



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

PERMIT MODIFICATION APPROVAL

February 21, 2014

CHESAPEAKE APPALACHIA, L.L.C.
POST OFFICE BOX 6070
CHARLESTON, WV 25362

Re: Permit Modification Approval for API Number 6900159 , Well #: ROY FERRELL OHI 205F
Modified casing

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith

Regulatory/Compliance Manager
Office of Oil and Gas



MOD
069 00159

Danielle Southall
Regulatory Analyst II

November 15, 2013

Ms. Laura Cooper
Office of Oil & Gas
601 57th Street
Charleston, WV 25304

Re: Modification for Roy Ferrell OHI 205H API# 47-069-00159

Dear Ms. Cooper:

Enclosed please find a modification request for the above captioned well. We would like to modify the 5 ½" casing, for directional work only. The bottom hole will not move. This well is situated on the Ferrell property, in Triadelphia District, Ohio County, West Virginia.

If you have any questions or require additional information, please contact me at 304-517-1416 ext 86024.

Sincerely,



Dee Southall

Enclosure(s)

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MOD

WW - 6B
(1/12)

069 00159

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

1) Well Operator: Chesapeake Appalachia, LLC 484477557 68-Ohio 7-Triadelphia 848-Valley Grove
Operator ID County District Quadrangle

2) Operator's Well Number: Roy Ferrell OHI 205H Well Pad Name: Roy Ferrell OHI Pad

3 Elevation, current ground: 1196' Elevation, proposed post-construction: 1196'

4) Well Type: (a) Gas Oil
Other
(b) If Gas: Shallow Deep
Horizontal

MGK 11/14/2013

5) Existing Pad? Yes or No: Yes

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Target formation-Marcellus, Target top TVD- 6630', Target base TVD- 6690', Anticipated thickness- 60', Associated Pressure -4177

7) Proposed Total Vertical Depth: 6,660'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 17,100'

10) Approximate Fresh Water Strata Depths: 340'

11) Method to Determine Fresh Water Depth: from a water well-4000' WNW of the pad

12) Approximate Saltwater Depths: 800'

13) Approximate Coal Seam Depths: 691'

14) Approximate Depth to Possible Void (coal mine, karst, other): 691' void abandoned mine

15) Does land contain coal seams tributary or adjacent to, active mine? No.

16) Describe proposed well work:
Drill and stimulate any potential zones between and including the Benson to the Marcellus. **If we should encounter a void, place basket above and below void area - balance cement to bottom of void and grout from basket to surface. Run casing not less than 20' below void nor more than 50' below void.
(If freshwater is encountered deeper than anticipated it must be protected, set casing 50' below and cts)

17) Describe fracturing/stimulating methods in detail:
Well will be perforated within the target formation and stimulated with a slurry of water, sand, and chemical additives at a high rate. This will be performed in stages with the plug and perf method along the wellbore until the entire lateral has been stimulated within the target formation. All stage plugs are then drilled out and the well is flowed back to surface.
The well is produced through surface facilities consisting of high pressure production units, vertical separation units, water and oil storage tanks.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 11

19) Area to be disturbed for well pad only, less access road (acres): 7

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20)

CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft.</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</u>
Conductor	20"	New	J-55	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	740'	740'	690 SX/CTS
Coal	9 5/8"	New	J-55	40#	2210'	2210'	860 SX/CTS
Intermediate	7"	New	P-110	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	P-110	20#	16,500'	17,100'	Lead 988 sx Tall 2442 sx/100' inside Intermediate
Tubing	2 3/8"	New	N-80	4.7#	Approx. 7,329'	Approx. 7,329'	
Liners							

MJK 11/14/2013

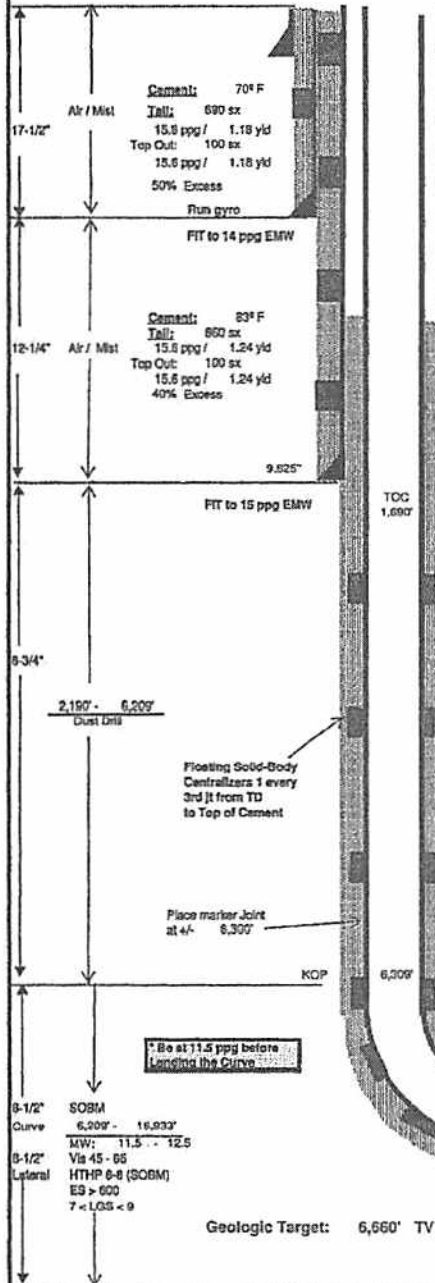
<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield</u>
Conductor	20"	30"	0.25"	2120	15.6 ppg	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	15.6 ppg	1.19/50% Excess
Coal	9 5/8"	12 1/4"	0.395	3950	15.6 ppg	1.19/50% Excess
Intermediate	7"	8 3/4"	.0317	4360	15.6 ppg	1.19/50% Excess
Production	5 1/2"	8 3/4"	0.361	12360	15.6 ppg	1.20/15% Excess
Tubing	2 3/8"	4.778"	0.190			
Liners						

PACKERS

Kind:	10K Arrowset AS1-X		
Sizes:	5 1/2"		
Depths Set:	Approx. 6,197'		

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		Well Name: Roy Ferrell OHI 205H	Drilling Rig: Nomac 37
Drilling Engineer: Chase Diggins	Formation: Marcellus	Directional Drilling: Calhedral	Drilling Mud: MI Swaco
Superintendent: R. Harless / J. Melville	County, State: Ohio, WV	Cement Surface: Schlumberger	Cement Longstrings: Schlumberger
Asset Manager: Garratt Smith	Surface Latitude: 40.043165	Surface Longitude: -80.531128	Wellhead: PVS
Geologist: Milton Smith	BH Latitude: 40.070098	BH Longitude: -80.53823	AFE #: 173677
Land: Bryan Lohoff	KB Elevation: 1214'	Ground Elevation: 1195'	Well #: 837094



Wellhead Equipment	
Tree Description	Blanking Cap
Tubing Head **	11" x 5M x 7-1/16" 10M
'B' Section	9 5/8" SOW x 11" SM
'A' Section	

** Space out such that Blanking Cap is no more than 30" above grade.

Casing Detail						
	Size	WT	Grid	Conn.	From	To:
Surface	13.375	54.5 #	J-55	STC	0'	740'
Interm	9.625	40 #	J-55	LTC	0'	2,190'
Prod	5.5	23 #	P-110	TXP	0'	16,933'

Report any Water flows and/or gas flows. Catch liquid sample if possible.

Casing Design						
	Size	ID	Coll	Burst	Tens	MU long
Surface	13.375	12.615	1130	2740	614	5140
Interm	9.625	8.835	2570	3950	520	5200
Prod	5.5	4.67	18220	14520	729	14420

Directional Drilling Details								
Section	TMD	Inc.	Azimuth	TVD	BUR	DLS	+N-S	+E-W
Surface	0.00'	0.00	0.00	0.00	0.00	0.00	0.0'	0.0'
KOP 1	850'	0.00	0.00	850'	0.00	0.00	0.0'	0.0'
Hold	1,250'	8.00	120.00	1,249'	2.00	2.00	-13.9'	24.1'
BUR/Lum	2,310'	8.00	120.00	2,298'	0.00	0.00	-87.7'	151.9'
Hold	2,982'	18.74	80.00	2,959'	1.58	2.00	-92.4'	331.0'
Hold	4,000'	18.74	80.00	3,917'	0.00	0.00	-38.0'	620.8'
Hold	5,000'	18.74	80.00	4,894'	0.00	0.00	18.8'	937.2'
KOP 2	6,309'	18.74	80.00	6,103'	0.00	0.00	82.8'	1,351.4'
Landing Pt	7,227'	90.60	346.21	6,857'	7.83	10.00	899.8'	1,597.0'
Turn	8,762'	90.60	346.21	6,641'	0.00	0.00	2,190.4'	1,031.7'
Hold	9,121'	90.60	339.04	6,637'	0.00	2.00	2,532.3'	924.7'
TU	16,933'	90.60	339.04	6,555'	0.00	0.00	9,827.5'	-1,669.6'
VS Plane	339.04						VS Length	10,640.07'

Lateral Length => 9,708.00'

Logging Program		
Run	Log Type	Interval
1	None	Surface
2	None	Intermediate to Surf. Csg
	CBL	Over Surface Casing
3	None	KOP to Int. Csg
	CBL	Over Intermediate Casing

Mudlogger operational at Surface

Formation Depths (TVD)	
GENESSEO	6,438'
TULLY	6,460'
HAMILTON	6,496'
MARCELLUS	6,514'
ONONDAGA	6,574'

Per Date	9/4/2013
Opst Date	11/7/2013
AFE Date	1/16/2013

Permit VS. Actual	0
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Cement: 122° F
Lead: 988 sx
16.0 ppg / 1.34 yd
Tail: 2,442 sx
19.8 ppg / 1.16 yd
15% Excess
Pump time: 6 hours
Ensure Gas Block Additive is in Lead Slurry
PBHL: 5.5"
TMD: 18,033'
TVD: 6,555'
Inclination: 90.60 deg

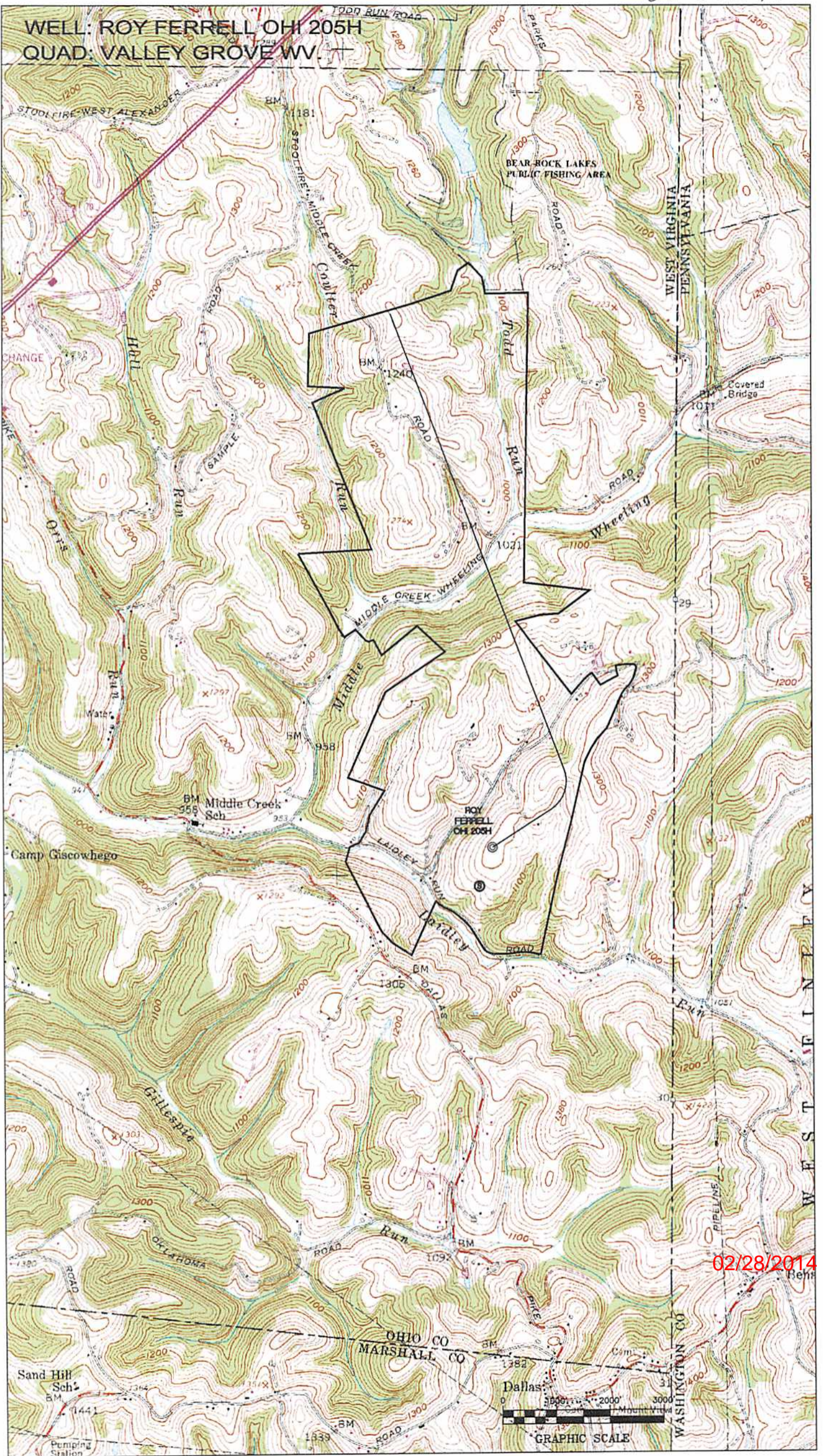
Geologic Target: 6,560' TVD @ 0° VS w/ 0.60 degrees Up-dip

Gyro the 1st well on the pad at KOP. Ensure all Surveys are referenced to Grid North.

Drawn by: **Chase**
Date: **11/11/2013**

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WELL: ROY FERRELL OHI 205H
QUAD: VALLEY GROVE WV.

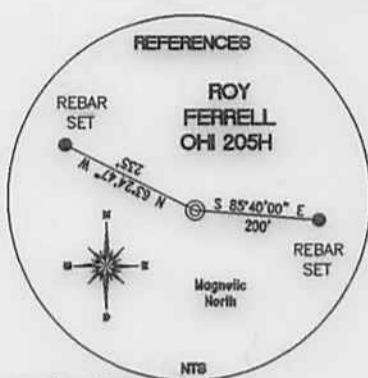
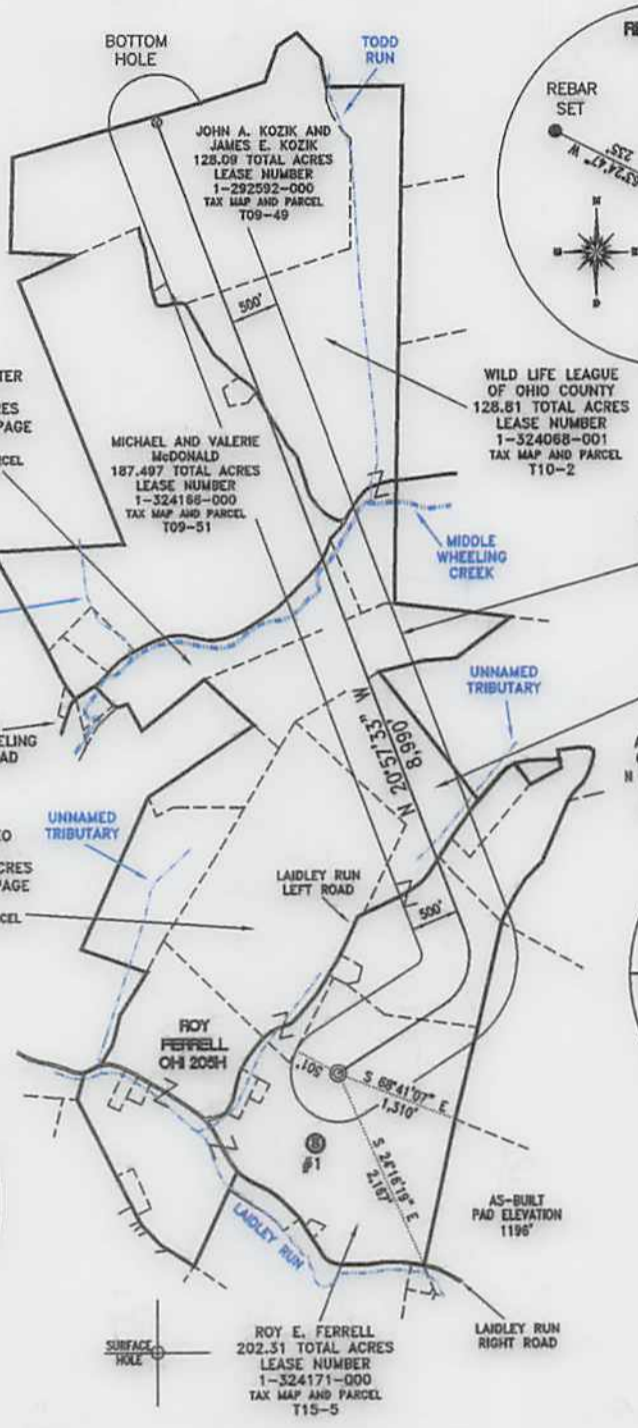


02/28/2014



TH (UTM-NAD 83)
N) 4432663.9
E) 540015.2
BOTTOM HOLE (UTM-NAD 83)
N) 4435647.9
E) 539393.9

SPRING #1
 S 18°53'01" W 758'



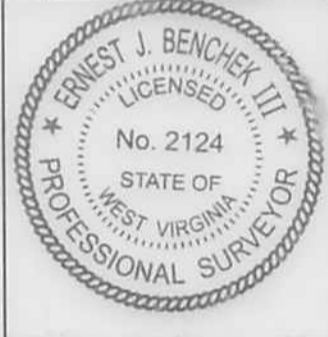
REFERENCE NOTES
 Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records Brooke County, West Virginia DECEMBER 2011 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS Drafted by: EAM.

FILE #: CHE 034
 DRAWING #: 1972
 SCALE: PLAT = 1" - 2000'
 TICK MARK = 1" - 2000'
 MINIMUM DEGREE OF ACCURACY: 1/200
 PROVEN SOURCE SUBMETER MAPPING OF ELEVATION: GRADE GPS

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:

L.L.S. #2124 : Ernest J. Benchek III



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WYDEP

OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304

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

WATERSHED: WHEELING CREEK ELEVATION: 1,196'

COUNTY/DISTRICT: OHIO/TRIADELPHIA QUADRANGLE: VALLEY GROVE WV.

SURFACE OWNER: ROY E. FERRELL ACREAGE: 202.31 +/-

OIL & GAS ROYALTY OWNER: ROY E. FERRELL ACREAGE: 814.117 +/-

LEASE NUMBERS: _____

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,660' TMD: 16,320'

WELL OPERATOR: CHESAPEAKE APPALACHIA, LLC. DESIGNATED AGENT: ERIC B. GILLESPIE

ADDRESS: PO BOX 18496 ADDRESS: Po Box 6070

CITY: OKLAHOMA CITY STATE: OK ZIP CODE: 73154-0496 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

DATE: JULY 26, 2013

OPERATOR'S WELL #: ROY FERRELL OHI 205H

API WELL #: 47 69 MOD 00159 H6A
 STATE COUNTY PERMIT

02/28/2014

SURFACE HOLE DEC. LAT: 40.043185 SURVEYED LAT: 40° 02' 35.5"