such description was intended to include all strips, tracts or parcels of land now owned or hereafter acquired by Lessor that are contiguous or adjacent to the lands described above, and all interests in the lands described above now owned or hereafter acquired by Lessor. ("Leased Property").

Whereas, the Lease shall remain in force for a primary term of five (5) years from the 2 day of June, 2014 and as long thereafter as either Oil and Gas are produced in paying quantities from the Leased Property or property unitized therewith.

Now, Therefore, Witnesseth: That in accordance with and pursuant to the provisions of West Virginia Code § 40-1-8, as in effect as of the date of this Memorandum, Lessor and Lessee hereby set forth the following information with respect to that certain Lease Agreement entered into and made by and between Lessor and Lessee:

- 1. LESSOR: William C. Schamp
- 2. LESSEE: Stone Energy Corporation
- 3. LESSOR'S ADDRESS: 1935 Brandon Road, Jeffersonville PA 19403
- 4. LESSEE'S ADDRESS: c/o Land Department, 625 East Kaliste Saloom Road, Lafayette, LA 70508
- 5. LEASE AGREEMENT EXECUTION DATE: June 2, 2014
- 6. LEASE TERM:
 - (a) COMMENCEMENT DATE: June 2, 2014
 - (b) TERMINATION DATE: June 2, 2019 unless either Oil and Gas are produced in paying quantities from the Leased Property or property unitized therewith.
 - (c) EXTENSION PERIOD OPTION: [yes/no]; if yes: no
 - (i) [date extension period may be exercised];
 - (ii) [term of extension];
 - (iii) [maximum date of extensions]; or
 - (iv) [number of extension periods].

IN WITNESS WHEREOF, Lessor and Lessee have caused this Memorandum to be executed and effective as of the date first set forth above.

Office of Oil and Gas

[Signature Page Follows]

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LESSOR

By: William C. Schamp
William C. Schamp

LESSEE

Stone Energy Corporation
a Delaware Corporation

By: RLC
Roger L Cutright
Its: Land Manager/Special Counsel

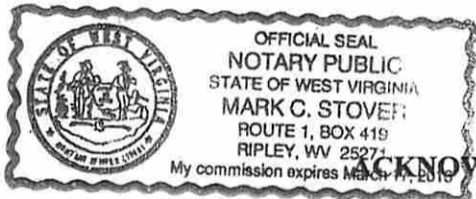
ACKNOWLEDGMENT BY LESSOR

STATE OF West Virginia,
COUNTY OF Wetzel, TO-WIT:

The foregoing instrument was acknowledged before me this the 2nd day of June, 2014, by William C. Schamp, in his/her individual capacity, as the act and deed of such individual.

{SEAL}

Mark C. Stover
Notary Public
My Commission expires: 3/19/2016



ACKNOWLEDGMENT BY LESSEE

STATE OF WEST VIRGINIA,
COUNTY OF MONONGALIA, TO-WIT:

The foregoing instrument was acknowledged before me this 25th day of August, 2014 by ~~Timothy P. McGregor~~, Land Coordinator, on behalf of Stone Energy Corporation, a Delaware corporation. Roger Cutright Manager

{SEAL}

Kathy J. Stamper
Notary Public
My commission expires: 5-18-2021



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This instrument was prepared by:
Stone Energy Corporation
6000 Hampton Center, Ste. B
Morgantown, WV 26505

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WV Department of
Environmental Protection

04/24/2015



1300 Fort Pierpont Dr., Suite 201
Morgantown, WV 26508
Telephone: (304) 225-1600

October 2, 2014

Laura Cooper
West Virginia Department of Environmental Protection
Office of Oil & Gas
601 57th Street SE
Charleston, West Virginia 25304

RE: Proposed Starkweather #5H Wetzel Co.
Well work permit application
This is an additional permit for this unit that is currently under construction in Wetzel County.

Dear Laura:

You will see that we are crossing under routes 38 & 20.

The lessors for tracts 7-36, 7-42, 7-43, 12-1.1 & 12-1.2 are leased to Stone Energy; which are shown on the WW6A1 form. These lessors own the minerals under these tracts under routes 38 & 20.

If you require any additional information, please do not hesitate to contact myself or Danielle Snoderly.

Thank you for your assistance.

Sincerely,

Roger L. Cutright
Land Manager/Special Counsel
Stone Energy Corporation
(304) 225-1789
CutrightRL@StoneEnergy.com

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

Date of Notice Certification: 10/02/2014

API No. 47- 103 - _____

Operator's Well No. Starkweather #5H

Well Pad Name: Starkweather

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>WV</u>	UTM NAD 83 Easting: <u>518,194</u>
County: <u>Wetzel</u>	UTM NAD 83 Northing: <u>4,380,618</u>
District: <u>Green</u>	Public Road Access: <u>Wetzel County Route 20/1</u>
Quadrangle: <u>Porters Falls</u>	Generally used farm name: <u>Starkweather, Heath & Charmaine</u>
Watershed: <u>Fishing 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 checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</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>
<p>Received Office of Oil & Gas OCT 29 2014</p>	

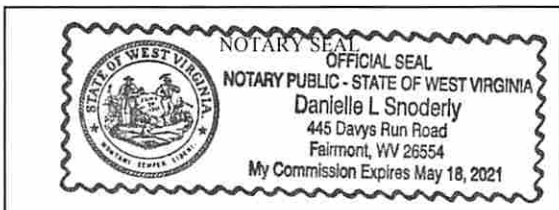
Required Attachments:

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

Certification of Notice is hereby given:

THEREFORE, I Roger L. Cutright, 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>Stone Energy Corporation</u>	Address:	<u>1300 Fort Pierpont Dr. - Suite 201</u>
By:	<u><i>RL</i></u>		<u>Morgantown, WV 26508</u>
Its:	<u>Land Manager/Special Counsel</u>	Facsimile:	<u>337-521-9911</u>
Telephone:	<u>304-225-1600</u>	Email:	<u>CutrightRL@StoneEnergy.com</u>



Subscribed and sworn before me this 2nd day of October 2014.
Danielle L. Snoderly Notary Public
 My Commission Expires 5/18/2021

Oil and Gas Privacy Notice:

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

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

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

Date of Notice: 10/2/2014 Date Permit Application Filed: 10/3/2014

Notice of:

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

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

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

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

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

SURFACE OWNER(s)

Name: Heath & Charmaine Starkweather
Address: 4301 Cassell Blvd.
Prince Fredrick, MD 20678

Name: _____
Address: _____

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

Name: Heath & Charmaine Starkweather
Address: 4301 Cassell Blvd.
Prince Fredrick, MD 20678

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: un-declared
Address: _____

COAL OPERATOR

Name: _____
Address: _____

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

Name: See Attached List
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary

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Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, on or before December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work with the Secretary at:

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

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Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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04/24/2015

WW-6A
(8-13)

API NO. 47- 103 -
OPERATOR WELL NO. Starkweather #5H
Well Pad Name: Starkweather

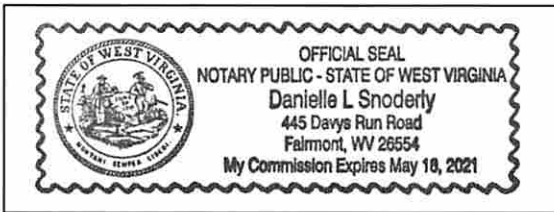
Notice is hereby given by:

Well Operator: Stone Energy Corporation
Telephone: 304-225-1600
Email: CutrightRL@StoneEnergy.com

Address: 1300 Fort Pierpont Dr. - Suite 201
Morgantown, WV 26508
Facsimile: 337-521-9911

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 2nd day of October 2014.
Danielle L. Snoderty Notary Public
My Commission Expires 5/18/2021

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Mailings of Applications to Surface/Mineral owners and Water Purveyors:

Heath & Charmaine Starkweather
4301 Cassell Blvd. ✓
Prince Frederic, MD 20678

Jerome Staley
RT. 2 Box 184
New Martinsville, WV 26155

Roger & Tina Midcap ✓
RT. 2 Box 184A
New Martinsville, WV 26155

Carson & Carnet Shreve ✓
49848 Calcutta Smith Ferry Rd.
East Liverpool, OH 43920

James & Mary Price ✓
RR 2 Box 173B
New Martinsville, WV 26155

Darrell & Donna Ashenart ✓
RR 2 Box 173A
New Martinsville, WV 26155

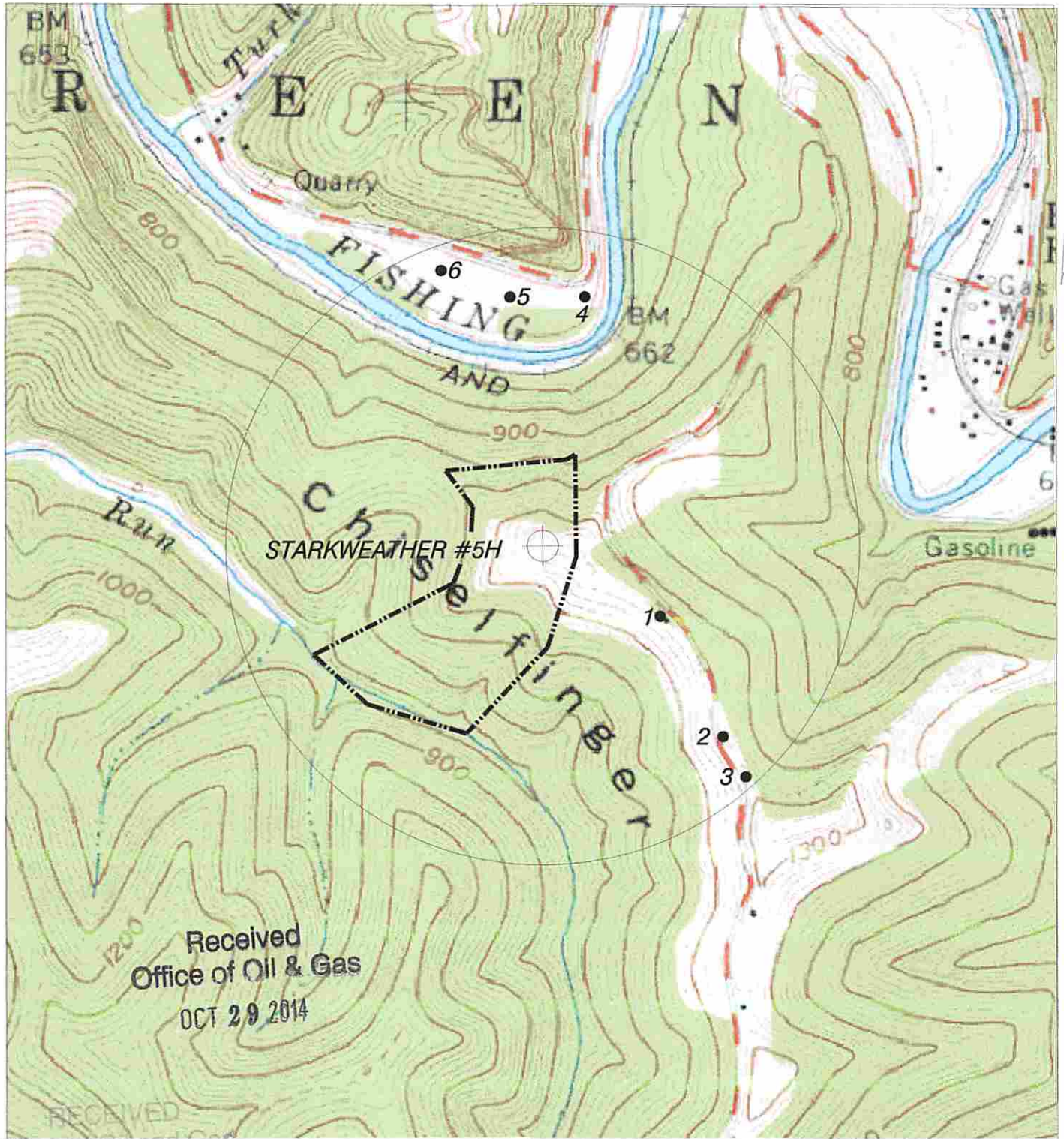
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Stone Energy Corporation STARKWEATHER #5H Water



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DmH
5-7-14

HUPP Surveying & Mapping

1" = 1000'
Porters Falls 7.5'

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

04/24/2015

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

HUPP Surveying & Mapping
P.O. BOX 647
GRANTSVILLE, WV 26147
(304) 354-7035 hupp@frontiernet.net FAX: (304) 354-6548

March 30, 2014

RE: Water Samples for Starkweather #5H

There appears to be six (6) potable water sources within 2,200' of Starkweather #5H, therefore tests should be offered and samples taken as required.

1. Charmaine Starkweather, et al ✓
1301 Cassell Blvd.
Prince Frederic, MD 20678
Tax Map 12 Parcel 17

2. Jerome Staley ✓
Rt. 2 Box 184
New Martinsville, WV 26155
Tax Map 12 Parcels 24 & 25

3. Roger & Tina Midcap ✓
Rt. 2 Box 184A
New Martinsville, WV 26155
Tax Map 12 Parcel 38

4. Carson & Garnet Shreve ✓
49848 Calcutta Smith Ferry Rd.
East Liverpool, OH 43920
Tax Map 12 Parcel 57

5. James & Mary Price ✓
RR 2 Box 173B
New Martinsville, WV 26155
Tax Map 12 Parcel 1.1

6. Darrell & Donna Ashenart ✓
RR 2 Box 173A
New Martinsville, WV 26155
Tax Map 12 Parcels 1.2 & 1.4

DMH
4-8-14

04/24/2015

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

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

Date of Notice: 6/21/2012 **Date of Planned Entry:** 7/3/2012

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

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

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

Notice is hereby provided to:

SURFACE OWNER(s)

Name: Heath & Charmaine Starkweather

Address: 4301 Cassell Blvd.
Prince Fredrick, MD 20678

Name: _____

Address: _____

Name: _____

Address: _____

COAL OWNER OR LESSEE

Name: un-declared

Address: _____

MINERAL OWNER(s)

Name: Heath & Charmaine Starkweather

Address: 4301 Cassell Blvd.
Prince Fredrick, MD 20678

*please attach additional forms if necessary

Received
Office of Oil & Gas
OCT 29 2014

Notice is hereby given:

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

State: <u>WV</u>	Approx. Latitude & Longitude: <u>4,380,618 & 518,194</u>
County: <u>Wetzel</u>	Public Road Access: <u>Wetzel County Route 20/1</u>
District: <u>Green</u>	Watershed: <u>Fishing Creek</u>
Quadrangle: <u>Porters Falls</u>	Generally used farm name: <u>Starkweather, Heath & Charmaine</u>

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

Notice is hereby given by:

Well Operator: Stone Energy Corporation

Telephone: 304-225-1600

Email: CutrightIRL@StoneEnergy.com

Address: 1300 Fort Pierpont Dr. - Suite 201
Morgantown, WV 26508

Facsimile: 337-521-9911

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Oil and Gas Privacy Notice:

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

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

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

Date of Notice: 10/02/2014 **Date Permit Application Filed:** 10/03/2014

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

- CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED 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: Heath & Charmaine Starkweather

Name: _____

Address: 4301 Cassell Blvd.
Prince Fredrick, MD 20678

Address: _____

Notice is hereby given:

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

State: <u>WV</u>	UTM NAD 83 Easting: <u>518,194</u>
County: <u>Wetzel</u>	UTM NAD 83 Northing: <u>4,380,618</u>
District: <u>Green</u>	Public Road Access: <u>Wetzel County Route 20/1</u>
Quadrangle: <u>Porters Falls</u>	Generally used farm name: <u>Starkweather, Heath & Charmaine</u>
Watershed: <u>Fishing Creek</u>	

This Notice Shall Include:

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

Well Operator: Stone Energy Corporation
Telephone: 304-225-1600
Email: CutrightRL@StoneEnergy.com

Address: 1300 Fort Pierpont Dr. - Suite 201
Morgantown, WV 26508
Facsimile: 337-521-9911

Oil and Gas Privacy Notice:

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

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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

February 18, 2015

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

Subject: DOH Permit for the Starkweather Pad, Wetzel County

Starkweather 1H	Starkweather 2H	Starkweather 3H	Starkweather 4H
Starkweather 5H	Starkweather 6H	Starkweather 7H	Starkweather 8H

Dear Mr. Martin,

This well site will be accessed from an encroachment permit #06-2014-0318 issued to Stone Energy Corporation for access to the State Road for a well site located off of Wetzel County Route 20/1 SLS.

The operator has signed a STATEWIDE 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: Tim McGregor
Stone Energy Corporation
CH, OM, D-6
File



STONE ENERGY CORPORATION

Addendum for

Planned Additives to be Used in Fracturing or Stimulations

Listed below are the chemicals used in addition to water and sand (CAS-No 14808-60-7) and their respective quantities for slick water fracturing;

- 0.5 gal/thousand gallons of water – Friction Reducer (CAS-No 7783-20-2)
- 0.25 gal/thousand gallons of water – Bacteria Control (CAS-No 11-30-8)
- 0.25 gal/thousand gallons of water – Clay Stabilizer (CAS- No 75-57-0)
- 0.75 gal/thousand gallons of water – Surfactant (CAS-No Proprietary)
- 0.25 gal/thousand gallons of water – Scale Inhibitor (CAS-No 7601-54-9 & 107-21-1)
- 2000 gal of 15% HCl (CAS-No 7647-01-0) per stage with/ 2 gal/thousand gallons of acid Corrosion Inhibitor (CAS-No 67-56-1, 107-19-7, & Proprietary) and 6 pints/thousand gallons of acid – Iron Stabilizer (CAS-No 6381-77-7)
- A 15 lb. Linear Gel and breaker is sometimes used during a stage but the exact amount is not known until the stimulation is in progress (CAS-No Proprietary & 7727-54-0)

DmH
4-8-14

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04/24/2015

API#10303007

STONE ENERGY



6500 Hensley Center
Morgantown, West Virginia 26505

APPROVED
WVDEP OOG
7/24/2014

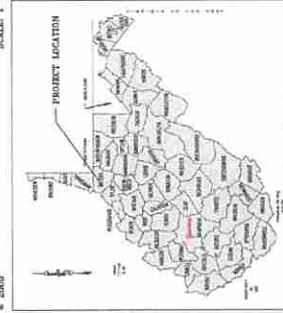
STARKWEATHER PAD 25 SITE

GREEN DISTRICT WETZEL COUNTY, WEST VIRGINIA

JULY 23, 2014
Electronic Version of These Plans May be Viewed at: [OIL GASISAY FILES/REVIEWS](#)



SCALE: 1" = 200'



SCALE: 1" = 1 MILE

DESIGNED BY: [Signature]
DATE: 7/23/14
CHECKED BY: [Signature]
DATE: 7/23/14

REQUIRED INSPECTIONS/APPROVALS BY ENGINEER.

1. CONTRACTOR TO NOTIFY OWNER AT ONE (1) HOUR BEFORE (HATCH-MOTT MACDONALD) 48 HOURS IN ADVANCE OF THE START OF CONSTRUCTION. ALL INSPECTIONS AND APPROVALS ARE PERFORMED BEFORE PROCEEDING TO THE NEXT CONSTRUCTION OPERATIONAL.
2. CLEAR AND UNBIT FINAL INSPECTION.
3. TEST KEY FILLMATERIAL PRIOR TO FILL PLACEMENT.
4. FILL EMBANKMENT PLACEMENT OPERATIONS AND COMPACTION TESTING AT REGULAR INTERVALS.
5. FINAL SLOPE GAUGES PRIOR TO SEEDING AND MULCHING OR STONE PLACEMENT.
6. AS-BUILT INSPECTION AND APPROVAL.
7. RECLAMATION OF THE PAD SITE WILL BE COMPLETED UPON THE INSTALLATION OF ALL PRODUCTION FACILITIES AT THAT TIME. THE LOCATION WILL BE MARKED TO THE EXTENT POSSIBLE WHILE ALLOWING ACCESS TO BOTH THE PAD AND THE ADJACENT AREAS. THE RECLAMATION OF THE PAD SITE WILL BE COMPLETED UPON THE INSTALLATION OF ALL PRODUCTION FACILITIES. THE RECLAMATION OF THE PAD SITE WILL BE COMPLETED UPON THE INSTALLATION OF ALL PRODUCTION FACILITIES. THE RECLAMATION OF THE PAD SITE WILL BE COMPLETED UPON THE INSTALLATION OF ALL PRODUCTION FACILITIES.

TITLE	SHEET NO.
COVER SHEET	1
INDEX SHEET	2
PLAN SHEET	3
ACCESS ROAD PROFILE AND SECTIONS	4
PAD PROFILE AND SECTIONS	5
DETAIL SHEET	6
DETAIL SHEET	7
RECLAMATION SHEET	8



Mark E. Bopp, P.E.
No. 11869
State of West Virginia
1000 Main Street, S.W.
Charleston, WV 25309

1.800.245.4848

ENGINEER — **Hatch Mott MacDonald**
2601 Cranberry Square
Morgantown, WV 26508
T: 304.212.4392 F: 304.594.2814
www.hatchmott.com

