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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

May 02, 2014

**WELL WORK PERMIT**

**Horizontal 6A Well**

This permit, API Well Number: 47-5101736, issued to CHESAPEAKE APPALACHIA, L.L.C., 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: CHARLES YOHO MSH 8H  
Farm Name: YOHO, DOROTHY L.  
**API Well Number: 47-5101736**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 05/02/2014

**Promoting a healthy environment.**

**05/02/2014**

## 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.

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### CONDITIONS

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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

453

1) Well Operator: Chesapeake Appalachia, LLC 49447757 51- Marshall 9- Webster Majorsville  
Operator ID County District Quadrangle

2) Operator's Well Number: Charles Yoho MSH 8H Well Pad Name: Charles Yoho MSH Pad

3 Elevation, current ground: 1330' Elevation, proposed post-construction: 1332'

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

5) Existing Pad? Yes or No: No

*MDIC 10/24/2013*

*Ja 10/24/13*

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):  
Target formation- Marcellus Target top TVD- 6639' Target base TVD- 6683 Anticipated thickness- 44' Associated Pressure- 4448

7) Proposed Total Vertical Depth: 6,663'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 14,100'

10) Approximate Fresh Water Strata Depths: 438'

11) Method to Determine Fresh Water Depth: From analysis of water wells in the area.

12) Approximate Saltwater Depths: 1,400'

13) Approximate Coal Seam Depths: 890'

14) Approximate Depth to Possible Void (coal mine, karst, other): 460' Possible Void.

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)




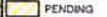
17) Describe fracturing/stimulating methods in detail:  
Well will be perforated within the target formation and stimulated with a slurry of water, sand, and chemical additives at a high rate. This will be performed in stages with the plug and perf method along the wellbore until the entire lateral has 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.

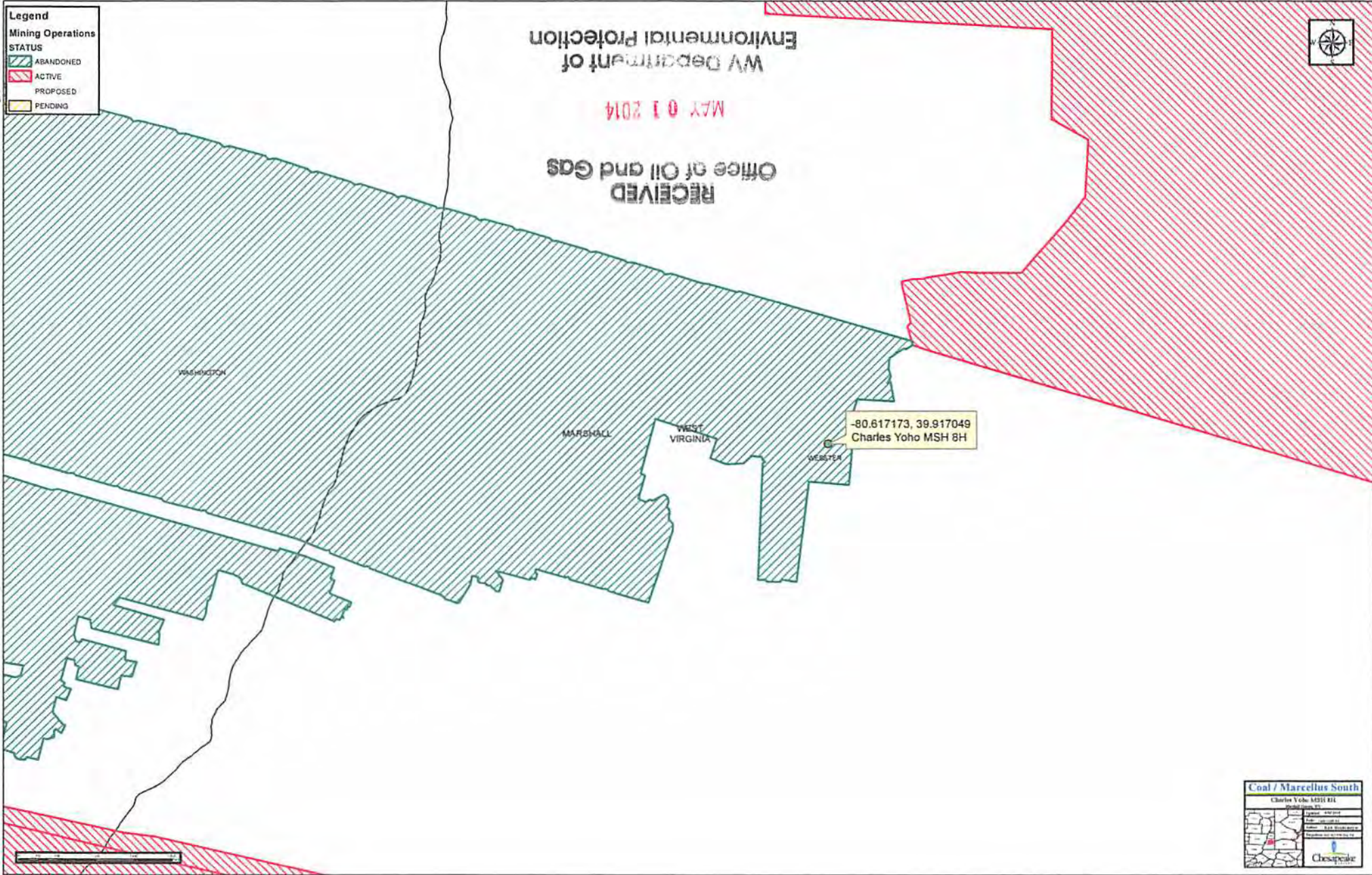
18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 10.9

19) Area to be disturbed for well pad only, less access road (acres): 8.7

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS  
Page 1 of 3

51-01736

**Legend**  
**Mining Operations**  
**STATUS**  
 ABANDONED  
 ACTIVE  
 PROPOSED  
 PENDING




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 MAY 01 2014  
 WV Department of  
 Environmental Protection

-80.617173, 39.917049  
 Charles Yoho MSH 8H

**Coal / Marcellus South**  
 Charles Yoho MSH 8H  
 51-01736-01

Project Name	Charles Yoho MSH 8H
Project ID	51-01736-01
County	Webster
Operator	Charles Yoho
Effective Date	05/01/2014
Expiration Date	05/01/2014
Approval Authority	WV Department of Environmental Protection



WW - 6B  
(3/13)

20)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	J-55	94#	✓ 100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	✓ 940'	940'	850 sx/CTS
Coal	9 5/8"	New	J-55	40#	✓ 2,330'	2,330'	850 sx/CTS
Intermediate	7"	New	P-110	20#	✓ If Needed	If Needed	If needed/As Needed
Production	5 1/2"	New	P-110	20#	✓ 14,100'	14,100'	<small>Level 1.210cu Tall 1.210cu/100' inside intermediate</small>
Tubing	2 3/8"	New	N-80	4.7#	Approx. 7,744'	Approx. 7,744'	
Liners							

*MDK 10/24/2013*

*JK  
10/24/13*

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
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"	0.317	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"		
Depths Set:	Approx. 6,197'		

WW - 6B  
(3/13)

21) Describe centralizer placement for each casing string. \_\_\_\_\_

All casing strings will be ran with a centralizer at a minimum of 1 per every 3 joints of casing.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

22) Describe all cement additives associated with each cement type. \_\_\_\_\_

\*\*Please see attached sheets for Chemical Listing of Cement & Additives for Chesapeake Energy wells.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

23) Proposed borehole conditioning procedures. \_\_\_\_\_

All boreholes will be conditioned with circulation and rotation for a minimum of one bottoms up and continuing until operator is satisfied with borehole conditions.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*Note: Attach additional sheets as needed.

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FEB 11 2014  
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West Virginia Department of Environmental Protection

51-01736

SLB Cement Additives

	Product Name	Product Use	Chemical Name	CAS Number	% Concentration Used
Surface	D046	antifoam	Fuller's earth (attapulgitite)	8031-18-3	0.2% BWOC
			Polypropylene glycol	25322-69-4	
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9	0.125 lb/sk
	S001	calcium chloride	calcium chloride	10043-52-4	2% BWOC
		SPACER			
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9	1 lb/bbl
	D020	bentonite extender	bentonite	1302-78-9	20 lb/bbl
Intermediate	D046	antifoam	Fuller's earth (attapulgitite)	8031-18-3	0.2% BWOC
			Polypropylene glycol	25322-69-4	
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9	0.125 lb/sk
	D044	granulated salt	sodium chloride	7647-14-5	10% BWOW
	D153	Anti-Settling Agent	chrySTALLINE silica	14808-60-7	0.15% BWOC
		SPACER			
	D020	bentonite extender	bentonite	1302-78-9	20 lb/bbl
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9	1 lb/bbl
Kick Off Plug	D080	cement liquid dispersant	product classified as non-hazardous.		0.05 gal/sk
	D801	mid-temp retarder	product classified as non-hazardous		0.01 gal/sk
	D047	antifoam agent	polypropylene glycol	25322-69-4	0.02 gal/sk
		SPACER			
	B389	MUDPUSH* Express	Carbohydrate	proprietary	1 lb/bbl
	D206	Antifoaming Agent	Silica Organic Polymer	proprietary	0.1 gal/bbl
	D031	barite	barium sulfate	7727-43-7	310 lb/bbl
			fatty acid amine	proprietary	
		ethoxylated alcohol	proprietary		
		glycerol	56-81-5		
	B220	surfactant	2,2'-Iminodiethanol	111-42-2	1 gal/bbl
Production - Lead	D167	UNIFLAC* S	aliphatic amide polymer	proprietary	0.35% BWOC
	D154	low-temperature extender	non-crystalline silica	7631-86-9	6% BWOC
	D400	EasyBLOK	boric acid	10043-35-3	0.8% BWOC
	D046	antifoam	Fuller's earth (attapulgitite)	8031-18-3	
			Polypropylene glycol	25322-69-4	0.2% BWOC
	D201	basic cements enabler	chrySTALLINE silica	14808-60-7	
		metal oxide	proprietary	0.2% BWOC	
	D202	low-temperature solid dispersant	sulphonated synthetic polymer	proprietary	
			formaldehyde (impurity)	50-00-0	0.3% BWOC
	D046	antifoam	Fuller's earth (attapulgitite)	8031-18-3	
			Polypropylene glycol	25322-69-4	0.2% BWOC
	D167	UNIFLAC* S	aliphatic amide polymer	proprietary	0.35% BWOC
	D065	TIC* Dispersant	Sodium Polynaphthalene Sulfonate	9008-63-3	
			Sodium Sulfate	7757-82-6	0.25% BWOC
	D201	basic cements enabler	chrySTALLINE silica	14808-60-7	

\*\*\*Ref: 2013-78

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51-01736


		metal oxide	proprietary	0.2% BWOC
D153	Anti-Settling Agent	chrystalline silica	14808-60-7	0.2% BWOC
<b>SPACER</b>				
B389	MUDPUSH* Express	Carbohydrate	proprietary	proprietary
D206	Antifoaming Agent	Silica Organic Polymer	proprietary	proprietary
D031	barite	barium sulfate	7727-43-7	7727-43-7
		fatty acid amine	proprietary	proprietary
		ethoxylated alcohol	proprietary	proprietary
		glycerol	56-81-5	56-81-5
B220	surfactant	2,2'-Iminodiethanol	111-42-2	111-42-2

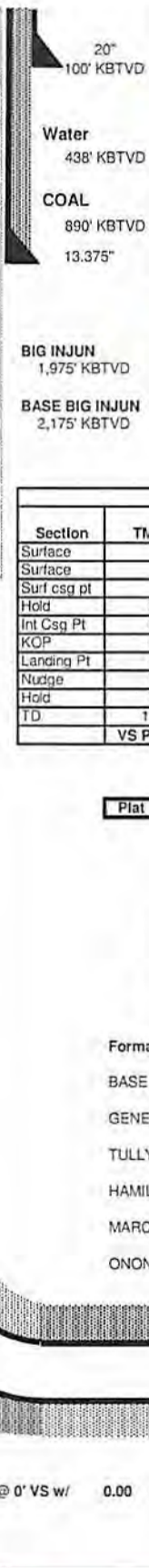
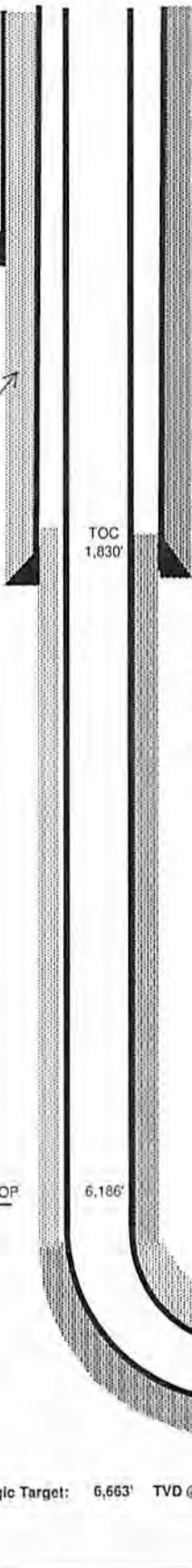
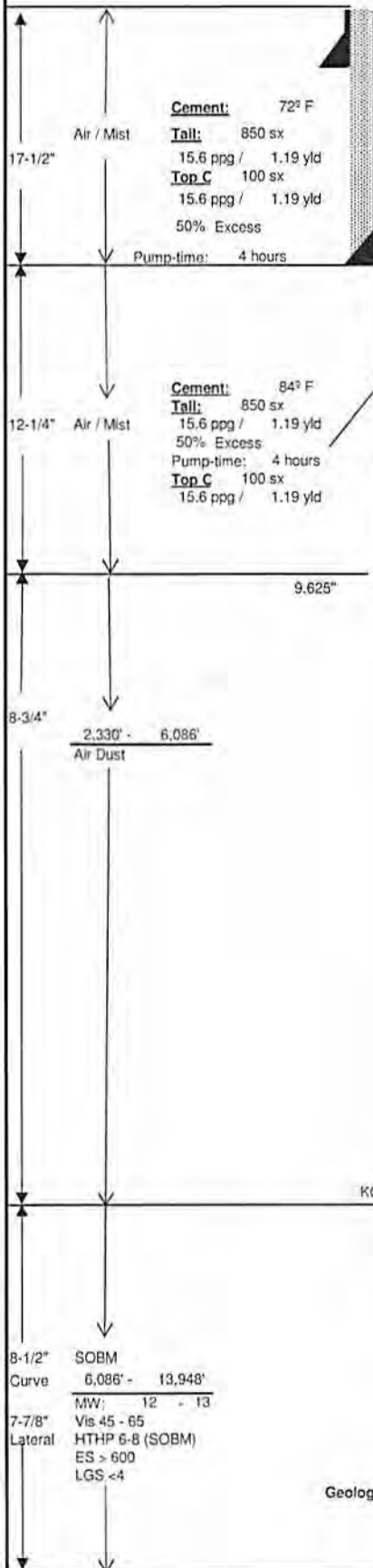
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NY Department of  
Environmental Protection



		Well Name: <b>Charles Yoho MSH 8H</b>	Drilling Rig: <b>N/A</b>
			Directional Drilling: <b>N/A</b>
Drilling Engineer: <b>TBD</b>	Formation: <b>Marcellus</b>		Drilling Mud: <b>N/A</b>
Superintendent: <b>N/A</b>	County, State: <b>Marshall, WV</b>		Cement Surface: <b>N/A</b>
Asset Manager: <b>N/A</b>	Surface Latitude: <b>39.917049</b>	Surface Longitude: <b>-80.617173</b>	Cement Longstrings: <b>N/A</b>
Geologist: <b>N/A</b>	BH Latitude: <b>39.900235</b>	BH Longitude: <b>-80.605292</b>	Wellhead: <b>N/A</b>
Land: <b>N/A</b>	KB Elevation: <b>1350'</b>	Ground Elevation: <b>1330'</b>	AFE #: <b>N/A</b>



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

\*\* 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'	940'
Interm	9.625	40 #	J-55	LTC	0'	2,330'
Prod	5.5	20 #	P-110	GBCD	0'	13,948'

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

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'
Surface	100'	0.00'	0.00'	100'	0.00'	0.00'	0.0'	0.0'
Surf csg pt	941'	0.00'	0.00'	941'	0.00'	0.00'	0.0'	0.0'
Hold	2,000'	0.00'	0.00'	2,000'	0.00'	0.00'	0.0'	0.0'
Int Csg Pt	2,330'	0.00'	0.00'	2,330'	0.00'	0.00'	0.0'	0.0'
KOP	6,186'	0.00'	0.00'	6,186'	0.00'	0.00'	0.0'	0.0'
Landing Pt	6,936'	90.00'	141.50'	6,663'	12.00'	12.00'	-373.7'	297.2'
Nudge	7,125'	90.00'	141.50'	6,663'	0.00'	0.00'	-521.7'	415.0'
Hold	7,744'	90.00'	153.88'	6,663'	0.00'	2.00'	-1,043.9'	745.2'
TD	13,948'	90.00'	153.88'	6,663'	0.00'	0.00'	-6,614.6'	3,476.7'
<b>VS Plane</b>	<b>153.88</b>						<b>VS Length</b>	<b>7,469.66'</b>

Lateral Length ==> 6,823.30'

Plat Date 10/3/13

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

Mudlogger operational at Surface

Formation Depths (TVD)

BASE BIG INJUN	2,175'
GENESEO	6,488'
TULLY	6,510'
HAMILTON	6,538'
MARCELLUS	6,638'
ONONDAGA	6,682'

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Cement: 122° F  
Lead: 1,210 sx  
15.6 ppg / 1.20 yld  
Tail: 1,210 sx  
15.6 ppg / 1.20 yld  
15% Excess  
Pump-time: 5 hours

Geologic Target: 6,663' TVD @ 0° VS w/ 0.00 degrees/100 ft Up-dip

PBHL 5.5"  
TMD: 13,948'  
TVD: 6,663'  
Inclination: 90.00 deg

05/02/2014

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

Drawn by: **TBD**  
Date: **10/15/2013**

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Chesapeake Appalachia, LLC OP Code 49447757

Watershed (HUC 10) Wheeling Creek Quadrangle Majorsville

Elevation 1330' County 51- Marshall District 9- Webster

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes x No \_\_\_\_\_

Will a pit be used for drill cuttings? Yes \_\_\_\_\_ No x

If so, please describe anticipated pit waste: Closed loop system in place at this time- cuttings will be taken to a permitted landfill.

Will a synthetic liner be used in the pit? Yes \_\_\_\_\_ No x If so, what ml.? \_\_\_\_\_

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number 2D0072539/ 2D0413175/ 2D0610306/ 2D0610317 )
- Reuse (at API Number at next anticipated well, API# will be included with the WR-34/DDMR &/or permit addendum. )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain Flow back fluids will be put in steel tanks and reused or taken to a permitted disposal facility.)

Will closed loop system be used? Yes

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air and salt saturate mud

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

Additives to be used in drilling medium? see attached sheets

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) \_\_\_\_\_

-Landfill or offsite name/permit number? Meadow# SWF-1032, SS Grading SWF-4902, Northwestern SWF-1025, Short Creek 1034/WV0109517/CID28726, Carbon Limestone 28726/CID 28726

Arden Landfill 10072, American 02-12954, Country Wide 38390/CID 38390, Pine Grove 13688

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 \_\_\_\_\_

Company Official (Typed Name) Danielle Southall

Company Official Title Regulatory Analyst

Subscribed and sworn before me this 18th day of September

Brittany R Woody  
11/27/2014

My commission expires \_\_\_\_\_



Form WW-9

Operator's Well No. Charles Yoho MSH 8H

Chesapeake Appalachia, LLC

Proposed Revegetation Treatment: Acres Disturbed 10 +/- Prevegetation pH \_\_\_\_\_

Lime as determined by pH test min. 2 \_\_\_\_\_ Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)

Mulch Hay/Straw 2.5 Tons/acre

Seed Mixtures

Seed Type	Area I lbs/acre	Seed Type	Area II lbs/acre
White Clover	15	White Clover	15
Red Top	15	Red Top	15
Orchard Grass	20	Orchard Grass	20

Attach:  
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature] [Signature]

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Title: Oil and Gas Inspector Date: 10/24/2013

Field Reviewed? ( X ) Yes ( ) No

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WV Dept. of Environmental Protection

<u>Chemical Name</u>	<u>CAS Number</u>	<u>% Concentration Used</u>
Fuller's earth (attapulgit)	8031-18-3	0.2% BWOC
Polypropylene glycol	25322-69-4	
polyethylene terephthalate	25038-59-9	0.125 lb/sk
calcium chloride	10043-52-4	2% BWOC
polyethylene terephthalate	25038-59-9	1 lb/bbl
bentonite	1302-78-9	20 lb/bbl
Fuller's earth (attapulgit)	8031-18-3	0.2% BWOC
Polypropylene glycol	25322-69-4	
polyethylene terephthalate	25038-59-9	0.125 lb/sk
sodium chloride	7647-14-5	10% BWOW
chrySTALLine silica	14808-60-7	0.15% BWOC
bentonite	1302-78-9	20 lb/bbl
polyethylene terephthalate	25038-59-9	1 lb/bbl
product classified as non-hazardous.		0.05 gal/sk
product classified as non-hazardous		0.01 gal/sk
polypropylene glycol	25322-69-4	0.02 gal/sk
Carbohydrate	proprietary	1 lb/bbl
Silica Organic Polymer	proprietary	0.1 gal/bbl
barium sulfate	7727-43-7	310 lb/bbl
fatty acid amine	proprietary	
ethoxylated alcohol	proprietary	
glycerol	56-81-5	
2,2'-Iminodiethanol	111-42-2	1 gal/bbl
aliphatic amide polymer	proprietary	0.35% BWOC
non-crystalline silica	7631-86-9	6% BWOC
boric acid	10043-35-3	0.8% BWOC
Fuller's earth (attapulgit)	8031-18-3	
Polypropylene glycol	25322-69-4	0.2% BWOC
chrySTALLine silica	14808-60-7	
metal oxide	proprietary	0.2% BWOC
sulphonated synthetic polymer	proprietary	
formaldehyde (impurity)	50-00-0	0.3% BWOC
Fuller's earth (attapulgit)	8031-18-3	
Polypropylene glycol	25322-69-4	0.2% BWOC
aliphatic amide polymer	proprietary	0.35% BWOC
Sodium Polynaphthalene Sulfonate	9008-63-3	
Sodium Sulfate	7757-82-6	0.25% BWOC

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Office of Oil and Gas  
WV Dept. of Environmental Protection

05/02/2014

chrystalline silica	14808-60-7	
metal oxide	proprietary	0.2% BWOC
chrystalline silica	14808-60-7	0.2% BWOC
Carbohydrate	proprietary	proprietary
Silica Organic Polymer	proprietary	proprietary
barium sulfate	7727-43-7	7727-43-7
fatty acid amine	proprietary	proprietary
ethoxylated alcohol	proprietary	proprietary
glycerol	56-81-5	56-81-5
2,2'-Iminodiethanol	111-42-2	111-42-2

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WV Dept. of Environmental Protection  
05/02/2014

**Marcellus Well Drilling Procedures  
And Site Safety Plan**

Chesapeake Appalachia, LLC

47 - 51 - 01736

Well name: Charles Yoho MSH 8H  
Majorsville, Quad  
Webster, District  
Marshall County, West Virginia

MDK  
10/24/2013

JL  
10/24/13

Submitted by:

Danielle Southall

9/18/2013

Date:

Title Regulatory Analyst

Chesapeake Appalachia, LLC

Approved by:

Date:

Title:

Approved by:

Date:

Title:

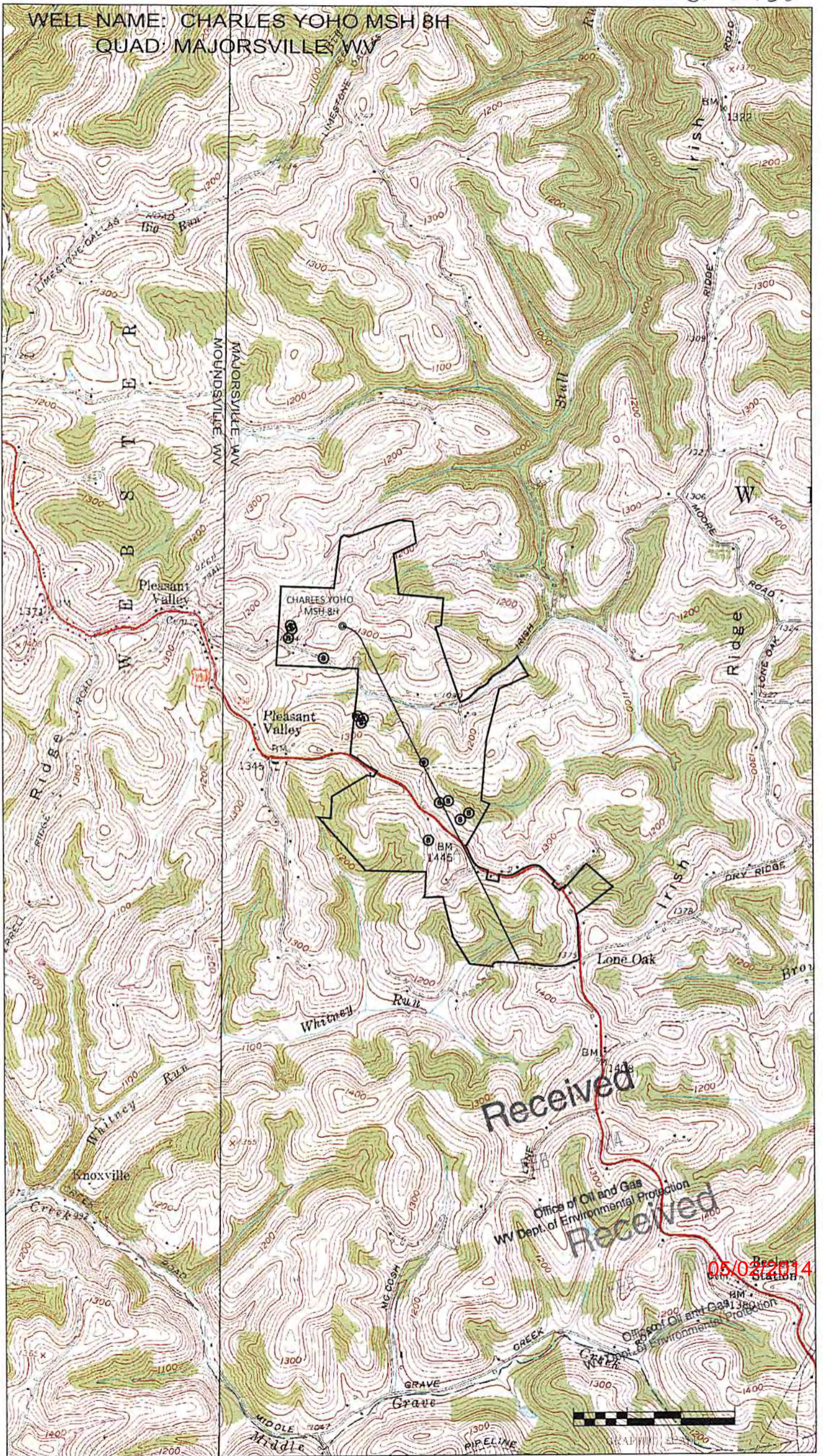
Chesapeake Appalachia, L.L.C. – Confidential

Received

FEB - 7 2014

Office of Oil and Gas  
WV Dept. of Environmental Protection

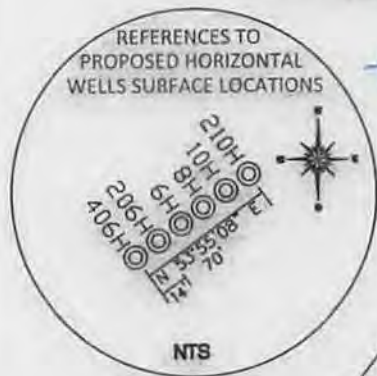
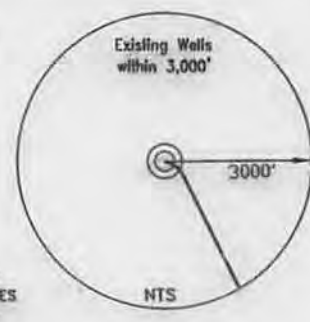
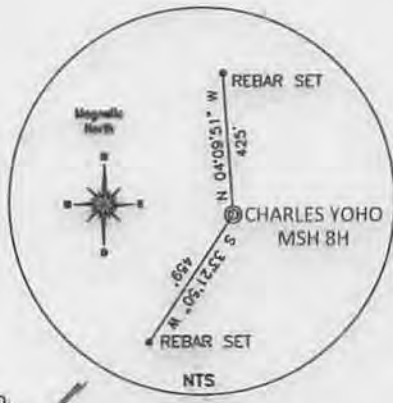
WELL NAME: CHARLES YOHO MSH 8H  
QUAD: MAJORSVILLE WV



<b>TOP HOLE (UTM NAD 83)</b> N) 4418629.2 E) 532734.6	A MICHAEL R. MAGERS ET UX 15-14-7.2 LEASE NUMBER 8 1.05 AC
<b>BOTTOM HOLE (UTM NAD 83)</b> N) 4416767.5 E) 533758.2	B MICHAEL R. AND DANK S. MAGERS 15-14-7.3 LEASE NUMBER 9 3.389 AC
	C GNDY KAY McNIER 15-14-13.3 LEASE NUMBER 10 1.816 AC

NO WATER WELLS WERE FOUND WITHIN 250' OF THE CENTER OF WELL PAD

1 N 89°17'42" W 962'
2 S 86°57'13" W 942'
3 S 30°49'59" W 685'



**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 Marshall County, West Virginia JUNE 2013  
State Plane Coordinates & NAD 83 Lot/Long by differential submeter mapping grade GPS  
Drafted by: E.A.M.

FILE #: CHE 119  
DRAWING #: 2276  
SCALE: PLAT - 1" = 1200'  
TICK MARK - 1" = 2000'  
MINIMUM DEGREE OF ACCURACY: 1/200  
PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING 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  
COUNTY/DISTRICT: MARSHALL/WEBSTER  
SURFACE OWNER: DOROTHY L. YOHO  
OIL & GAS ROYALTY OWNER: DOROTHY L. YOHO  
LEASE NUMBERS: \_\_\_\_\_

DATE: OCTOBER 16, 2013  
OPERATOR'S WELL #: CHARLES YOHO MSH 8H  
API WELL #: 47 51 01736 H6A  
STATE COUNTY PERMIT

ASBUILT ELEVATION: 1330'  
QUADRANGLE: MAJORSVILLE, WV  
ACREAGE: 84.25 +/-  
ACREAGE: 439.65 + /- 05/02/2014

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: 6,663' TMD: 13,448'  
WELL OPERATOR: CHESAPEAKE APPALACHIA, LLC  
DESIGNATED AGENT: ERIC 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

SURFACE HOLE DEC. LAT: 39.917049 SURVEYED LAT: 39° 55' 01.4"