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west virginia department of environmental protection

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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](http://www.dep.wv.gov)

## PERMIT MODIFICATION APPROVAL

January 09, 2014

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

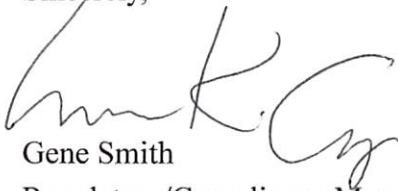
Re: Permit Modification Approval for API Number 6900157 , Well #: ROY FERRELL OHI 201E  
**changed top hole location**

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,

  
for Gene Smith  
Regulatory/Compliance Manager  
Office of Oil and Gas



Danielle Southall  
Regulatory Analyst II

August 23, 2013

VIA UPS

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

Re: Modification to Roy Ferrell OHI 5H API# 47-069-00112 & Roy Ferrell OHI 201H  
API# 47-069-00157

Dear Ms. Cooper:

Attached please find a revised WW-6B and wbs for the above captioned wells. We would like to modify the casing due to directional work and to stay consistent with the other Ferrell wells. The BHL's will remain the same. These well are situated on the Roy Ferrell property, in Triadelphia District, Wetzel County, West Virginia.

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

Sincerely,

Chesapeake Appalachia, LLC

Dee Southall

DS:brw

Enclosure(s)

RECEIVED  
Office of Oil and Gas

AUG 26 2013

WV Department of  
Environmental Protection

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

1) Well Operator: Chesapeake Appalachia, LLC 49447757 69- Ohio 7- Triadelphia 648-Valley Grove  
Operator ID County District Quadrangle

2) Operator's Well Number: Roy Ferrell OHI 201H Well Pad Name: Roy Ferrell OHI Pad

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

4) Well Type: (a) Gas  Oil  Underground Storage   
Other \_\_\_\_\_  
(b) If Gas: Shallow \_\_\_\_\_ Deep \_\_\_\_\_  
Horizontal

*MSAK  
8/24/2013*

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: 6,588'

8) Formation at Total Vertical Depth: Marcellus

**RECEIVED**  
**Office of Oil and Gas**

9) Proposed Total Measured Depth: 15,000'

**AUG 26 2013**

10) Approximate Fresh Water Strata Depths: 326'

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

**WV Department of**  
**Environmental Protection**

12) Approximate Saltwater Depths: 800'

13) Approximate Coal Seam Depths: 646'

14) Approximate Depth to Possible Void (coal mine, karst, other): 646' void abandoned mine

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of 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



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#	741'	741'	680'sx/CTS
Coal	9 5/8"	New	J-55	40#	2200'	2200'	820 sx/CTS
Intermediate	7"	New	P-110	20#	If Needed	If Needed	If needed/As Possible
Production	5 1/2"	New	P-110	20#	15,000'	15,000'	Lead 1240 sx Tail 1360 sx/100' inside intermediate
Tubing	2 3/8"	New	N-80	4.7#	Approx. 7,810'	Approx. 7,810'	
Liners							

*MJK 8/22/2013*

<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	1.20/15% 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"		RECEIVED
Depths Set:	Approx. 6,197'		Office of Oil and Gas

AUG 26 2013



Well Name: Roy Ferrell OHI 201H

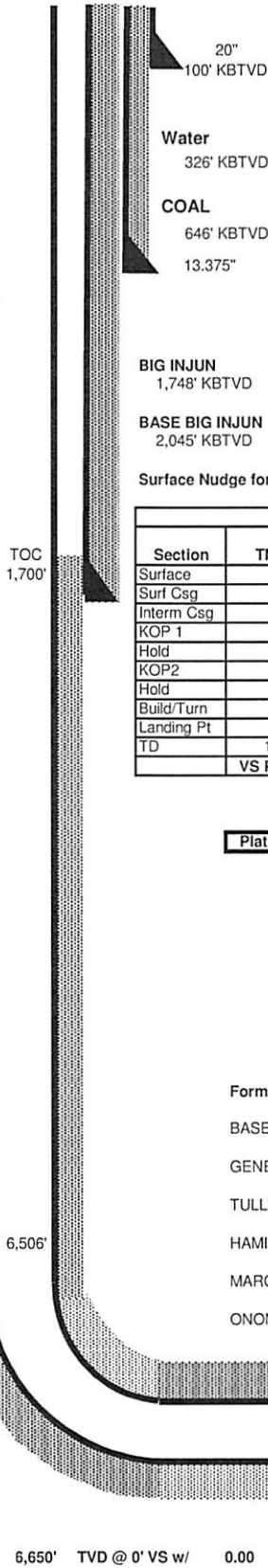
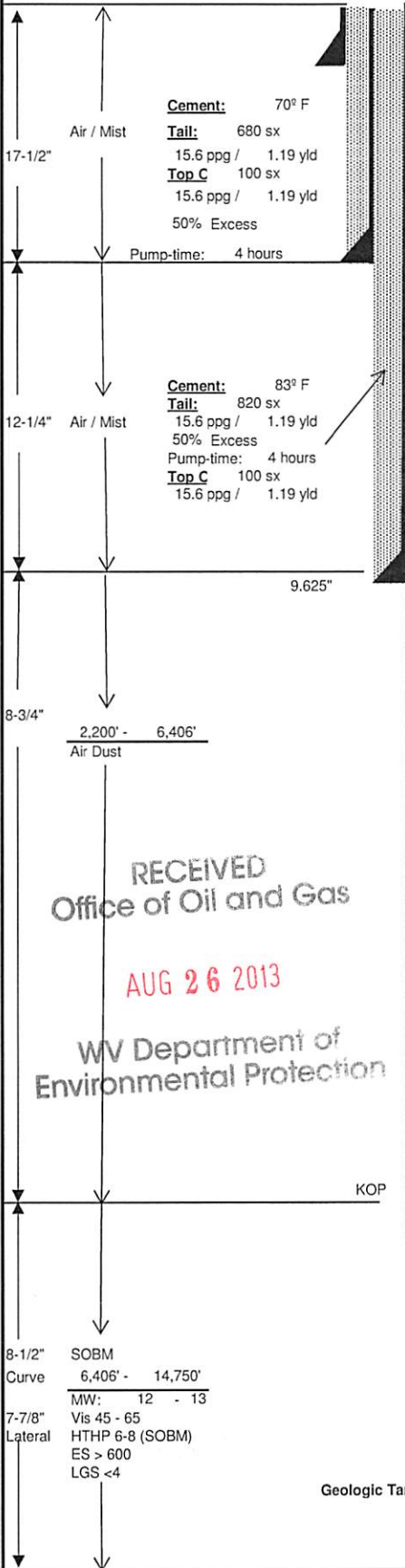
Drilling Rig: N/A

Directional Drilling: N/A

Drilling Engineer: TBD  
 Superintendent: N/A  
 Asset Manager: N/A  
 Geologist: N/A  
 Land: N/A

Formation: Marcellus  
 County, State: Ohio, WV  
 Surface Latitude: 40.043206 Surface Longitude: -80.531194  
 BH Latitude: 40.058073 BH Longitude: -80.547977  
 KB Elevation: 1216' Ground Elevation: 1196'

Drilling Mud: N/A  
 Cement Surface: N/A  
 Cement Longstrings: N/A  
 Wellhead: N/A  
 AFE #: N/A



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

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

Casing Detail						
	Size	Wt	Grd	Conn.	From:	To:
Surface	13.375	54.5 #	J-55	STC	0'	741'
Interm	9.625	40 #	J-55	LTC	0'	2,200'
Prod	5.5	20 #	P-110	GBCD	0'	14,750'

Report any water or gas flows. Catch liquid sample if possible.

Casing Design						
	Size	ID	Coll	Burst	Tens	MU torq
Surface	13.375	12.615	1130	2740	514	5140
Interm	9.625	8.835	2570	3950	520	5200
Prod	5.5	4.778	12200	12360	641	8530

Surface Nudge for Anti-Collision purposes.

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'
Surf Csg	741'	0.00	0.00	741'	0.00	0.00	0.0'	0.0'
Interm Csg	2,210'	0.00	0.00	2,210'	0.00	0.00	0.0'	0.0'
KOP 1	2,300'	0.00	0.00	2,300'	0.00	0.00	0.0'	0.0'
Hold	3,600'	26.00	236.00	3,556'	2.00	2.00	-162.1'	-240.4'
KOP2	6,506'	26.00	236.00	6,168'	0.00	0.00	-874.6'	-1,296.6'
Hold	6,929'	71.00	270.70	6,445'	10.65	12.00	-927.4'	-1,592.7'
Build/Turn	7,229'	71.00	270.70	6,543'	0.00	0.00	-923.9'	-1,876.3'
Landing Pt	7,810'	90.50	339.06	6,648'	3.35	12.00	-609.2'	-2,310.0'
TD	14,750'	90.50	339.06	6,588'	0.00	0.00	5,872.0'	-4,790.1'
VS Plane	339.06						VS Length 7,196.14'	

Lateral Length ==> 7,521.20'

Plat Date 7/26/13

Logging Program		
Run	Log Type	Interval
1	TBD	TBD
2	TBD	TBD

Mudlogger operational at Surface

Formation Depths (TVD)

BASE BIG INJUN	2,045'
GENESECO	6,440'
TULLY	6,470'
HAMILTON	6,498'
MARCELLUS	6,616'
ONONDAGA	6,676'

**Cement: 122° F**  
 Lead: 1,240 sx  
 15.6 ppg / 1.20 yld  
 Tail: 1,360 sx  
 15.6 ppg / 1.20 yld  
 15% Excess  
 Pump-time: 6 hours

Geologic Target: 6,650' TVD @ 0' VS w/ 0.00 degrees/100 ft Up-dip

PBHL 5.5"  
 TMD: 14,750'  
 TVD: 6,588'  
 Inclination: 90.50 deg

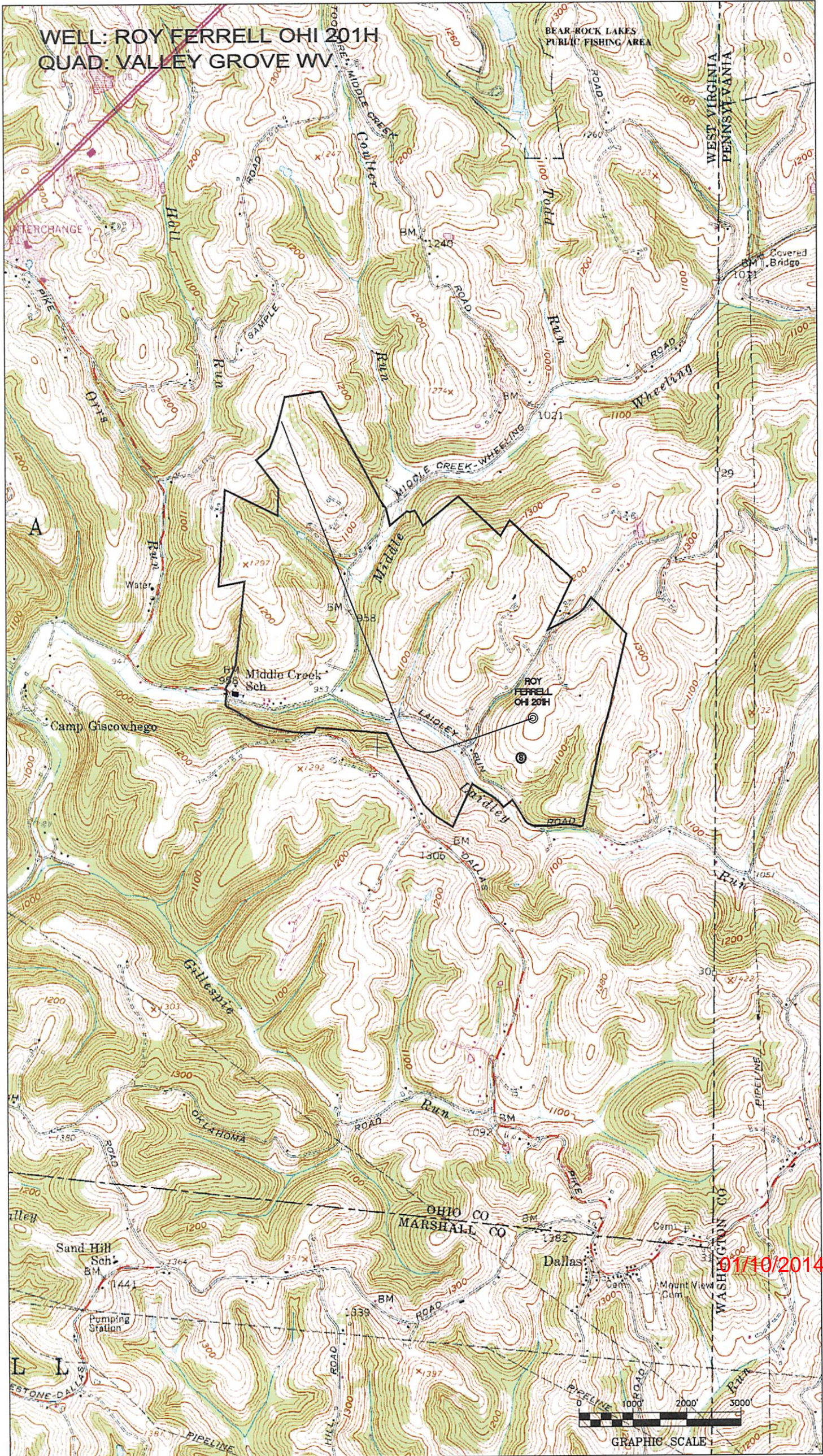
01/10/2014

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

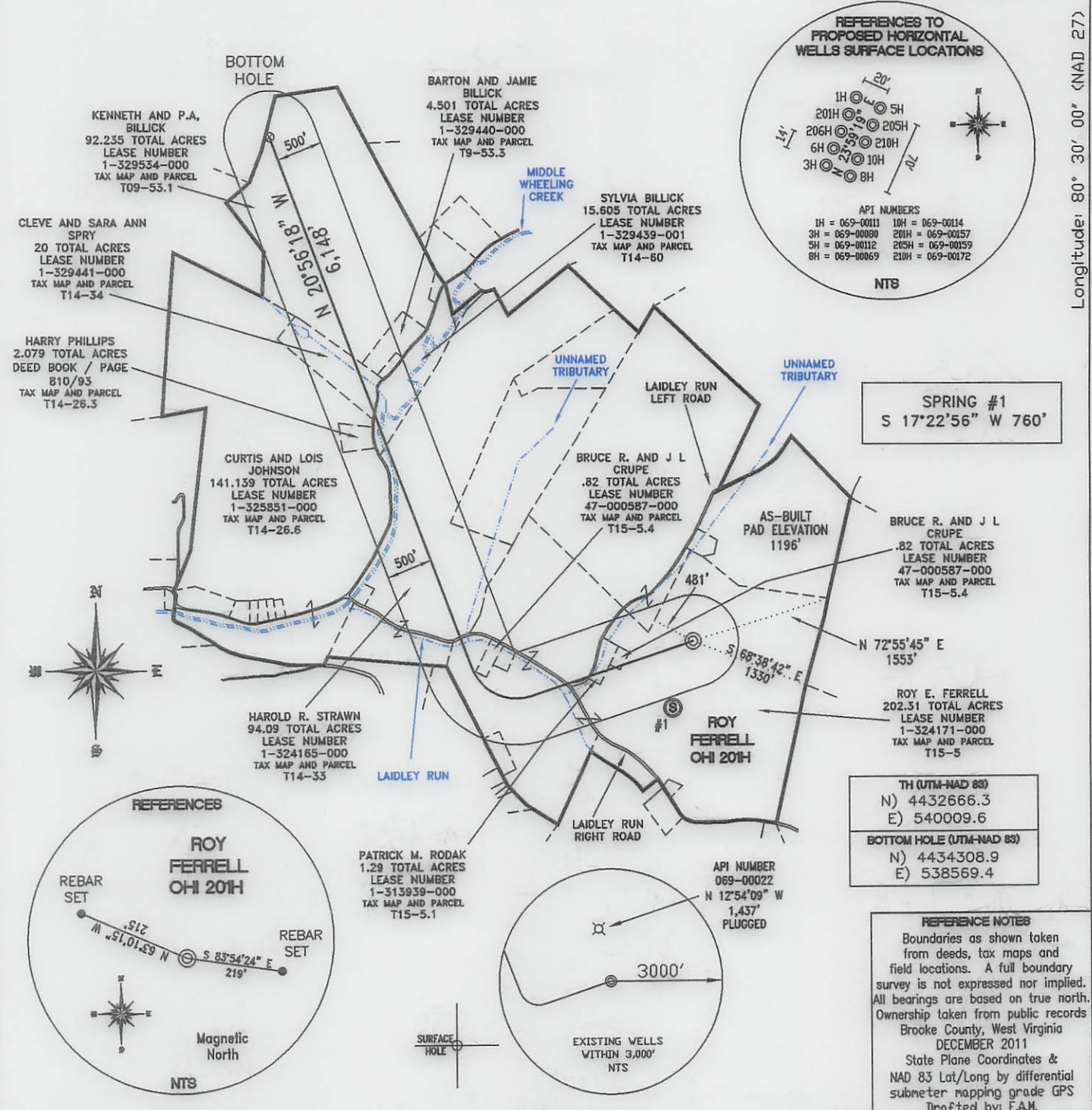
Drawn by: TBD  
 Date: 8/21/2013



WELL: ROY FERRELL OHI 201H  
QUAD: VALLEY GROVE WV







FILE #: CHE 034  
DRAWING #: 1972  
PLAT = 1" - 1600'  
SCALE: 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: *[Signature]*  
L.L.S. #2124: Ernest J. Benchek III



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

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: 549.949 +/-

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: 13,570'

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 201H  
API WELL #: 47 69 00157H6A  
STATE COUNTY PERMIT

01/10/2014

SURFACE HOLE DEC. LAT: 40.043206  
SURVEYED LAT: 40° 02' 55.5"