



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

November 28, 2012

WELL WORK PERMIT

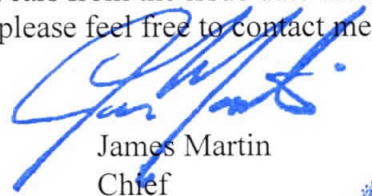
Horizontal 6A Well

This permit, API Well Number: 47-5101600, 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 of completion of drilling, 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: MICHAEL DUNN MSH 210H
Farm Name: DUNN, MICHAEL A.

API Well Number: 47-5101600

Permit Type: Horizontal 6A Well

Date Issued: 11/28/2012

Promoting a healthy environment.

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.

CONDITIONS

1. 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.
2. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the fill material shall be within plus or minus 2% of the optimum moisture content as determined by the standard proctor density test, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. Each lift must meet 95 % compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. 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.
3. 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.
4. 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.
5. 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.

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 494477557 51-Marshall 9-Webster 453
Operator ID County District Quadrangle

2) Operator's Well Number: Michael Dunn MSH 210H Well Pad Name: Michael Dunn MSH Pad

3 Elevation, current ground: 1260' Elevation, proposed post-construction: 1256'

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

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Proposed Target Formation- Marcellus, Marcellus top-6796' TVD, Marcellus Base-6846' TVD, Thickness- 50', Anticipated Pressure-4281

7) Proposed Total Vertical Depth: 6822'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 15,000'

10) Approximate Fresh Water Strata Depths: 330'

11) Method to Determine Fresh Water Depth: Data was gathered from e-logs, drillers logs and from wells within a 2500' radius

12) Approximate Saltwater Depths: 1156'

13) Approximate Coal Seam Depths: 770'

14) Approximate Depth to Possible Void (coal mine, karst, other): None that we are aware of.

15) Does land contain coal seams tributary or adjacent to, active mine? yes

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): 13.7

19) Area to be disturbed for well pad only, less access road (acres): 7.2

*DmH
9-21-13*

*RECEIVED
OCT 10 2012
WV Department of
Environmental Protection*

WW - 6B
(1/12)

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#	430'	430' ✓	410 sx/cts
Coal	9 5/8"	New	J-55	40#	2300'	2300' ✓	880 sx/cts
Intermediate	7"	New	P-110	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	P-110	20#	15,000'	15,000' ✓	Lead 1200 sx Tail 1400 sx/100' inside intermediate
Tubing	2 3/8"	New	N-80	4.7#	Approx. 7572'	Approx. 7572'	
Liners							

DH 9-21-12

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"	.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"		
Depths Set:	Approx. 6,197'		

DEC 10 2012

2012

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.

DMAH
9-21-12

NOV 10 2012

ES-111111



**CHEMICAL LISTING OF CEMENT & ADDITIVES FOR CHESAPEAKE ENERGY
CORP. WELLS**

	PRODUCT NAME	PRODUCT USE	CHEMICAL NAME	CAS #
SURFACE STRING (13-3/8")	Type I Cement	Cementing	Portland Cement	65997-15-1
			Gypsum	7778-18-9
			Crystalline Silica (Quartz)	14808-60-7
	Calcuim Chloride	Salt	Calcuim Chloride	010043-52-4
	Cello Flake	Lost Circulation Additive	N.A.	N.A.
	Bentonite	Special: Cement Additive	Bentonite	1302-78-9
Crystalline Silica			14808-60-7	
INTERMEDIATE STRING (9-5/8")	Type I Cement	Cementing	Portland Cement (Gypsum)	65997-15-1
	Calcuim Chloride	Salt	Calcuim Chloride	010043-52-4
	Cello Flake	Lost Circulation Additive	N.A.	N.A.
	Bentonite	Special: Cement Additive	Bentonite	1302-78-9
			Crystalline Silica	14808-60-7
LONG STRING (9-5/8")	Class H Cement	Cementing	Portland Cement (Gypsum)	65997-15-1
	Fly Ash (Poz)	CMT extender	Alumina	1344-28-1
			Calcium Oxide	1305-78-8
			Iron Oxide	1309-37-1
			Silica (quartz)	14808-60-7
	FL-62	Fluid loss - cement	Trade Secret	Trade Secret
	CD-32	Cement dispersant	Sodium lauryl ether sulphate	009004-82-4
	ASA-301	Special additive	Crystalline silica quartz	014808-60-7
	SMS	CMT extender	Sodium Silicate	6834-92-0
	R-3	Retarder	No hazardous ingredients	N.A.
	SS-2	Proprietary surfactant mixture	No hazardous ingredients	N.A.
	SealBond	Special Cement Spacer Additive	Crystalline Silica	14808-60-7
	Alpha 1427	Biocide	Glutaraldehyde	000111-30-8
			Quaternary ammonium chloride	007173-51-5
			Alkyl dimethyl benzyl ammonium chloride	068424-85-1
			Ethanol	000064-17-5
	Barite	Cement Additive	Barium Sulfate	7727-43-7
			Crystalline Silica (Quartz)	14808-60-7
	Techni-Hib 377	Corrosion Inhibitor	Quaternary Ammonium Compd	Trade Secret
			Methanol	67-56-1
Ehanol			64-17-5	

Production Cement					
D167	UNIFLAC* S	aliphatic amide polymer		proprietary	
D154	low-temperature extender	non-crystalline silica		7631-86-9	
D400	EasyBLOK	boric acid		10043-35-3	
D046	antifoam	Fuller's earth (attapulгите)		8031-18-3	
D201	basic cements enabler	Polypropylene glycol		25322-69-4	
		chrySTALLINE silica		14808-60-7	
		metal oxide		proprietary	
D202	low-temperature solid dispersant	sulphonated synthetic polymer		proprietary	
D207	general purpose FLAC	formaldehyde (impurity)		50-00-0	
D153	anti-settling agent	polyglucoside derivative		proprietary	
		crystalline silica		14808-60-7	
SPACER					
D182	MUSPUSH* II Spacer	sulfonated organic polymer		proprietary	
D031	barite	glucoside polymer		proprietary	
		barium sulfate		7727-43-7	
		fatty acid amine		proprietary	
B220	surfactant	ethoxylated alcohol		proprietary	
		glycerol		56-81-5	
		2,2'-iminodiethanol		111-42-2	

202 AT 100
 51-01600

SLB Cement Additives

Product Name	Product Use	Chemical Name	CAS Number	
Surface	D046	antifoam	Fuller's earth (attapulгите)	8031-18-3
	D130	polyester flake - lcm	Polypropylene glycol	25322-69-4
	D020	bentonite extender	polyethylene terephthalate bentonite	25038-59-9 1302-78-9
Intermediate	D046	antifoam	Fuller's earth (attapulгите)	8031-18-3
	D130	polyester flake - lcm	Polypropylene glycol	25322-69-4
	D044	granulated salt	polyethylene terephthalate	25038-59-9
	D201	basic cements enabler	sodium chloride	7647-14-5
	D202	low-temperature solid dispersant	chrystalline silica	14808-60-7
	<u>SPACER</u>		metal oxide	proprietary
	D020	bentonite extender	sulphonated synthetic polymer	proprietary
	D130	polyester flake - lcm	formaldehyde (impurity)	50-00-0
	D080	cement liquid dispersant	bentonite	1302-78-9
	D081	liquid retarder	polyethylene terephthalate	25038-59-9
	D047	antifoam agend		
Kick Off Plug	<u>SPACER</u>			
	D182	MUSPUSH* II Spacer	sulfonated organic polymer	proprietary
	D031	barite	glucoside polymer	proprietary
	B220	surfactant	barium sulfate	7727-43-7
			fatty acid amine	proprietary
			ethoxylated alcohol	proprietary
			glycerol	56-81-5
		2,2-Iminodietanol	111-42-2	

Halliburton Cement Additives**Surface Casing**

Standard Cement

Poly-E-Flake – Lost Circulation Material

Intermediate Casing

Standard Cement

Poly-E-Flake – Lost Circulation Material

Sodium Chloride – Salt

Production

Standard Cement

Pozmix

Latex – Gas Migration Control/Low Fluid Loss

HR-5 – Retarder


CFR-3 – Friction Reducer

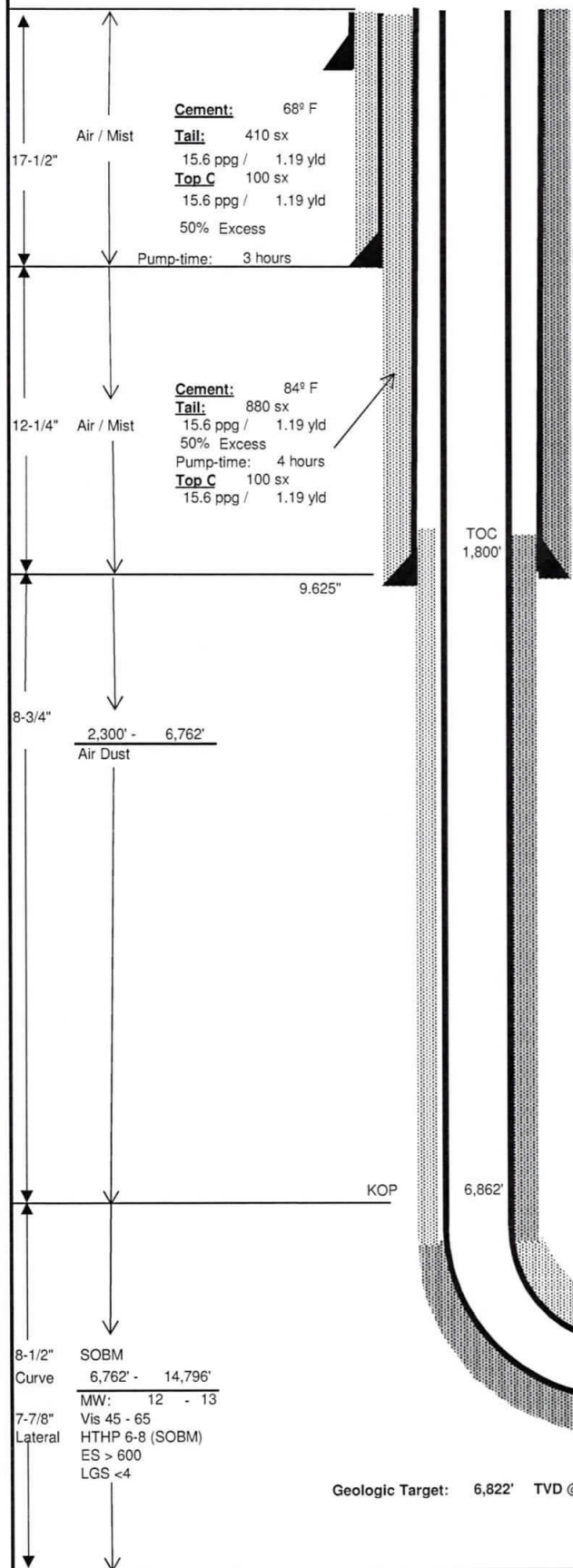
D-Air – Defoamer

WG-17 – Suspension Agent

Halad-322 – Fluid Loss Control

MCT 10 2010

		Well Name: Michael Dunn MSH 210H	Drilling Rig: N/A
Drilling Engineer: TBD	Formation: Marcellus	Directional Drilling: N/A	Drilling Mud: N/A
Superintendent: N/A	County, State: Marshall, WV	Cement Surface: N/A	Cement Longstrings: N/A
Asset Manager: N/A	Surface Latitude: 39.897142	Surface Longitude: -80.554223	Wellhead: N/A
Geologist: N/A	BH Latitude: 39.87911	BH Longitude: -80.536404	AFE #: N/A
Land: N/A	KB Elevation: 1280'	Ground Elevation: 1260'	



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'	430'
Interm	9.625	40 #	J-55	LTC	0'	2,300'
Prod	5.5	20 #	P-110	GBCD	0'	14,796'

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'
Surface	200'	0.00	0.00	200'	0.00	0.00	0.0'	0.0'
Surface	300'	0.00	0.00	300'	0.00	0.00	0.0'	0.0'
Surface	525'	0.00	0.00	525'	0.00	0.00	0.0'	0.0'
KOP1	2,400'	0.00	0.00	2,400'	0.00	0.00	0.0'	0.0'
Hold	3,825'	28.50	77.36	3,767'	2.00	2.00	76.0'	338.7'
KOP2	6,862'	28.50	77.36	6,436'	0.00	0.00	393.1'	1,752.9'
Landing Pt	7,572'	90.00	157.23	6,822'	8.66	12.00	34.2'	2,127.2'
TD	14,796'	90.00	157.23	6,822'	0.00	0.00	-6,626.3'	4,922.9'
VS Plane	157.23						VS Length	8,015.16'

Lateral Length ==> 7,223.40'

Plat Date 9/4/12

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

Mudlogger operational at Surface

Formation Depths (TVD)	
BASE BIG INJUN	2,150'
GENESEO	6,609'
TULLY	6,626'
MAHANTANGO	6,683'
MARCELLUS	6,795'
ONONDAGA	6,850'

DMH 9-21-12

Cement: 123° F
Lead: 1,200 sx
 15.6 ppg / 1.20 yld
Tail: 1,400 sx
 15.6 ppg / 1.20 yld
 15% Excess
 Pump-time: 6 hours

PBHL: 5.5"
TMD: 14,796'
TVD: 6,822'
Inclination: 90.00 deg

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

Drawn by: TBD
 Date: 9/14/2012

RECEIVED 9-21-12
Environmental

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

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name Chesapeake Appalachia, LLC OP Code 494477557

Watershed Upper Ohio South Quadrangle 453-Majorsville

Elevation 1260' County 51-Marshall District 9-Webster

Description of anticipated Pit Waste: Closed loop system in place at this time - cuttings will be taken to a permitted landfill.

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

Will a synthetic liner be used in the pit? . If so, what mil.?

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.)

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? see attached sheets

Will closed loop system be used? yes

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,

-Landfill or offsite name/permit number? Meadowfill SWF-1032, SS Grading SWF-4902, Northwestern SWF-1025

Short Creek 1034/WV0109517 / CID28726 , Arden Landfill 100172, Carbon Limestone 28726/CID 28726, American 02-12954, Country Wide 38390/CID 38390, Pine Grove 13688

*DmH
9-21-12*

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 *[Signature]*

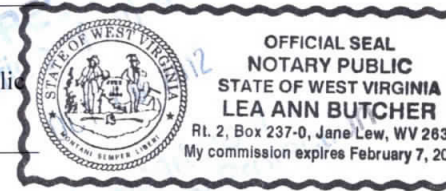
Company Official (Typed Name) Dee Southall

Company Official Title Regulatory Tech I

Subscribed and sworn before me this 17th day of September, 2012

[Signature] Notary Public

My commission expires 2/7/21



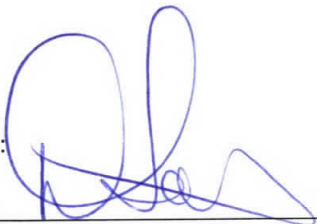
WV Dept of Environmental Protection

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

Chesapeake Appalachia, LLC

47 - 51 -

Well name: Michael Dunn MSH 210H
Majorsville, Quad
Webster, District
Marshall County, West Virginia

Submitted by:  Date: 9/12/2012
Dee Southall _____

Title Regulatory Tech I Chesapeake Appalachia, LLC

Approved by:  Date: 9-21-12

Title: Oil + Gas Inspector

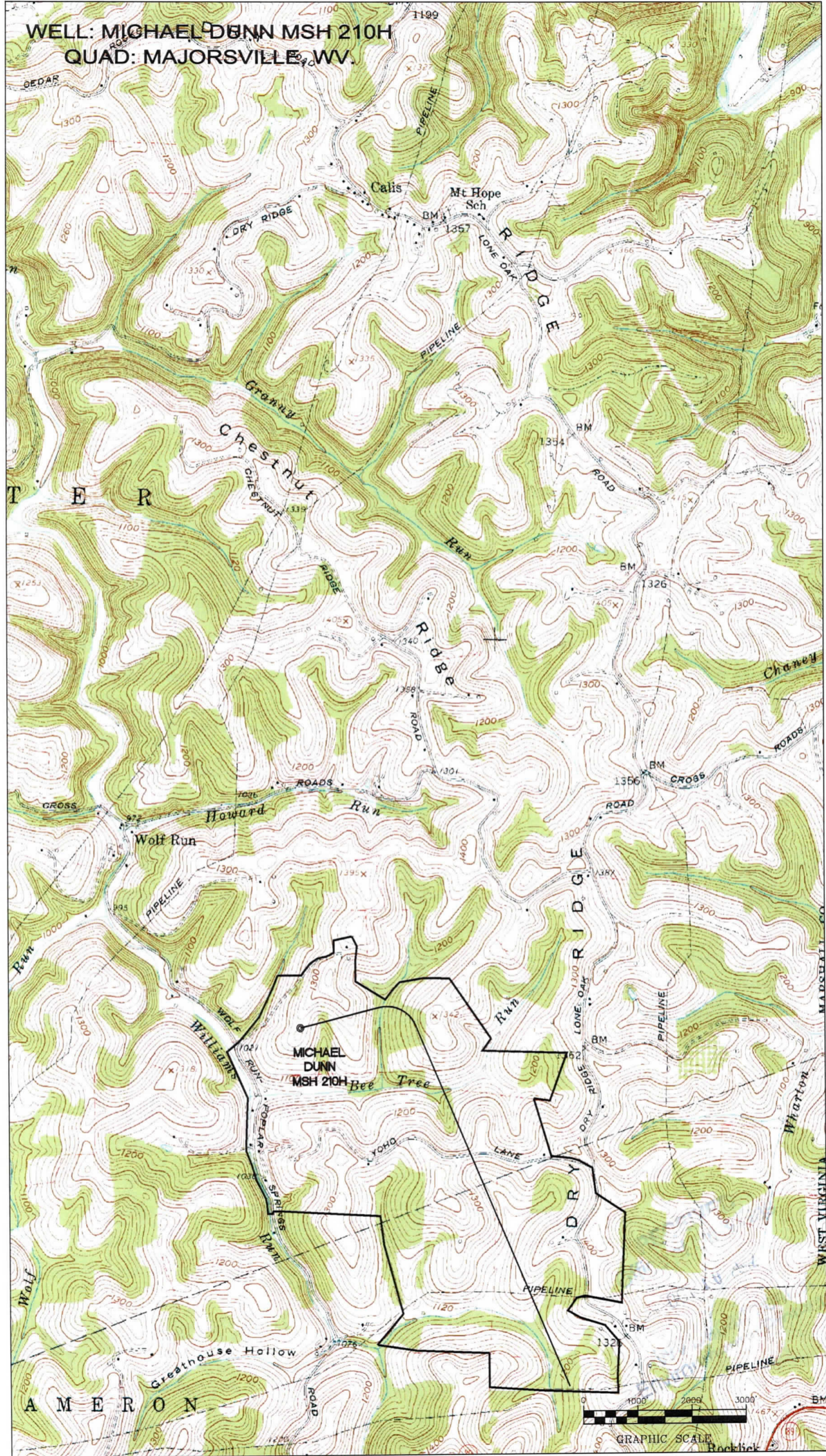
Approved by: _____ Date: _____

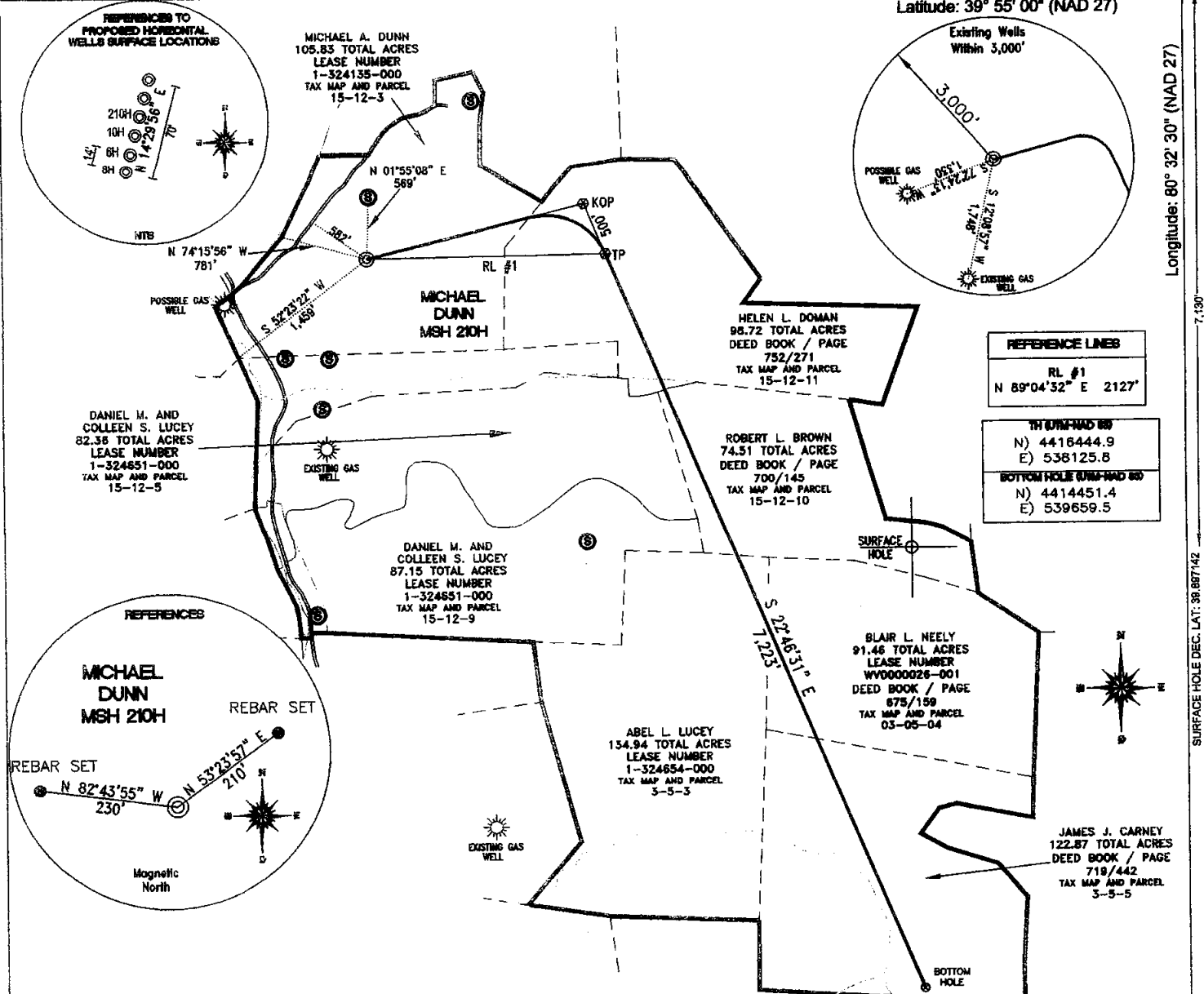
Title: _____

Chesapeake Appalachia, L.L.C. – Confidential

RECEIVED
Office of Oil & Gas
OCT 10 2012
WV Department of
Environmental Protection

WELL: MICHAEL DUNN MSH 210H
QUAD: MAJORSVILLE, WV.



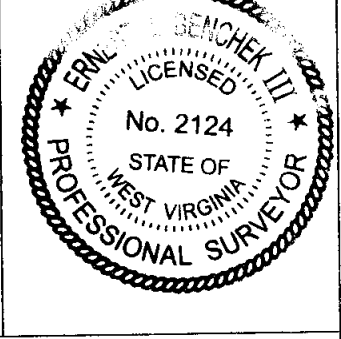


TOP HOLE (NAD 83) N) 510648.5 E) 1672781.3 LAT.) 39°53'50.0" LONG.) 80°33'14.5" DEC. LAT.) 39.897219 DEC. LONG.) 80.554020	TP (NAD 83) N) 510682.8 E) 1674908.4 LAT.) 39°53'50.6" LONG.) 80°32'47.2" DEC. LAT.) 39.897382 DEC. LONG.) 80.546441	KOP (NAD 83) N) 511143.8 E) 1674714.8 LAT.) 39°53'55.1" LONG.) 80°32'49.7" DEC. LAT.) 39.898641 DEC. LONG.) 80.547150	BOTTOM HOLE (NAD 83) N) 504022.8 E) 1677704.6 LAT.) 39°52'45.1" LONG.) 80°32'10.3" DEC. LAT.) 39.879189 DEC. LONG.) 80.536201
TOP HOLE (NAD 27) N) 510811.1 E) 1704216.4 LAT.) 39°53'49.7" LONG.) 80°33'15.2" DEC. LAT.) 39.897142 DEC. LONG.) 80.554223	TP (NAD 27) N) 510645.4 E) 1706343.5 LAT.) 39°53'50.3" LONG.) 80°32'47.9" DEC. LAT.) 39.897304 DEC. LONG.) 80.546644	KOP (NAD 27) N) 511106.4 E) 1706149.9 LAT.) 39°53'54.8" LONG.) 80°32'50.5" DEC. LAT.) 39.898564 DEC. LONG.) 80.547353	BOTTOM HOLE (NAD 27) N) 503985.3 E) 1709139.7 LAT.) 39°52'44.8" LONG.) 80°32'11.1" DEC. LAT.) 39.879110 DEC. LONG.) 80.536404

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 MAY 2011
 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS Drafted by E.A.M.

FILE #: CHE 070
 DRAWING #: 2083
 SCALE: 1" = 1400'
 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 WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304

DATE: SEPTEMBER 04, 2012
 OPERATOR'S WELL #: MICHAEL DUNN MSH 210H
 API WELL #: 47 51 01600H6A
 STATE COUNTY PERMIT

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

WATERSHED: UPPER OHIO SOUTH ELEVATION: 1,260'
 COUNTY/DISTRICT: MARSHALL / WEBSTER QUADRANGLE: MAJORSVILLE, WV.
 SURFACE OWNER: MICHAEL A. DUNN ACREAGE: 105.83 +/-
 OIL & GAS ROYALTY OWNER: MICHAEL A. DUNN ACREAGE: 435.19 +/-
 LEASE NUMBERS: _____

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

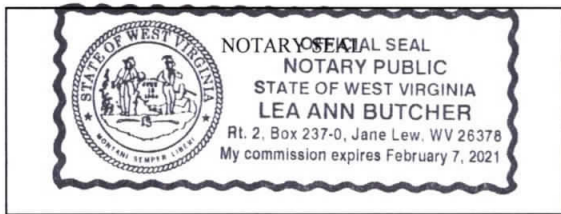
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,822' TMD: 14,796'
 WELL OPERATOR: CHESAPEAKE APPALACHIA, LLC. DESIGNATED AGENT: ERIC GILLESPIE
 ADDRESS: PO BOX 18496 ADDRESS: PO BOX 6070
 CITY: OKLAHOMA CITY STATE: OK ZIP CODE: 73154-0496 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

Certification of Notice is hereby given:

THEREFORE, I Dee Southall, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, 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 and imprisonment.

Well Operator: Chesapeake Appalachia, LLC
By: Dee Southall
Its: Regulatory Tech I
Telephone: 304-517-1416

Address: PO Box 1300
Jane Lew, WV 26378
Facsimile: 304-471-2497
Email: danielle.southall@chk.com



Subscribed and sworn before me this 17th day of September, 2012
Lea Ann Butcher Notary Public
My Commission Expires 2/7/21

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

RECEIVED
Office of Oil and Gas
OCT 10 2012



STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 10/9/12 **Date Permit Application Filed:** 10/9/12

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b), no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner.

Notice is hereby provided to:

SURFACE OWNER(s)

Name: Michael & Kandy Dunn
Address: 502 Dunns Drive
Cameron, WV 26033

Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: _____
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments/Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: Consol Energy, Inc. Attn: Leatherwood
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317-6506

COAL OPERATOR

Name: _____
Address: _____

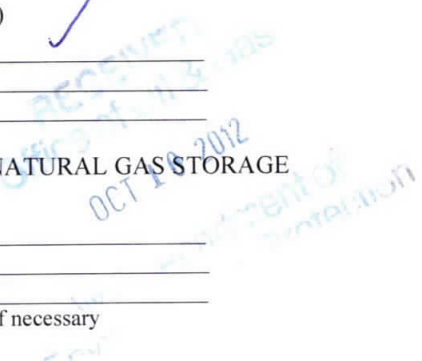
WATER PURVEYOR(s)

Name: Michael Dunn
Address: RR 4 Box 56
Cameron, WV 26033

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary



STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 10/9/12 **Date Permit Application Filed:** 10/9/12

Notice of:

- PERMIT FOR ANY WELL WORK CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE REGISTERED MAIL METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b), no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner.

Notice is hereby provided to:

- SURFACE OWNER(s)

Name: _____

Address: _____

Name: _____

Address: _____

- SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: _____

Address: _____

Name: _____

Address: _____

- SURFACE OWNER(s) (Impoundments/Pits)

Name: _____

Address: _____

- COAL OWNER OR LESSEE

Name: _____

Address: _____

- COAL OPERATOR

Name: _____

Address: _____

- WATER PURVEYOR(s)

Name: Jerald Whipkey ✓

Address: 64 Gambles

Moundsville, WV 26041

- OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____

Address: _____

*Please attach additional forms if necessary

RECEIVED
 Office of Oil & Gas
 OCT 10 2012
 Department of Environmental Protection

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall also include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

WW-6A
(1-12)

API NO. 47-51-Marshall - 01600
OPERATOR WELL NO. Michael Dunn MSH 210H
Well Pad Name: Michael Dunn MSH Pad

Notice is hereby given by:

Well Operator: Chesapeake Appalachia, LLC
Telephone: 304-517-1416
Email: danielle.southall@chk.com

Address: PO Box 1300
Jane Lew, WV 26378
Facsimile: 304-471-2497

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at deprivacyofficer@wv.gov.

RECEIVED
Office of Oil & Gas
OCT 10 2012
WV DEPARTMENT OF
Environmental Protection

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 09/17/2012 **Date Permit Application Filed:** 10/09/2012

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

- | | |
|--|-------------------------------|
| <input checked="" type="checkbox"/> CERTIFIED MAIL | <input type="checkbox"/> HAND |
| RETURN RECEIPT REQUESTED | DELIVERY |

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)

(at the address listed in the records of the sheriff at the time of notice):

Name: <u>Michael A. Dunn and Kandy R. Dunn</u>	Name: _____
Address: <u>502 Dunns Drive</u>	Address: _____
<u>Cameron, WV 26033</u>	_____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>538123.8</u>
County: <u>Marshall</u>		Northing: <u>4416436.6</u>
District: <u>Webster</u>	Public Road Access: <u>Wolf Run Rd</u>	
Quadrangle: <u>Majorsville, WV</u>	Generally used farm name: _____	
Watershed: <u>Upper Ohio- Wheeling</u>		

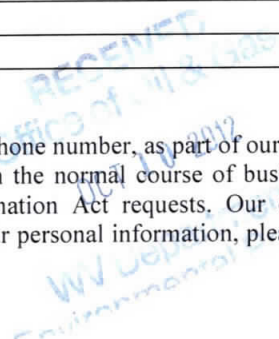
This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: <u>Chesapeake Appalachia LLC</u>	Address: <u>PO Box 1300, 179 Chesapeake Drive</u>
Telephone: <u>304-517-1416</u>	<u>Jane Lew, WV 26378</u>
Email: <u>Danielle.Southall@chk.com</u>	Facsimile: <u>304-471-2497</u>

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.





WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

May 25, 2011

RECEIVED

MAY 27 2011

MAINTENANCE DIVISION

To: Heather Huffman

From:

Gary K. Clayton

Gary K. Clayton

Attached please find the original Bond provided by Chesapeake for their Statewide Blanket Bond and the Oil and Gas Statewide Bonding Agreement.

Also transmitted herewith please find a bonding agreement to accompany a bond you already have received from Gastar Exploration USA Inc..

*Sent Bond agreement
- in duplicate to
Legal 6/27/11*

OCT 10 2011

RECEIVED

MAY 27 2011

**OIL AND GAS ROAD
STATEWIDE BONDING AGREEMENT**

MAINTENANCE DIVISION

THIS AGREEMENT, executed in duplicate, made and entered into this 19th day of May, 2011, by and between the **WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS**, hereinafter called "**DEPARTMENT**," and **CHESAPEAKE APPALACHIA LLC**, hereinafter called "**COMPANY**."

WITNESSETH:

WHEREAS, Company has horizontal gas well drilling operations in certain areas of West Virginia; and

WHEREAS, the Department believes that the frequent and repetitive use of certain sections of highways in the State by Company, its contractors, agents, independent contractors or suppliers of drilling materials or drilling equipment, and employees contributes to increased wear and tear to public roads in the state road system in the State, including local roads ("State Owned Roads"); and,

WHEREAS, the Department and Company have entered into this Agreement to satisfy the requirements of the Department's policy entitled "Oil & Gas Road Policy" dated February 1, 2011, as issued by Paul A. Mattox, Jr., Secretary of Transportation / Commissioner of Highways, and any subsequent related policies, hereinafter called "Policy", a copy of which is made a part of this Bonding Agreement and is identified as Attachment 1.

NOW, THEREFORE, for and in consideration of the mutual agreements hereinafter set forth, the parties agree as follows:

I. For purposes of this Bonding Agreement, "Project Transportation Usage" of the Company shall be understood to mean use of one or more State Owned Roads for the delivery and removal of drilling materials and drilling equipment at the site or location of one or more of Company's horizontal gas well pad locations. To the extent reasonably practical, prior to commencing use of a State Owned Road for Project Transportation Usage after January 1, 2011, the Company shall submit to the Department a section or sections of current official WVDOH County Highway maps identifying the exact location of the proposed project and the State Owned Roads that the Company will utilize for the Project Transportation Usage.

II. Company and Department shall within 14 days of the Company's submittal, agree to a list of these sections of State Owned Roads, hereinafter called "Project Roads List", to be utilized for each of Company's projects, identified by route number and milepost; at a time to be mutually agreed to by the parties prior to initial commencement of Project Transportation Usage of a particular State Owned Road on a Project Roads List, the Company and Department will jointly review the condition of the roads and bridges on the Project Roads List. The Department will document the road type and surface condition and general right-of-way width of each section of road on the Project Road List. Either party may supplement this documentation with photographs, video or other evidence of the present condition of the road surface, shoulders, ditches, culverts, bridges or other structures or appurtenances of roads on the Project Road List, as well as approaches to the roads, utility facilities located within or along the right-of-way, or any other condition, including third-party activities, that may affect the duties and responsibilities of the parties under this Agreement. A copy of any such documentation must be made and provided to the other party within ten business days after the joint review of the roads on the Project Roads List.

III. Department shall issue a Project Agreement or Project Permit, as appropriate, to Company to use State Owned Roads and may include any minor or major improvements required of Company prior to, during or after Project with the assignment of responsibilities of both parties prior to, during and after the operator has completed well fracturing..

IV. In the Project Agreement/Project Permit, the Department shall not require the use of State Owned Roads other than the roads proposed by Company unless the Department has safety concerns as to the Company's proposed roads. A failure to agree on roads that may otherwise be lawfully used for a particular Project Transportation Usage shall result in the designation of the State Owned Roads proposed by Company, with milepost determinations as designated by Department. This Agreement shall only cover portions of State Owned Roads designated on the Project Roads List.

V. For the duration of Company's Project Transportation Usage of the Stated Owned Roads on the Project Roads List, whether by the Company, its contractors (while working on behalf of Company), agents, independent contractors or suppliers of drilling materials or drilling equipment, or employees, the Company agrees to pay for all reasonable maintenance and repair costs incurred by the Department to repair areas of the State Owned Roads included in the Project Roads List that were directly damaged by Company's Project Transportation Usage, as determined to be reasonably necessary and appropriate by the Department. The Department shall keep a record of all labor performed by Department employees and contractors for such maintenance and repairs and shall send an invoice for the same to Company.

VI. Company shall be responsible for the cost of all maintenance and repairs reasonably necessary to put the existing roadways, bridges and appurtenances on the Project Roads List utilized for the Project Transportation Usage in the condition that existed immediately prior to the Project Transportation Usage. Company shall not be required to pay for maintenance or repairs to put any areas of such roadways, bridges and appurtenances on the Project Roads List in a condition better than the condition that existed immediately prior to the Project Transportation Usage. Company shall also not be required to pay for maintenance or repairs to any areas of these roadways, bridges or appurtenances on the Project Roads List that are not actually utilized for the Project Transportation Usage or for damage not caused by Project Transportation Usage.

VII. Company shall notify the Department in writing of Company's final completion of Project Transportation Usage for particular roadways, bridges and appurtenances on the Project Roads List. Within fourteen days after its receipt of written notification of the completion of the Project Transportation Usage for all roads on a Project Roads List, the Department will review the condition of the roadways, bridges and appurtenances on the Project Roads List actually utilized for the Project Transportation Usage and advise Company of any final repairs reasonably necessary to leave these roads, bridges and appurtenances in a condition reasonably deemed by Department to be equal to their condition prior to commencement of Project Transportation Usage; and, upon completion of all such final repairs by or on behalf of Company and acceptance by Department, the Company shall be released from all further liability for maintenance or repairs to roads, bridges, or appurtenances on said Project Roads List. Any maintenance or repair work under the Project Agreement/Project Permit for roads, bridges or appurtenances on the Project Roads List may be performed by a contractor directly chosen by the Company as approved by the Department, the Department's workforce, or a private contractor hired by the Department through the public bid process in accordance with state law, all of which work shall be subject to the standards and specifications of the Department.

VIII. In order to ensure performance of Company's performance and payment obligations under this Bonding Agreement, the Company shall post a corporate surety bond, hereinafter called "**Master Bond**", with the Department named as the beneficiary, which form of bond shall be subject to the consent of the Department, not to be unreasonably withheld. The amount and form of the bond shall be in accordance with the Policy as set forth above. However, the amount of the Master Bond does not limit the amount of claims that may be made by the Department against the Company under this Bonding Agreement. The Company shall provide the Master Bond to the Department within one (1) month after the execution of this Bonding Agreement. The Master Bond shall secure the good faith performance of all payment obligations of Company under the terms of this Bonding Agreement respecting the roads, bridges and appurtenances on the Project Roads List for each Project Transportation Usage undertaken by the Company, and shall remain in effect until termination of this Agreement. Company shall not be obligated to provide any other bonds, sureties, or other guarantees of performance to the Department for Company's use of State Owned Roads, except as required in this Agreement.

IX. Company shall maintain Commercial General Liability Insurance in the amount of two million dollars, with a minimum coverage of one million dollars per occurrence, for personal injury or death to persons, or for property damage, resulting from Company's Project Transportation Usage and shall present evidence of such insurance to Department upon request.

X. Company's usage of State Owned Roads under the Project Agreement/Project Permit shall comply with all applicable Federal, State and local laws and regulations including, but not limited to, to the extent applicable, the National Environmental Policy Act, Section 404 of the Clean Water Act, Section 106 of the National Historic Preservation Act, Rare, Threatened and Endangered Species Act, Section 401 Water Quality Certification, and hazardous waste requirements. Further, upon reasonable written request of Department, Company shall furnish Department with acceptable documentation of such compliance which is in the possession of the Company.

XI. Company shall defend, indemnify and hold Department harmless from and against any and all losses, damage, and liability, and from all claims for damages on account of or by reason of bodily injury, including death, which may be sustained, or claimed to be sustained, by any person or persons, including employees of Department, and from and against any and all claims, losses or liabilities for damages to property, arising out of the negligent or willful acts or omissions of Company, its agents, independent contractors and suppliers of drilling materials or drilling equipment, employees and contractors, in the performance of all Project Transportation Usage activities undertaken pursuant to this Agreement (collectively, "claims"). The Company shall not be responsible to indemnify, defend or hold harmless Department for any claims caused by the negligent or willful acts or omissions of the Department or its agents, employees and contractors or third parties not performing work at the direction of Company or delivering drilling equipment or drilling materials, including water, for use by or for company.

XII. If a provision of this Agreement is or becomes illegal, invalid or unenforceable in any jurisdiction, that shall not affect the validity or enforceability of any other provision of this Agreement; or the validity or enforceability in other jurisdictions of that or any other provision of this Agreement.

XIII. Department shall give Company a minimum of thirty days written notice of default under the terms of this Bonding Agreement and the opportunity to cure this default during such thirty-day period. If a default is not cured to the satisfaction of Department, or provision acceptable to Department is not made for a cure, Department may then elect to terminate this Bonding Agreement in whole or in part, and may in addition exercise its rights under the Master Bond or seek any other lawful relief available. Company may terminate this Bonding Agreement upon thirty days written notice to Department for any reason. In the event Company terminates this Agreement for any reason, it shall be liable for the repair and maintenance costs set forth above for prior Project Transportation Usage.

XIV. Nothing herein shall be construed to mean that Company shall have any jurisdiction or control over any public roads in the state road system.

XV. Company, its contractors, agents, employees and suppliers shall at all times be subject to applicable provisions of state and federal law, including without limitation laws requiring operation of vehicles in accordance with legal size and weight restrictions and posted weight limits. Oversize/overweight permits for vehicle or loads not otherwise conforming with law must be obtained in accordance with law; Department agrees to work in good faith with Company to review and grant (where authorized by law) such permits in a timely manner upon request by Company.

XVI. This Bonding Agreement shall be construed and enforced in accordance with the laws of the State of West Virginia, as they may be amended.

XVII. This Bonding Agreement shall be binding upon the successors and assigns of each party hereto.

IN WITNESS WHEREOF, the parties hereto have caused this Bonding Agreement to

be executed by their duly authorized officers effective as of the date first above written.

**WEST VIRGINIA DEPARTMENT OF
TRANSPORTATION,
DIVISION OF HIGHWAYS**

Doreen Bama
Witness *Executive Secretary*

By: *Martin S. Murphy*
State Highway Engineer

**Chesapeake Appalachia LLC,
A limited liability company**

[Signature]
Witness

By: *Stacy D. Roberts*

Title: *Vice President - Risk Management*

(To be executed in duplicate)

APPROVED AS TO FORM THIS
8th DAY OF July 2011
[Signature]
ATTORNEY LEGAL DIVISION
WEST VIRGINIA DEPARTMENT
OF HIGHWAYS

RECEIVED

MAY 27 2011



Liberty Mutual Surety
1001 4th Avenue, Suite 1700
Seattle, WA 98154

MAINTENANCE DIVISION

PERFORMANCE BOND

Bond 022033412

KNOW ALL BY THESE PRESENTS, That we, Chesapeake Appalachia, L.L.C.

(hereinafter called the Principal), as Principal, and Safeco Insurance Company of America, a corporation duly organized under the laws of the State of Washington (hereinafter called the Surety), as Surety, are held and firmly bound unto West Virginia Department of Transportations, Division of Highways

_____ (hereinafter called the Obligee),
in the sum of One Million Dollars And Zero Cents

_____ (\$ 1,000,000.00) Dollars, for the payment of which sum well and truly to be made, we, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Signed and sealed this 19th day of May, 2011.

WHEREAS, said Principal has entered into a written Contract with said Obligee, dated _____, for use of State roadways pursuant to Oil and Gas Road Statewide Bonding Agreement

in accordance with the terms and conditions of said Contract, which is hereby referred to and made a part hereof as if fully set forth herein:

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, That if the above bounden Principal shall well and truly keep, do and perform each and every, all and singular, the matters and things in said contract set forth and specified to be by said Principal kept, done and performed, at the times and in the manner in said contract specified, or shall pay over, make good and reimburse to the above named Obligee, all loss and damage which said Obligee may sustain by reason of failure or default on the part of said Principal so to do, then this obligation shall be null and void; otherwise shall remain in full force and effect.

NO SUIT, ACTION OR PROCEEDING by the Obligee to recover on this bond shall be sustained unless the same be commenced within two (2) years following the date on which Principal ceased work on said Contract.



Chesapeake Appalachia, L.L.C.
By _____ Principal



Safeco Insurance Company of America
By Stacy L. Roberts
Stacy L. Roberts Attorney-in-Fact



POWER OF ATTORNEY

Safeco Insurance Companies of America
1001 4th Avenue
Suite 1700
Seattle, WA 98154

KNOW ALL BY THESE PRESENTS:

No. 13359

That SAFECO INSURANCE COMPANY OF AMERICA, a Washington corporation, does hereby appoint

*****STACY L. ROBERTS: Oklahoma City, Oklahoma*****

its true and lawful attorney(s)-in-fact, with full authority to execute on behalf of the company fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind SAFECO INSURANCE COMPANY OF AMERICA thereby as fully as if such instruments had been duly executed by its regularly elected officers at its home office. IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA has executed and attested these presents

this 17th day of April 2009

Dexter R. Legg

Dexter R. Legg, Secretary

TAMIKOLAJEWSKI

Timothy A. Mikolajewski, Vice President

CERTIFICATE

Extract from the By-Laws of SAFECO INSURANCE COMPANY OF AMERICA:

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of SAFECO INSURANCE COMPANY OF AMERICA adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

- (i) The provisions of Article V, Section 13 of the By-Laws, and
- (ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
- (iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be facsimile thereof."

I, Dexter R. Legg, Secretary of SAFECO INSURANCE COMPANY OF AMERICA, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of this corporation, and of a Power of Attorney issue pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 19th day of May 2011.



Dexter R. Legg

Dexter R. Legg, Secretary

Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
BAKER HUGHES	ALPHA 1427	Biocide	Didecyl Dimethyl Ammonium Chloride	007173-51-1
			Ethanol	000064-17-5
			Glutaraldehyde (Pentanediol)	000111-30-8
			Quaternary Ammonium Compound	068424-85-1
			Water	007732-18-5
	BF-7L	Buffer	Potassium Carbonate	000584-08-7
	ClayCare	Clay Stabilizer	Choline Chloride	000067-48-1
			Water	007732-18-5
	Enzyme G-I	Breaker	No Hazardous Components	NONE
	ENZYME G-NE	Breaker	No Hazardous Components	NONE
	FRW-18	Friction Reducer	Petroleum Distillate Hydrotreated Light	064742-47-8
	GW-3LDF	Gel	Petroleum Distillate Blend	N/A-014
			Polysaccharide Blend	N/A-021
	SCALETROL 720	Scale Inhibitor	Diethylene Glycol	000111-46-6
Ethylene Glycol			000107-21-1	
XLW-32	Crosslinker	Boric Acid	010043-35-3	
		Methanol (Methyl Alcohol)	000067-56-1	
FRAC TECH SERVICES	APB01 (AMMONIUM PERSUFATE BREAKER)	Breaker	Ammonium Persulfate	007727-54-0
	B05 (LOW PH BUFFER)	Buffer	Acetic acid	000064-19-7
	BXL03 Borate XL Delayed High Temp	Crosslinker	No Hazardous Components	NONE
	FRW-200	Friction Reducer	No Hazardous Components	NONE
	HVG01 (TURQUOISE-1 BULK)	Gelling Agent	Petroleum Distillate Hydrotreated Light	064742-47-8
	KCLS-4	Clay Stabilizer	No Hazardous Components	NONE
	LTB-1	Breaker	Ammonium Persulfate	N/A

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 Environmental Protection

Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
NALCO ONESOURCE	EC6110A	Biocide	Ethanol	000064-17-5
			Glutaraldehyde (Pentanediol)	000111-30-8
			Quaternary Ammonium Compounds	N/A-063
	EC6629A	Biocide	No Hazardous Components	NONE
WEATHERFORD	WBK-133 OXIDIZER	Breaker	Ammonium Persulfate	007727-54-0
	WBK-134	Breaker	Ammonium Persulfate	007727-54-0
			Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7
	WCS-631LC	Clay Stabilizer	Proprietary Non Hazardous Salt	N/A-229
			Water	007732-18-5
	WFR-55LA	Friction Reducer	No Hazardous Components	NONE
	WGA-15L	Gel	Petroleum Distillate Hydrotreated Light	064742-47-8
	WPB-584-L	Buffer	Potassium Carbonate	000584-08-7
			Potassium Hydroxide	001310-58-3
	WXL-101LE	Corsslinker	No Hazardous Components	NONE
	WXL-101LM	Crosslinker	Petroleum Distillate Hydrotreated Light	064742-47-8
	WXL-105L	Crosslinker	Water	007732-18-5
			Ethylene Glycol	000107-21-1
			Boric Acid	010043-35-3
Ethanolamine			000141-43-5	
SCHLUMBERGER	B244 Green-Cide 25G	Biocide	Glutaraldehyde	111-30-8
	L071 Temporary Clay Stabilizer	Clay Stabilizer	Cholinium Chloride	67-48-1
	Breaker J218	Breaker	Diammonium Peroxidisulphate	7727-54-0
	EB-Clean* J475 Breaker		Diammonium Peroxidisulphate	7727-54-0
	Friction Reducer B315	Friction Reducer	Distillates (petroleum), Hydrotreated light Aliphatic Alcohol Glycol Ether	64742-47-8 Proprietary
	Friction Reducer J609		Ammonium Sulfate	7783-20-2

Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
SCHLUMBERGER	Water Gelling Agent J580	Gel	Carbohydrate Polymer	Proprietary
	Scale Inhibitor B317	Scale Inhibitor	Trisodium ortho phosphate Ethane-1, 2-diol	7601-54-9 107-21-1
	Borate Crosslinker J532	Crosslinker	Aliphatic polyol Sodium tetraborate decahydrate	Proprietary 1303- 96-4
	Crosslinker J610		Aliphatic polyol Potassium hydroxide	Proprietary 1310- 58-3

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