

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47-051-01720 County Marshall District Clay
Quad Glen Easton Pad Name Francis Field/Pool Name _____
Farm name Francis Well Number 13H
Operator (as registered with the OOG) Chevron Appalachia, LLC
Address 800 Mountain View Drive City Smithfield State PA Zip 15478

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4413722.148 Easting 536313.552
Landing Point of Curve Northing 4413472.1 Easting 526359.8
Bottom Hole Northing 4412453.2 Easting 527180.4

Elevation (ft) 1283 GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
None Aqueous Fluid containing weighting agent, fluid loss additive, emulsifier, Viscosity and Rheological Control agent, Oil-Wetting Agent, fluid rheology conditioner

Date permit issued 3/20/2014 Date drilling commenced 4/11/2014 Date drilling ceased 7/27/2014
Date completion activities began 3/3/2015 Date completion activities ceased 7/8/2015
Verbal plugging (Y/N) N Date permission granted _____ Granted by Received

Office of Oil & Gas

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug **JUL 20 2015**

Freshwater depth(s) ft 619 - 648 Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1890' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 105-145', 490-520', 700-840', 1080-1190', 1475-1535', 1640-1660' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No but not sealed

Reviewed by:
[Signature] 8/21/15
10/23/2015

API 47-051 - 01720 Farm name Francis Well number 13H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	36	30	45	New	X-56; 118.6		
Surface	17 1/2	13 3/8	670	New	J-55; 54.50		
Coal							
Intermediate 1	12 1/4	9 5/8	2554	New	L-80; 40		
Intermediate 2							
Intermediate 3							
Production	8 1/2	5 1/2	11439	New	P-110; 20		
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Bulk Cement	Bulk Cement	Bulk Cement	Bulk Cement	Bulk Cement	Surface	8.0
Surface	Class A	712	15.6	1.21	865	Surface	8.0
Coal							
Intermediate 1	Class A	829	15.6	1.25	1037	Surface	8.0
Intermediate 2							
Intermediate 3							
Production	Class A	2146	15.2	1.29	2768	Surface	Well TD'd
Tubing							

Drillers TD (ft) ¹¹⁴⁵⁶ 6614 Loggers TD (ft) ¹¹⁴⁵⁶ _____
 Deepest formation penetrated Marcellus Shale Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) ⁴⁶⁶³ _____

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____
One bow spring centralizer every two ft on the Surface string and intermediate. Two centralizer every ft in the lateral and curve, then one every two ft from KOP to surface

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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS SEE ATTACHED PERFORATION/STIMULATION REPORT

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

API: 47-051-01720	Well Name: Francis	Well Number: 13H
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PERFORATION RECORD					
Stage No.	Perforation Date	Perforated From TMD Ft.	Perforated To TMD Ft.	Number of Perforations	Formation(s)
1	5/7/2015	11297	11135	50	Marcellus
2	5/9/2015	11097	10935	50	Marcellus
3	5/10/2015	10897	10735	50	Marcellus
4	5/10/2015	10697	10535	50	Marcellus
5	5/10/2015	10497	10334	50	Marcellus
6	5/10/2015	10297	10139	50	Marcellus
7	5/10/2015	10101	9935	50	Marcellus
8	5/11/2015	9897	9735	50	Marcellus
9	5/11/2015	9697	9535	50	Marcellus
10	5/11/2015	9497	9335	50	Marcellus
11	5/11/2015	9297	9130	50	Marcellus
12	5/11/2015	9092	8935	50	Marcellus
13	5/11/2015	8897	8735	50	Marcellus
14	5/12/2015	8697	8535	50	Marcellus
15	5/12/2015	8493	8335	50	Marcellus
16	5/12/2015	8297	8135	50	Marcellus
17	5/12/2015	8097	7935	50	Marcellus
18	5/13/2015	7897	7741	50	Marcellus
19	5/13/2015	7690	7535	50	Marcellus
20	5/13/2015	7497	7335	50	Marcellus
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Please insert additional copies of this page if additional rows/stages are needed.

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API: 47-051-01720	Well Name: Francis	Well Number: 13H
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STIMULATION INFORMATION / STAGE								
Complete a separate record for each stimulation stage. (Please insert additional lines for additional stages or additional pages as applicable).								
Stg No.	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	5/7/2015	94	8845	6748	4470	405820	9362	
2	5/9/2015	85.1	8146	6613	5027	403720	10408	
3	5/10/2015	97	8380	7325	4953	402220	9867	
4	5/10/2015	92.4	8542	6985	5161	403220	9572	
5	5/10/2015	94.3	8540	7045	4989	404340	9333	
6	5/10/2015	88.8	8566	6735	5265	406960	9768	
7	5/10/2015	95.1	8784	6943	4733	403380	9758	
8	5/11/2015	97.2	8864	8128	4953	400760	9504	
9	5/11/2015	98.7	8413	5603	5311	400180	10400	
10	5/11/2015	94.4	8352	6576	5472	400920	9751	
11	5/11/2015	57.9	8883	7179	5093	130200	9426	
12	5/11/2015	94.6	8394	6666	5773	400740	10424	
13	5/11/2015	86.6	8809	6396	5332	400220	9430	
14	5/12/2015	60	9236	6133	4852	38820	4699	
15	5/12/2015	97.2	8191	n/a	4827	403720	10543	
16	5/12/2015	93.9	8484	5849	4920	401080	9637	
17	5/12/2015	97.4	8208	6792	5227	401720	9385	
18	5/13/2015	93.9	8280	7757	5126	402200	13649	
19	5/13/2015	88.2	9001	8583	5195	402180	11008	
20	5/13/2015	89.3	8329	7476	4711	403420	9728	
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API 47-051-01720 Farm name Francis Well number 13H

PRODUCING FORMATION(S)	DEPTHS	
	TVD	MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs
 OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY
 Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
Monongahela Group Sand	596	635	596	635	Fresh Water 619'-648'MD 2" stream
Pittsburgh Coal	816	820	816	820	Coal
Big Lime	1860	1940	1860	1940	Limestone: crm-wh, hd, crpxln (Brine @ 1890' 25bbls/hr)
Burgoon (Big Injun)	1940	2130	1938	2128	SS: offwh, wh, cons, clr, trans, lcemt, fg-mg
Weir Sand	2290	2310	2288	2308	SLTST: ltgy-mgy, occ mgy, hrd, vf-fg, tcmt, bio, arg, sl calc
Berea Sand	2525	2550	2522	2547	SS: wh, cr, trans, lly-gy, cns, lcmt, mg-fg, stang-ang, arg, msph, non calc, tr floor, exl fast cut, fh edr, lse pyr
Burket Shale	6392	6416	6636	6685	SH: drkgy, v.drkgy, frm, slty, grty, sbbkly-sbfiss, modcalc, embd calc, lse calct
Tully Limestone	6416	6447	6685	6694	LS: ltgy, gy, mgy, frm-hrd, dns, cln, mic-fxln, v. arg
Hamilton Shale	6447	6527	6694	6967	SH: drkgy, v.drkgy, frm, slty, grty, sbbkly-sbfiss, carb, modv. calc, lse calct, w/LS
Marcellus Shale	6527		6967		SH: drkgy, v.drkgy, frm, slty, grty, sbbkly-sbfiss, non calc, lse calct, lse pyr, w/LS gy, lly, hrd, molt, mic, fxln, v. arg

Please insert additional pages as applicable.

Drilling Contractor SEE ATTACHED
 Address _____ City _____ State _____ Zip _____

Logging Company Stratagraph NE Inc
 Address 116 Ellsworth Avenue City Marietta State OH Zip 45750

Cementing Company SEE ATTACHED
 Address _____ City _____ State _____ Zip _____

Stimulating Company Schlumberger Technology Corp
 Address Two Robinson Plaza, Suite 200 City Pittsburgh State PA Zip 15205

Please insert additional pages as applicable.

Completed by Jackie M. Scholar Telephone 724-564-3721
 Signature [Signature] Title Regulatory Compliance Team Lead Date 7/15/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API: 47-051-01720	Well Name: Francis	Well Number: 13H
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DRILLING CONTRACTORS			
Driller	Driller	Driller	Driller
Name Rocky Mountain Drilling	Name Highlands Drilling LLC	Name Nabors Drilling USA	Name
Address 185 North Vernal Avenue, Suite 2	Address 900 Virginia Street East	Address 10100 NW 10th Street	Address
City - State - Zip Vernal, UT 84078	City - State - Zip Charleston, WV 25301	City - State - Zip Oklahoma City, OK 73127	City - State - Zip

API: 47-051-01720	Well Name: Francis	Well Number: 13H
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CEMENTING CONTRACTORS			
Name	Name	Name	Name
Schlumberger Technology Corp	Baker Hughes		
Address Two Robinson Plaza, Suite 2	Address 5373 West Alabama, Suite 300	Address	Address
City - State - Zip Pittsburgh, PA 15205	City - State - Zip Houston, TX 77056	City - State - Zip	City - State - Zip

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/7/2015
Job End Date:	5/13/2015
State:	West Virginia
County:	Marshall
API Number:	47-051-01720-00-00
Operator Name:	Chevron USA Inc.
Well Name and Number:	Francis 13H
Longitude:	-80.69232766
Latitude:	39.87300148
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,614
Total Base Water Volume (gal):	8,217,393
Total Base Non Water Volume:	

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Base Fluid	Chevron	Carrier/Base Fluid	Water (including Mix Water Supplied by Client)	7732-18-5	100.00000	89.91038	
Proppant	Schlumberger	Proppant	Crystalline Silica	14808-60-7	100.00000	9.87947	
J580	Schlumberger	Gelling Agent	Carbohydrate Polymer	Proprietary	100.00000	0.08611	
7.5% Acid	Schlumberger	Perf Cleanup	Hydrochloric Acid	7647-01-0	8.00000	0.00975	
J609W	Schlumberger	Friction Reducer	Ammonium Sulfate	7783-20-2	30.00000	0.00321	
J134	Schlumberger	Gel Breaker	Urea	57-13-6	5.00000	0.00053	
M300	BASF Corporation	Bioocide	Hemicellulase enzyme	9012-54-8	100.00000	0.00343	
J042	Schlumberger	Iron Chelating Agent	Water	7732-18-5	75.00000	0.00173	
			Glutaral	111-30-8	25.00000	0.00058	
			Tetrasodium ethylenediaminetetraacetate	84-02-8	60.00000	0.00170	

51-01720



Amended labels

51-01720

			Trisodium nitrilotriacetate (impurity)	5064-31-3		10.00000	0.00028	
			Sodium hydroxide	1310-73-2		5.00000	0.00014	
1058	Schlumberger	Iron Stabilizer	Sodium erythorbate	6381-77-7		100.00000	0.00059	
3317	Schlumberger	Scale Inhibitor	Ethane-1,2-diol	107-21-1		5.00000	0.00011	
			Trisodium ortho phosphate	7601-54-9		5.00000	0.00011	
A264	Schlumberger	Corrosion Inhibitor	Methanol	67-58-1		40.00000	0.00004	
			Aliphatic acids	Proprietary		30.00000	0.00003	
			Aliphatic alcohols, ethoxylated #1	Proprietary		30.00000	0.00003	
			Prop-2-yn-1-ol	107-19-7		10.00000	0.00001	

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

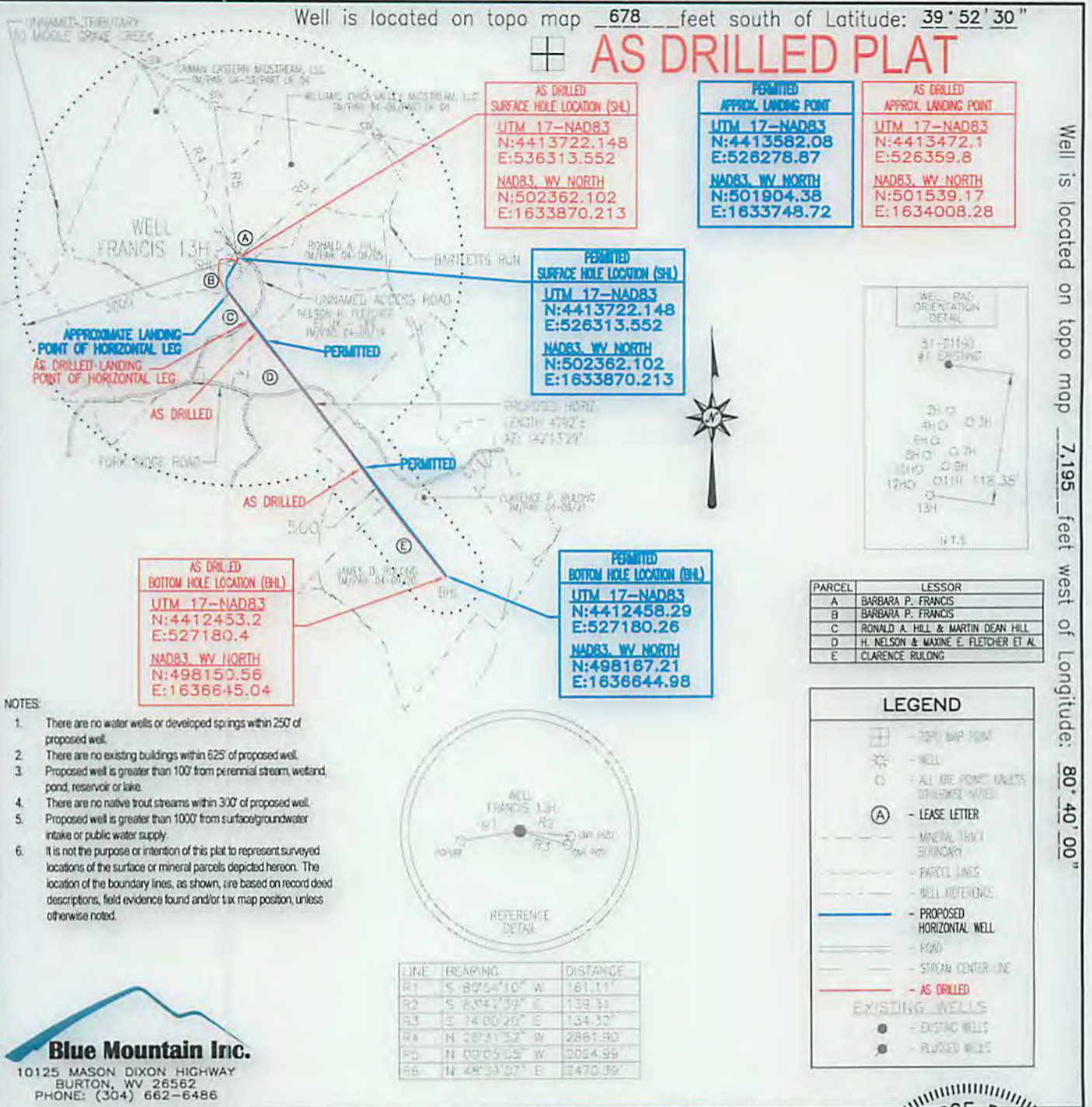
Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

Well is located on topo map 678 feet south of Latitude: 39° 52' 30"

AS DRILLED PLAT

Well is located on topo map 7,195 feet west of Longitude: 80° 40' 00"



AS DRILLED SURFACE HOLE LOCATION (SHL)
 UTM 17-NAD83
 N:4413722.148
 E:536313.552
 NAD83, WV NORTH
 N:502362.102
 E:1633870.213

PERMITTED APPROX. LANDING POINT
 UTM 17-NAD83
 N:4413582.08
 E:526278.87
 NAD83, WV NORTH
 N:501904.38
 E:1633748.72

AS DRILLED APPROX. LANDING POINT
 UTM 17-NAD83
 N:4413472.1
 E:526359.8
 NAD83, WV NORTH
 N:501539.17
 E:1634008.28

PERMITTED SURFACE HOLE LOCATION (SHL)
 UTM 17-NAD83
 N:4413722.148
 E:526313.552
 NAD83, WV NORTH
 N:502362.102
 E:1633870.213

PERMITTED BOTTOM HOLE LOCATION (BHL)
 UTM 17-NAD83
 N:4412458.29
 E:527180.26
 NAD83, WV NORTH
 N:498167.21
 E:1638644.98

AS DRILLED BOTTOM HOLE LOCATION (BHL)
 UTM 17-NAD83
 N:4412453.2
 E:527180.4
 NAD83, WV NORTH
 N:498150.56
 E:1636645.04

PARCEL	LESSOR
A	BARBARA P. FRANCIS
B	BARBARA P. FRANCIS
C	RONALD A. HILL & MARTIN DEAN HILL
D	H. NELSON & MAXINE E. FLETCHER ET AL
E	CLARENCE RULONG

LEGEND

- - 30' MAP POINT
- - WELL
- - ALL ARE POINT VALUETS OTHERWISE NOTED
- Ⓐ - LEASE LETTER
- - MINERAL TRACT BOUNDARY
- - PARCEL LINES
- - WELL REFERENCE
- - ROAD
- - STREAM CENTER LINE
- - AS DRILLED
- - EXISTING WELLS
- - PLUGGED WELLS

- NOTES**
- There are no water wells or developed springs within 250' of proposed well.
 - There are no existing buildings within 625' of proposed well.
 - Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
 - There are no native trout streams within 300' of proposed well.
 - Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
 - It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.



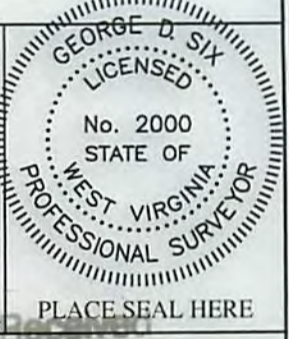
LINE	BEARING	DISTANCE
R1	S 80°54'10" W	161.11'
R2	S 63°42'39" E	139.31'
R3	S 74°00'20" E	134.32'
R4	N 76°51'32" W	2881.90'
R5	N 02°03'05" W	2024.95'
R6	N 48°33'07" E	2470.39'

Blue Mountain Inc.
 10125 MASON DIXON HIGHWAY
 BURTON, WV 26562
 PHONE: (304) 662-6486

FILE #: FRANCIS 13H-AS DRILLED
 DRAWING #: FRANCIS 13H-AS DRILLED
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/2500
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

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

Signed: *George D. Six*
 R.P.E.: _____ L.L.S.: P.S. No. 2000



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

DATE: JUNE 23, 2015
 OPERATOR'S WELL #: FRANCIS 13H-AS DRILLED
 API WELL #: 47 51 01720
 STATE COUNTY PERMIT

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

WATERSHED: MIDDLE GRAVE CREEK ELEVATION: 1260.40'
 COUNTY/DISTRICT: MARSHALL / CLAY QUADRANGLE: GLEN EASTON, WV 7.5'
 SURFACE OWNER: WILLIAMS OHIO VALLEY MIDSTREAM, LLC ACREAGE: 70.41±
 OIL & GAS ROYALTY OWNER: BARBARA P. FRANCIS ACREAGE: 535.852±

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,512± TMD: 11,764±
 WELL OPERATOR: CHEVRON APPALACHIA, LLC DESIGNATED AGENT: KENNETH E. TAWNEY
 Address: 800 MOUNTAIN VIEW DRIVE Address: 500 LEE STREET, EAST SUITE 1600
 City: SMITHFIELD State: PA Zip Code: 15478 City: CHARLESTON State: WV Zip Code: 25301-3202

10/23/2015