

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

API 47 - 051 - 01714 County Marshall District Clay
Quad Glen Easton Pad Name Francis Field/Pool Name _____
Farm name Francis Well Number 7H
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 4413734.3 Easting 526320.0
Landing Point of Curve Northing 4413684.2 Easting 526981.5
Bottom Hole Northing 4412804.6 Easting 527685.4

Elevation (ft) 1383 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

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Date permit issued 3/20/2014 Date drilling commenced 4/14/2014 Date drilling ceased 11/5/2014
Date completion activities began 3/3/2015 Date completion activities ceased 7/21/2015
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

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

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', 1475-1585', 1640-1660' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No but not sealed

Reviewed by:
JL 8/21/15 E
08/21/2015

API 47- 051 - 01714 Farm name Francis Well number 7H

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	652	New	J-55; 54.50		
Coal							
Intermediate 1	12-1/4	9-5/8	2653	New	L-80; 40		
Intermediate 2							
Intermediate 3							
Production	8-1/2	5-1/2	12030	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	681	15.6	1.21	837	Surface	8.0
Coal							
Intermediate 1	Class	947	15.6	1.18	1117	Surface	8.0
Intermediate 2							
Intermediate 3							
Production	Class A	2358	15.2	1.25	2942	Surface	Well TD'd
Tubing							

Drillers TD (ft) 12083 Loggers TD (ft) 12083
 Deepest formation penetrated Marcellus Shale Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5308

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

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No
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DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____
One bow spring centralizer every two jts on the Surface string and intermediate. Two centralizer every jt in the lateral and curve, then one every two jts from KOP to surface

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 - 01714 Farm name Francis Well number 7H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
		SEE ATTACHED			

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations 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)
			SEE ATTACHED					

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Please insert additional pages as applicable.

API: 47-051-01714	Well Name: Francis	Well Number: 7H
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PERFORATION RECORD					
Stage No.	Perforation Date	Perforated From TMD Ft.	Perforated To TMD Ft.	Number of Perforations	Formation(s)
1	5/14/2015	11998	11836	50	Marcellus
2	5/14/2015	11798	11636	50	Marcellus
3	5/15/2015	11590	11436	50	Marcellus
4	5/15/2015	11398	11236	50	Marcellus
5	5/15/2015	11198	11033	50	Marcellus
6	5/16/2015	10998	10836	50	Marcellus
7	5/16/2015	10798	10641	50	Marcellus
8	5/16/2015	10600	10436	50	Marcellus
9	5/17/2015	10398	10236	50	Marcellus
10	5/17/2015	10198	10036	50	Marcellus
11	5/18/2015	9998	9836	50	Marcellus
12	5/18/2015	9798	9636	50	Marcellus
13	5/18/2015	9598	9436	50	Marcellus
14	5/19/2015	9398	9233	50	Marcellus
15	5/19/2015	9193	9038	50	Marcellus
16	5/19/2015	8998	8836	50	Marcellus
17	5/20/2015	8798	8636	50	Marcellus
18	5/20/2015	8598	8436	50	Marcellus
19	5/20/2015	8398	8236	50	Marcellus
20	5/21/2015	8198	8036	50	Marcellus
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Please insert additional copies of this page if additional rows/stages are needed.

API: 47-051-01714	Well Name: Francis	Well Number: 7H
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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	5/14/2015	28.4	9184	9096	4231	2680	3218	
2	5/14/2015	98	8631	9247	4437	348320	10912	
3	5/15/2015	93.5	8463	7112	4851	392520	11156	
4	5/15/2015	96.6	8728	6751	4953	402940	11794	
5	5/15/2015	99.7	8076	6334	5265	404480	11324	
6	5/16/2015	55.7	9505	6541	6127	8000	4071	
7	5/16/2015	98.4	8428	n/a	4816	260640	10332	
8	5/16/2015	94.6	8724	7126	5125	404360	12191	
9	5/17/2015	96.3	8249	6197	4644	352260	12042	
10	5/17/2015	97.8	8132	6369	4953	399500	10651	
11	5/18/2015	98.3	7634	6369	4953	402440	11108	
12	5/18/2015	94.7	8342	6092	5193	405420	11993	
13	5/18/2015	97	8087	6611	4851	408240	11196	
14	5/19/2015	99.3	8022	6334	5125	400180	10973	
15	5/19/2015	97.6	8100	6506	5230	406720	10481	
16	5/19/2015	99.7	7903	6818	5335	370260	10279	
17	5/20/2015	52.3	9186	6783	--	5945	5275	
18	5/20/2015	99.3	7742	--	4663	405655	12858	
19	5/20/2015	96.9	8104	5920	5023	409860	10486	
20	5/21/2015	97.3	8165	6748	4954	402100	10610	
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API 47-051-01714 Farm name Francis Well number 7H

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' 25bbbls/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, clr, trans, ltgy-gy, cns, lcmt, mg-fg, sbang-ang, arg, msph, non calc, tr flor, exl fast cut, fnt odr, lse pyr
Burket Shale	6391	6410	7124	7177	SH: drkgy, v.drkgy, frm, slty, grty, sbblky-sbfiss, modcalc, embd calc, lse calct
Tully Limestone	6410	6446	7177	7284	LS: ltgy, gy, mgy, frm-hrd, dns, cln, mic-fxln, v. arg
Hamilton Shale	6446	6530	7284	7641	SH: drkgy, v.drkgy, frm, slty, grty, sbblky-sbfiss, carb, modv. calc, lse calct, w/LS
Marcellus Shale	6530		7641		SH: drkgy, v.drkgy, frm, slty, grty, sbblky-sbfiss, non calc, lse calct, lse pyr, w/LS: gy, ltgy, hrd, mott, 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

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Cementing Company Baker Hughes
Address 5373 West Alabama, Suite 300 City Houston State TX Zip 77056

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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 7/22/2015

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

API: 47-051-01714	Well Name: Francis	Well Number: 7H
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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 200	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

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/14/2015
Job End Date:	5/21/2015
State:	West Virginia
County:	Marshall
API Number:	47-051-01714-00-00
Operator Name:	Chevron USA Inc.
Well Name and Number:	Francis 7H
Longitude:	-80.69225200
Latitude:	39.87311000
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,596
Total Base Water Volume (gal):	8,523,817
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	91.10217	
Proppant	Schlumberger	Proppant	Crystalline Silica	14808-60-7	100.00000	8.61087	
J580	Schlumberger	Gelling Agent, Water	Carbohydrate Polymer	Proprietary	100.00000	0.08837	
7.5% Acid	Schlumberger	Perf Cleanup	Hydrochloric Acid	7647-01-0	8.00000	0.01405	
J609W	Schlumberger	Friction Reducer	Ammonium Sulfate	7783-20-2	30.00000	0.00329	
			Urea	57-13-6	5.00000	0.00055	
J134	Schlumberger	Gel Breaker	Hemicellulase enzyme	9012-54-8	100.00000	0.00377	
M300	BPSC Corporation	Biocide	Water	7732-18-5	75.00000	0.00170	
			Glutaral	111-30-8	25.00000	0.00057	
J042	Schlumberger	Iron Chelating Agent	Tetrasodium ethylenediaminetetraacetate	64-02-8	60.00000	0.00167	

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Amended 6/24/15

			Trisodium nitriothiacetate (impurity)	5064-31-3	10.00000	0.00028
			Sodium hydroxide	1310-73-2	5.00000	0.00014
L058	Schlumberger	Iron Stabilizer	Sodium erythorbate	6381-77-7	100.00000	0.00086
B317	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	67-56-1	40.00000	0.00006
			Aliphatic acids	Proprietary	30.00000	0.00005
			Aliphatic alcohols, ethoxylated #1	Proprietary	30.00000	0.00005
			Prop-2-yn-1-ol	107-19-7	10.00000	0.00002

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)

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08/21/2015



Jackie M. Scholar
Regulatory Reporting

Chevron Appalachia, LLC
Appalachian/Michigan Business Unit
800 Mountain View Drive
Smithfield, PA 15478
Tel 724 564 3721
Fax 724 564 3894
jscholar@chevron.com

July 22, 2015

CERTIFIED MAIL: 7015 0640 0008 0089 7148

WV DEP
Office of Oil and Gas
601 – 57th Street
Charleston, WV 25304

RE: Well Operator's Report of Well Work WR-35
Francis 7H

Dear Sir/Madam,

Enclosed here within please find one (1) Well Operator's Report of Well Work WR-35 for **Francis 7H, (API 47-5101714)**.

Please send all correspondence to our Fayette County office listed at the top right-hand corner. If you have any questions, please contact me at (724) 564-3721. Thank you.

Sincerely,
Chevron Appalachia, LLC

Jackie M. Scholar
Regulatory Reporting
jscholar@chevron.com

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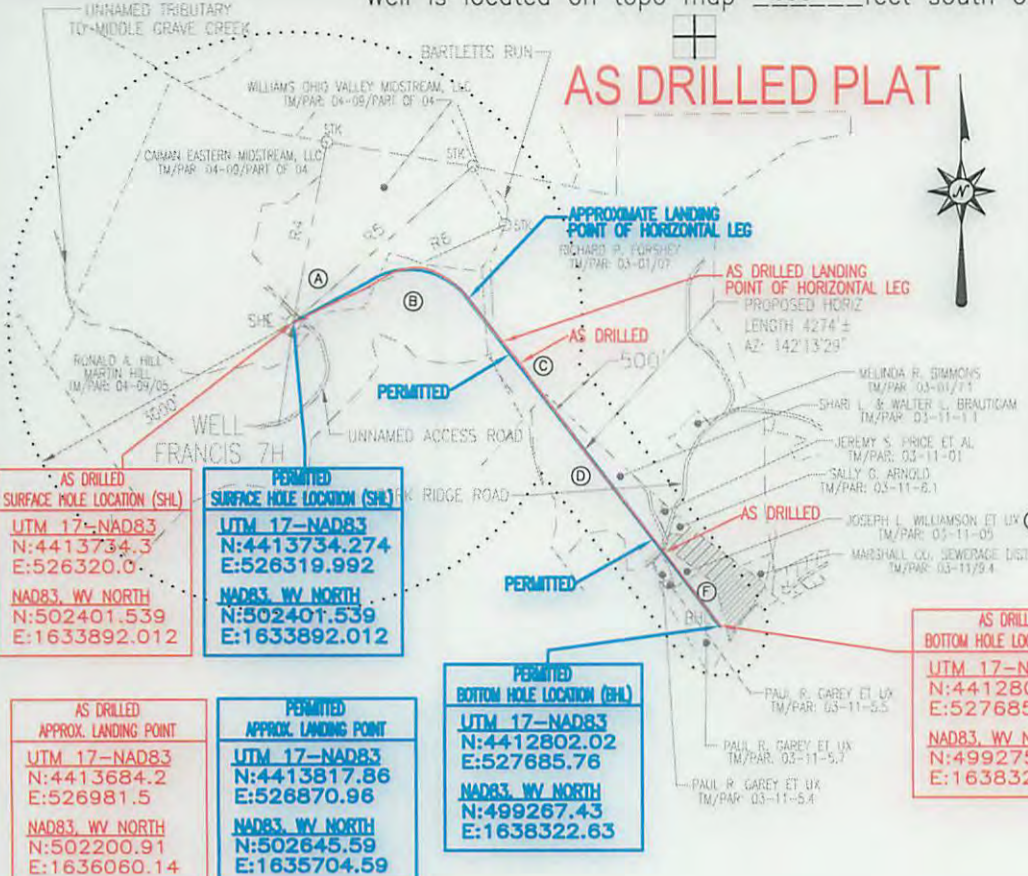
Enclosures

08/21/2015

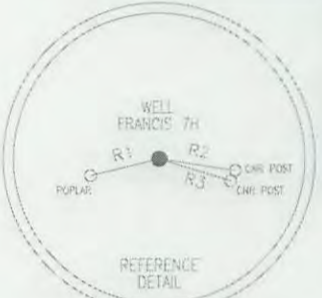
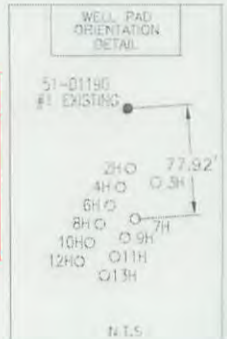
Well is located on topo map 639 feet south of Latitude: 39° 52' 30"

Well is located on topo map 7.174 feet west of Longitude: 80° 40' 00"

AS DRILLED PLAT



LEGEND	
	- TOPO MAP POINT
	- WELL
	- ALL ARE POINTS UNLESS OTHERWISE NOTED
	- LEASE LETTER
	- MINERAL TRACT BOUNDARY
	- PARCEL LINES
	- WELL REFERENCE
	- PROPOSED HORIZONTAL WELL
	- ROAD
	- STREAM CENTER LINE
	- AS DRILLED
EXISTING WELLS	
	- EXISTING WELLS
	- PLUGGED WELLS



LINE	BEARING	DISTANCE
R1	S 76°03'55" W	145.86'
R2	S 80°59'58" E	157.96'
R3	S 72°20'52" E	153.89'
R4	N 10°52'11" E	1909.86'
R5	N 48°05'11" E	2477.16'
R6	N 65°24'00" E	2418.29'

AS DRILLED SURFACE HOLE LOCATION (SHL)
 UTM 17-NAD83
 N:4413734.3
 E:526320.0
 NAD83_WV NORTH
 N:502401.539
 E:1633892.012

PERMITTED SURFACE HOLE LOCATION (SHL)
 UTM 17-NAD83
 N:4413734.274
 E:526319.992
 NAD83_WV NORTH
 N:502401.539
 E:1633892.012

AS DRILLED APPROX. LANDING POINT
 UTM 17-NAD83
 N:4413684.2
 E:526981.5
 NAD83_WV NORTH
 N:502200.91
 E:1636060.14

PERMITTED APPROX. LANDING POINT
 UTM 17-NAD83
 N:4413817.86
 E:526870.96
 NAD83_WV NORTH
 N:502645.59
 E:1635704.59

PERMITTED BOTTOM HOLE LOCATION (BHL)
 UTM 17-NAD83
 N:4412802.02
 E:527685.76
 NAD83_WV NORTH
 N:499267.43
 E:1638322.63

AS DRILLED BOTTOM HOLE LOCATION (BHL)
 UTM 17-NAD83
 N:4412804.6
 E:527685.4
 NAD83_WV NORTH
 N:499275.99
 E:1638321.61

PARCEL	LESSOR
A	BARBARA P. FRANCIS
B	RONALD A. HILL & MARTIN DEAN HILL
C	RICHARD P. FORSHEY
D	DAVID A. & SHARI WHEITZEL
E	JOSEPH L. & ALICE B. WILLIAMSON
F	PAUL R. & MARY EVELYN CAREY

- 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.

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

FILE #: FRANCIS 7H-AS DRILLED
 DRAWING #: FRANCIS 7H-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:

R.P.E.: _____ L.L.S.: P.S. No. 2000

PLACE SEAL HERE

(+) 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 7H-AS DRILLED
 API WELL #: 47 51 **01714**
 STATE COUNTY PERMIT

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

WATERSHED: MIDDLE GRAVE CREEK ELEVATION: 1260.39'
 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: 446.589±

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,512'± TMD: 11,910'±
 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

08/21/2015