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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

July 29, 2014


**WELL WORK PERMIT**  
**Vertical Well**

This permit, API Well Number: 47-10701750, issued to COLUMBIA GAS TRANSMISSION, LLC, 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: ROCKPORT 12593  
Farm Name: WADE, CARL & DIANNE  
**API Well Number: 47-10701750**  
**Permit Type: Vertical Well**  
Date Issued: 07/29/2014

**Promoting a healthy environment.**

**08/01/2014**

## PERMIT CONDITIONS

West Virginia Code §22-6-11 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

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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 §22-6-20, 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. Pursuant to 35 CSR 4-19.1.a, at the request of the surface owner all water wells or springs within 1000 feet of the proposed well that are actually utilized for human consumption, domestic animals or other general use shall be sampled and analyzed.
3. Pursuant to 35 CSR 4-19.1.c, if the operator is unable to sample and analyze any water well or spring with one thousand (1,000) feet of the permitted well location, the Office of Oil and Gas requires the operator to sample, at a minimum, one water well or spring located between one thousand (1,000) feet and two thousand (2,000) feet of the permitted well location.
4. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
5. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
6. During the surface casing and cementing process, in the event cement does not return to the surface, or any other casing string that is permitted to circulate cement to the surface and does not return to the surface, the oil and gas inspector shall be notified within twenty-four (24) hours.
7. Well work activities shall not constitute a hazard to the safety of persons.
8. 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](mailto:DEPOOGNotify@wv.gov) within 30 days of commencement of drilling.



WW - 2B  
(Rev. 8/10)

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

1) Well Operator: Columbia Gas Transmission, LLC 307032 Wood Steele Rockport  
Operator ID County District Quadrangle

2) Operator's Well Number: Rockport 12593 3) Elevation: 1079

4) Well Type: (a) Oil \_\_\_\_\_ or Gas X  
(b) If Gas: Production \_\_\_\_\_ / Underground Storage X  
Deep X / Shallow \_\_\_\_\_

5) Proposed Target Formation(s): Oriskany Proposed Target Depth: 5705' MD

6) Proposed Total Depth: 5819' MD Feet Formation at Proposed Total Depth: Helderberg

7) Approximate fresh water strata depths: no known water wells within 1000' - no offset well drilling records reported fresh water

8) Approximate salt water depths: Salt Sand 1950 - 2258'

9) Approximate coal seam depths: none expected

10) Approximate void depths, (coal, Karst, other): none expected

11) Does land contain coal seams tributary to active mine? no

12) Describe proposed well work and fracturing methods in detail (attach additional sheets if needed)

Drill well for underground natural gas storage service. Fracture stimulate with +/- 500 bbls fluid.

Refer to directional drilling well plan.

*Amie Stevens*  
*6/26/2014*

13) **CASING AND TUBING PROGRAM**

TYPE	SPECIFICATIONS			FOOTAGE	INTERVALS	CEMENT
	Size	Grade	Weight per ft	For Drilling	Left in Well	Fill -up (Cu. Ft.)
Conductor	20	B-35	59	20	20	20 (to surface)
Fresh Water	13-3/8"	H-40	48	400	400	280 (to surface)
Coal						
Intermediate	9-5/8"	J-55	36	2310	2310	740 (to surface)
Production	7"	N-80	23	5685	5685	150 (1000 ft)
Tubing						
Liners						

✓  
✓  
✓

Received

JUN 30 2014

Packers: Kind: \_\_\_\_\_  
Sizes: \_\_\_\_\_  
Depths Set \_\_\_\_\_

10701750T

PRE-DRILLING WELL PLAN

# Columbia Gas Transmission, LLC

Wood County, WV  
Rockport Storage Pad #2  
Rockport Storage Pad #2 - Well 12593

Rockport 12593 - Orig Hole

Plan: Rockport 12593 - Plan #5

## Standard Planning Report

05 June, 2014

Received

JUN 30 2014

Office of Oil and Gas  
WV Dept. of Environmental Protection



**Directional Drilling Contractors, LLC.**

An Archer Company

08/01/2014



10701750T

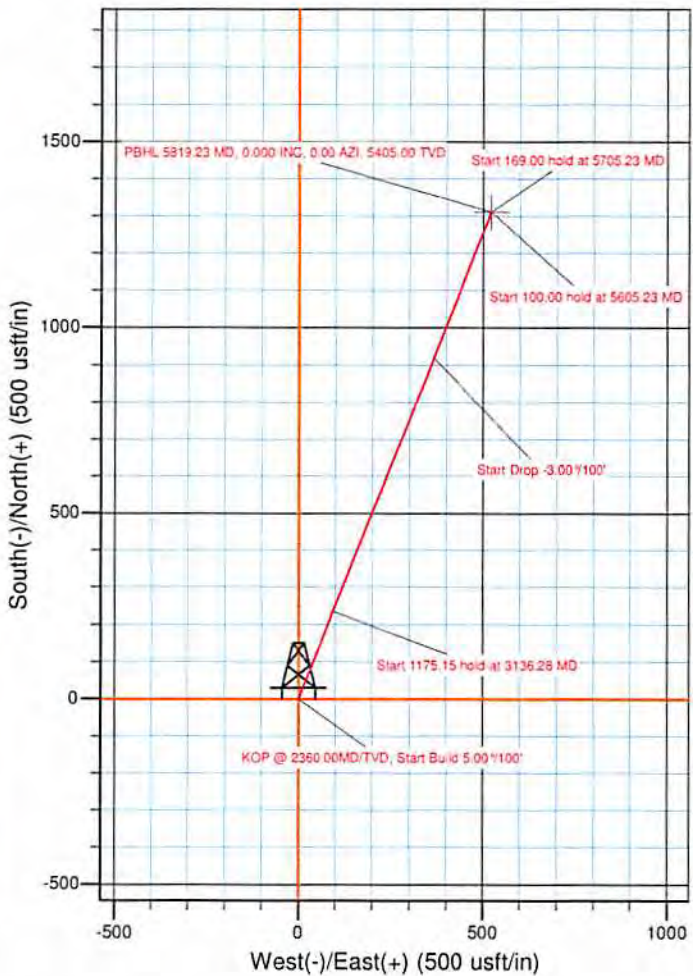
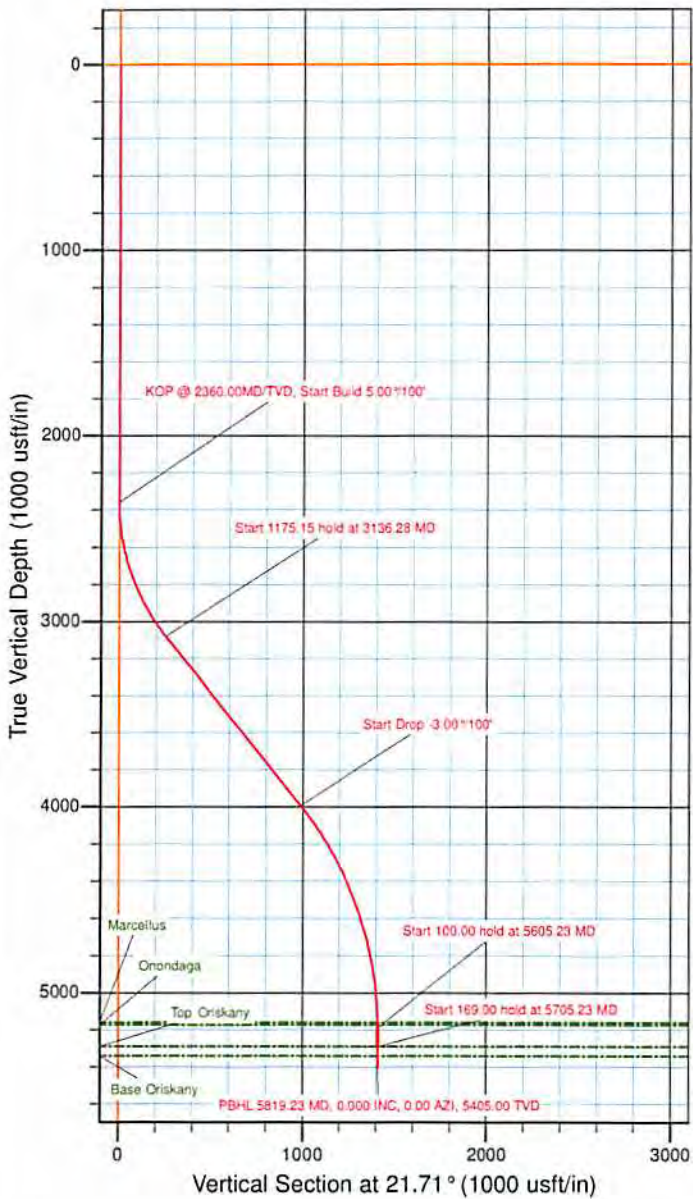
Columbia Gas Transmission, LLC

Rockport Storage Pad #2 - Well 12593						
+N/-S	+E/-W	Northing	Ground Level: Easting	0.00	Latitude	Longitude
0.00	0.00	210754.4000	1386009.2700	39° 3' 37.337 N	81° 33' 5.314 W	

Project: Wood County, WV  
 Site: Rockport Storage Pad #2  
 Well: Rockport Storage Pad #2 - Well 12593  
 Wellbore: Rockport 12593 - Orig Hole  
 Design: Rockport 12593 - Plan #5

Azimuths to Grid North  
 True North: 1.31°  
 Magnetic North: -7.11°

Magnetic Field  
 Strength: 52486.0snT  
 Dip Angle: 66.80°  
 Date: 05/13/2014  
 Model: HDGM



ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	V Sect	Departure	Annotation
2360.00	2360.00	0.000	0.00	0.00	0.00	0.00	0.00	KOP @ 2360.00MD/TVD, Start Build 5.00°/100'
3078.25	3136.28	38.814	21.71	235.08	93.61	253.03	253.03	Start 1175.15 hold at 3136.28 MD
3993.91	4311.43	38.814	21.71	919.40	366.11	989.61	989.61	Start Drop -3.00°/100'
5191.00	5605.23	0.000	0.00	1311.20	522.13	1411.33	1411.33	Start 100.00 hold at 5605.23 MD
5291.00	5705.23	0.000	0.00	1311.20	522.13	1411.33	1411.33	Start 169.00 hold at 5705.23 MD
5404.77	5819.00	0.000	0.00	1311.20	522.13	1411.33	1411.33	PBHL 5819.23 MD, 0.000 INC, 0.00 AZI, 5405.00 TVD

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DDC, LLC  
 646 Hall Road, Buckhannon, WV 26201  
 Phone: (304) 473-1825 Fax: (304) 473-1826

Office of **DDC** Environmental Protection  
 WV Dept. of Environmental Protection  
 An Equal Opportunity Company

Plan: Rockport 12593 - Plan #5 (Rockport Storage Pad #2 - Well 12593/Rockport 12593 - Orig Hole)  
 Created By: David L. Myers, Jr. Date: 9:44, June 05 2014

08/01/2014



10701750T

**Directional Drilling Contractors**  
Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Rockport Storage Pad #2 - Well 12593
<b>Company:</b>	Columbia Gas Transmission, LLC	<b>TVD Reference:</b>	WELL @ 0.00usft (Original Well Elev)
<b>Project:</b>	Wood County, WV	<b>MD Reference:</b>	WELL @ 0.00usft (Original Well Elev)
<b>Site:</b>	Rockport Storage Pad #2	<b>North Reference:</b>	Grid
<b>Well:</b>	Rockport Storage Pad #2 - Well 12593	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rockport 12593 - Orig Hole		
<b>Design:</b>	Rockport 12593 - Plan #5		

<b>Project</b>	Wood County, WV		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	West Virginia Northern Zone		

<b>Site</b>	Rockport Storage Pad #2				
<b>Site Position:</b>		<b>Northing:</b>	210,628.7826 usft	<b>Latitude:</b>	39° 3' 36.094 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,385,999.3630 usft	<b>Longitude:</b>	81° 33' 5.404 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	-1.31 "

<b>Well</b>	Rockport Storage Pad #2 - Well 12593					
<b>Well Position</b>	<b>+N/-S</b>	125.62 usft	<b>Northing:</b>	210,754.4000 usft	<b>Latitude:</b>	39° 3' 37.337 N
	<b>+E/-W</b>	9.91 usft	<b>Easting:</b>	1,386,009.2700 usft	<b>Longitude:</b>	81° 33' 5.314 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	0.00 usft

<b>Wellbore</b>	Rockport 12593 - Orig Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
	User Defined	05/13/14	(°) -8.42	(°) 66.80	(nT) 52,486

<b>Design</b>	Rockport 12593 - Plan #5			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	21.71

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,360.00	0.000	0.00	2,360.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,136.28	38.814	21.71	3,078.25	235.08	93.61	5.00	5.00	0.00	21.71	
4,311.43	38.814	21.71	3,993.91	919.40	366.11	0.00	0.00	0.00	0.00	
5,605.23	0.000	0.00	5,191.00	1,311.20	522.13	3.00	-3.00	0.00	180.00	
5,705.23	0.000	0.00	5,291.00	1,311.20	522.13	0.00	0.00	0.00	0.00	Well 12593 Vertical
5,819.23	0.000	0.00	5,405.00	1,311.20	522.13	0.00	0.00	0.00	0.00	

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**Directional Drilling Contractors**  
Planning Report



**Database:** EDM 5000.1 Single User Db  
**Company:** Columbia Gas Transmission, LLC  
**Project:** Wood County, WV  
**Site:** Rockport Storage Pad #2  
**Well:** Rockport Storage Pad #2 - Well 12593  
**Wellbore:** Rockport 12593 - Orig Hole  
**Design:** Rockport 12593 - Plan #5

**Local Co-ordinate Reference:** Well Rockport Storage Pad #2 - Well 12593  
**TVD Reference:** WELL @ 0.00usft (Original Well Elev)  
**MD Reference:** WELL @ 0.00usft (Original Well Elev)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

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**Planned Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn of Oil and Gas Rate (°/100usft)	Office of Oil and Gas WV Dept. of Environmental Protection
2,360.00	0.000	0.00	2,360.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>KOP @ 2360.00MD/TVD, Start Build 5.00°/100'</b>										
2,400.00	2.000	21.71	2,399.99	0.65	0.26	0.70	5.00	5.00	0.00	
2,500.00	7.000	21.71	2,499.65	7.94	3.16	8.54	5.00	5.00	0.00	
2,600.00	12.000	21.71	2,598.25	23.26	9.26	25.04	5.00	5.00	0.00	
2,700.00	17.000	21.71	2,695.03	46.52	18.52	50.07	5.00	5.00	0.00	
2,800.00	22.000	21.71	2,789.27	77.52	30.87	83.44	5.00	5.00	0.00	
2,900.00	27.000	21.71	2,880.23	116.04	46.21	124.90	5.00	5.00	0.00	
3,000.00	32.000	21.71	2,967.24	161.77	64.42	174.12	5.00	5.00	0.00	
3,100.00	37.000	21.71	3,049.63	214.38	85.37	230.75	5.00	5.00	0.00	
3,136.28	38.814	21.71	3,078.25	235.08	93.61	253.03	5.00	5.00	0.00	
<b>Start 1175.15 hold at 3136.28 MD</b>										
3,200.00	38.814	21.71	3,127.90	272.19	108.39	292.97	0.00	0.00	0.00	
3,300.00	38.814	21.71	3,205.82	330.42	131.58	355.65	0.00	0.00	0.00	
3,400.00	38.814	21.71	3,283.74	388.65	154.76	418.33	0.00	0.00	0.00	
3,500.00	38.814	21.71	3,361.66	446.88	177.95	481.01	0.00	0.00	0.00	
3,600.00	38.814	21.71	3,439.58	505.12	201.14	543.69	0.00	0.00	0.00	
3,700.00	38.814	21.71	3,517.50	563.35	224.33	606.37	0.00	0.00	0.00	
3,800.00	38.814	21.71	3,595.41	621.58	247.52	669.05	0.00	0.00	0.00	
3,900.00	38.814	21.71	3,673.33	679.81	270.71	731.73	0.00	0.00	0.00	
4,000.00	38.814	21.71	3,751.25	738.05	293.90	794.41	0.00	0.00	0.00	
4,100.00	38.814	21.71	3,829.17	796.28	317.08	857.09	0.00	0.00	0.00	
4,200.00	38.814	21.71	3,907.09	854.51	340.27	919.77	0.00	0.00	0.00	
4,300.00	38.814	21.71	3,985.01	912.74	363.46	982.45	0.00	0.00	0.00	
4,311.43	38.814	21.71	3,993.91	919.40	366.11	989.61	0.00	0.00	0.00	
<b>Start Drop -3.00°/100'</b>										
4,400.00	36.157	21.71	4,064.19	969.47	386.05	1,043.51	3.00	-3.00	0.00	
4,500.00	33.157	21.71	4,146.44	1,022.29	407.09	1,100.37	3.00	-3.00	0.00	
4,600.00	30.157	21.71	4,231.55	1,071.05	426.50	1,152.84	3.00	-3.00	0.00	
4,700.00	27.157	21.71	4,319.29	1,115.60	444.24	1,200.79	3.00	-3.00	0.00	
4,800.00	24.157	21.71	4,409.42	1,155.82	460.26	1,244.09	3.00	-3.00	0.00	
4,900.00	21.157	21.71	4,501.69	1,191.60	474.51	1,282.60	3.00	-3.00	0.00	
5,000.00	18.157	21.71	4,595.85	1,222.85	486.95	1,316.24	3.00	-3.00	0.00	
5,100.00	15.157	21.71	4,691.65	1,249.48	497.55	1,344.90	3.00	-3.00	0.00	
5,200.00	12.157	21.71	4,788.81	1,271.41	506.29	1,368.51	3.00	-3.00	0.00	
5,300.00	9.157	21.71	4,887.07	1,288.59	513.13	1,387.00	3.00	-3.00	0.00	
5,400.00	6.157	21.71	4,986.17	1,300.97	518.05	1,400.32	3.00	-3.00	0.00	
5,500.00	3.157	21.71	5,085.83	1,308.51	521.06	1,408.44	3.00	-3.00	0.00	
5,575.23	0.900	21.71	5,161.00	1,310.98	522.04	1,411.10	3.00	-3.00	0.00	
<b>Marcellus</b>										
5,587.23	0.540	21.71	5,173.00	1,311.12	522.10	1,411.25	3.00	-3.00	0.00	
<b>Onondaga</b>										
5,600.00	0.157	21.71	5,185.77	1,311.19	522.13	1,411.33	3.00	-3.00	0.00	
5,605.23	0.000	0.00	5,191.00	1,311.20	522.13	1,411.33	3.00	-3.00	0.00	
<b>Start 100.00 hold at 5605.23 MD</b>										
5,700.00	0.000	0.00	5,285.77	1,311.20	522.13	1,411.33	0.00	0.00	0.00	
5,705.23	0.000	0.00	5,291.00	1,311.20	522.13	1,411.33	0.00	0.00	0.00	
<b>Start 169.00 hold at 5705.23 MD - Top Oriskany</b>										
5,755.23	0.000	0.00	5,341.00	1,311.20	522.13	1,411.33	0.00	0.00	0.00	
<b>Base Oriskany</b>										
5,800.00	0.000	0.00	5,385.77	1,311.20	522.13	1,411.33	0.00	0.00	0.00	
5,819.00	0.000	0.00	5,404.77	1,311.20	522.13	1,411.33	0.00	0.00	0.00	
<b>PBHL 5819.23 MD, 0.000 INC, 0.00 AZI, 5405.00 TVD</b>										



1070 17507

Directional Drilling Contractors  
Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Rockport Storage Pad #2 - Well 12593
<b>Company:</b>	Columbia Gas Transmission, LLC	<b>TVD Reference:</b>	WELL @ 0.00usft (Original Well Elev)
<b>Project:</b>	Wood County, WV	<b>MD Reference:</b>	WELL @ 0.00usft (Original Well Elev)
<b>Site:</b>	Rockport Storage Pad #2	<b>North Reference:</b>	Grid
<b>Well:</b>	Rockport Storage Pad #2 - Well 12593	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rockport 12593 - Orig Hole		
<b>Design:</b>	Rockport 12593 - Plan #5		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,819.23	0.000	0.00	5,405.00	1,311.20	522.13	1,411.33	0.00	0.00	0.00

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Well 12593 Vertical - hit/miss target - Shape - Point	0.000	360.00	5,291.00	1,311.20	522.13	212,065.6000	1,386,531.4000	39° 3' 50.411 N	81° 32' 59.076 W

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,575.23	5,161.00	Marcellus		0.00	
5,587.23	5,173.00	Onondaga		0.00	
5,705.23	5,291.00	Top Oriskany		0.00	
5,755.23	5,341.00	Base Oriskany		0.00	

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
2,360.00	2,360.00	0.00	0.00	KOP @ 2360.00MD/TVD, Start Build 5.00°/100'
3,136.28	3,078.25	235.08	93.61	Start 1175.15 hold at 3136.28 MD
4,311.43	3,993.91	919.40	366.11	Start Drop -3.00°/100'
5,605.23	5,191.00	1,311.20	522.13	Start 100.00 hold at 5605.23 MD
5,705.23	5,291.00	1,311.20	522.13	Start 169.00 hold at 5705.23 MD
5,819.00	5,404.77	1,311.20	522.13	PBHL 5819.23 MD, 0.000 INC, 0.00 AZI, 5405.00 TVD

Received

JUN 30 2014

www.compassdrilling.com





WW-2A Surface Waiver

SURFACE OWNER WAIVER

County Wood

Operator  
Operator well number

Columbia Gas Transmission, LLC  
Rockport 12593

**INSTRUCTIONS TO SURFACE OWNERS NAMED ON PAGE WW2-A**

The well operator named on page WW2A is applying for a permit from the State to do oil or gas well work. (Note: If the surface tract is owned by more than three persons, then these materials were served on you because your name appeared on the Sheriff's tax ticket on the land or because you actually occupy the surface tract. In either case, you may be the only owner who will actually receive these materials.) See Chapter 22 of the West Virginia Code. Well work permits are valid for 24 months. If you do not own any interest in the surface tract, please forward these materials to the true owner immediately if you know who it is. Also, please notify the well operator and the Office of Oil and Gas.

**NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

**WHERE TO FILE COMMENTS AND OBTAIN ADDITIONAL INFORMATION:**

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

**Time Limits and methods for filing comments.** The law requires these materials to be served on or before the date the operator files his Application. You have **FIFTEEN (15) 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 a 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.

**Comments must be in writing.** Your comments must 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.

The Chief has the power to deny or condition a well work permit based on comments on the following grounds:

- 1) The proposed well work will constitute a hazard to the safety of persons.
- 2) The soil erosion and sediment control plan is not adequate or effective;
- 3) Damage would occur to publicly owned lands or resources;
- 4) The proposed well work fails to protect fresh water sources or supplies;
- 5) The applicant has committed a substantial violation of a previous permit or a substantial violation of one or more of the rules promulgated under Chapter 22, and has failed to abate or seek review of the violation..."

If you want a copy of the permit as it is issued or a copy of the order denying the permit, you should request a copy from the Chief.

**List of Water Testing Laboratories.** The Office maintains a list of water testing laboratories which you can hire to test your water to establish water quality prior to and after drilling. Contact the Chief to obtain a copy.

**VOLUNTARY STATEMENT OF NO OBJECTION**

I hereby state that I have read the instructions to surface owners and that I have received copies of a Notice and Application for a Well Work Permit on Form WW2-A, and attachments consisting of pages 1 through \_\_\_ including a work order on Form WW2-B, a survey plat, and a soil and erosion plan, all for proposed well work on my surface land as described therein.

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

FOR EXECUTION BY A NATURAL PERSON

FOR EXECUTION BY A CORPORATION, ETC.

Carl E. Wade  
Signature

Date 6-26-14 Company Name  
By  
Its

Received  
Date

CARL E. WADE  
Print Name

JUN 30 2014

Signature Office of Oil and Gas Date  
WV Dept. of Environmental Protection



1070750T

WW-2A Coal Waiver

COAL OPERATOR, OWNER, OR LESSEE WAIVER

County Wood  
Operator Columbia Gas Transmission, LLC Operator's Well Number Rockport 12593

INSTRUCTIONS TO COAL OPERATOR, OWNER, OR LESSEE

To the coal operator, owner, or lessee named on page WW2-A. You are hereby notified that any objection you wish to make or are required to make by WV Code 22-6-15, 16 or 17, must be filed with the Chief of the Office of Oil and Gas within fifteen (15) days after the receipt of this application by the Office. Mail objections to:

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0499 extension 1654

\* coal not operated

WAIVER

The undersigned coal operator \_\_\_\_/ owner \_\_\_\_/ lessee \_\_\_\_/ of the coal under this well location has examined this proposed well location. If a mine map exists which covers the area of well location, the well location has been added to the mine map. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations.

FOR EXECUTION BY A NATURAL PERSON

FOR EXECUTION BY A CORPORATION, ETC.

\_\_\_\_\_  
Signature Date

Company Name \_\_\_\_\_  
By \_\_\_\_\_  
Its \_\_\_\_\_ Date

Signature \_\_\_\_\_ Date

Received

JUN 30 2014

Office of Oil and Gas  
WV Dept. of Environmental Protection

08/01/2014

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6, Section 8(d)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
O H Blair (under surface location)	Columbia Gas Transmission, LLC	storage lease 1046161	359 / 200-202
A J Holbert Et Al (at bottom hole)	Columbia Gas Transmission, LLC	storage lease 1050678	360 / 504-506

**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

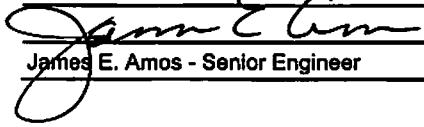
Received

JUN 30 2014

Office of Oil and Gas  
WV Dept. of Environmental Protection

- WV Division of Water and Waste Management
- WV Division of Natural Resources
- WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Columbia Gas Transmission, LLC  
 By: Its:   
James E. Amos - Senior Engineer



10701750T

WW-2B1  
(5-12)

Well No. Rockport 12593

West Virginia Department of Environmental Protection  
Office of Oil and Gas

NOTICE TO SURFACE OWNERS

The well operator named below is preparing to file for a permit from the state to drill a new well. Before a well work permit can be filed with the Chief of the Office of Oil and Gas, the well operator is required to have given notice of the right to request water well or spring analytical testing. This notice shall be given to the owners or occupants of land which have a water well or spring being utilized for human consumption, domestic animals, or other general use and which is located within 1000 feet of the proposed well site.

With this form, the operator is giving you notice of your right to request analytical testing. The operator is required to sample and analyze the water wells or springs of all owners or occupants who request it. Therefore, if you wish to have your water well or spring tested, contact the operator named below.

All sampling shall be completed prior to drilling. Within thirty (30) days of the receipt of such sample analyses the operator shall submit the results to the Chief of the Office of Oil and Gas and to the owners or occupants who may have requested them.

Be advised, you have the right to sample and analyze any water supply at your own expense.

Listed below is the laboratory chosen by operator to perform analysis, and contactor chosen to collect sample.

Certified Laboratory Name Standard Laboratories, Inc.  
Sampling Contractor Standard Laboratories, Inc.

Received

JUN 30 2014

Well Operator Columbia Gas Transmission, LLC  
Address 1700 MacCorkle Ave. SE  
Charleston, WV 25325-1273  
Telephone Jim Amos 304-483-0073

Chief of Oil and Gas  
WV Dept. of Environmental Protection

FOR OPERATOR'S USE ONLY: Below, or on an attached page, list those persons which were given this notice. Place an asterisk beside the one(s) that contacted you and requested sampling and analyses. If there were no requests made, indicate by underling which one you have selected to sample and analyze. If there are no water wells or springs within 1000 feet of the proposed site, the Chief may require the operator to test wells up to 2000 feet from the proposed site.

\* refer to water testing plan on next page

08/01/2014



10701750T

**WATER WELL (primary source)**  
Ellsworth Archer  
9129 Southern Highway  
Rockport, WV 26169  
304-474-3309  
surface elevation: 824 ft  
water depth: 75 ft  
water elevation above sea level: 749 ft

1000 ft radius around well

Rockport well 12593  
elevation (pad): 1052 ft  
surface csg setting depth above sea level: 652 ft

**SPRING**  
Carl Wade  
elevation above sea level: 1025 ft

Robert E Dent Jr  
9312 Southern Highway  
Rockport, WV 26169  
304-474-3652  
no spring or water well  
municipal water

Tri-County Worship Center  
no spring or water well  
municipal water

Carl Wade  
no water well  
municipal water



Google earth



**WATER TESTING TO BE PERFORMED**

1. Ellsworth Archer water well
2. Carl Wade spring

Received

JUN 30 2014

Office of Oil and Gas  
WV Dept. of Environmental Protection

08/01/2014



10701750T

WW-9  
(5/13)

Page \_\_\_\_\_ of \_\_\_\_\_  
API Number 47 - 107 - \_\_\_\_\_  
Operator's Well No. Rockport 12593

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Columbia Gas Transmission, LLC OP Code 307032

Watershed (HUC 10) Tygart Creek Quadrangle Rockport

Elevation 1079 County Wood District Steele

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

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

If so, please describe anticipated pit waste: fresh water, drilling fluid, cement returns, rock cuttings

Will a synthetic liner be used in the pit? Yes X No \_\_\_\_\_ If so, what ml.? 30

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number 34-105-23619, 34-167-29395, 34-167-23862 )
- Reuse (at API Number \_\_\_\_\_)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain EnviroTank Clean (Rt. 7, Belpre, OH))

Will closed loop system be used? yes

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. air, freshwater based drilling fluid

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

Additives to be used in drilling medium? air - KCl & surfactant drilling fluid - KCl, NaCl, biocide, polymer, starch, soda ash

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

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

-Landfill or offsite name/permit number? if needed: EnviroTank Clean (Rt. 7, Belpre, OH)

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 James E. Amos JUN 30 2014

Company Official (Typed Name) James E. Amos

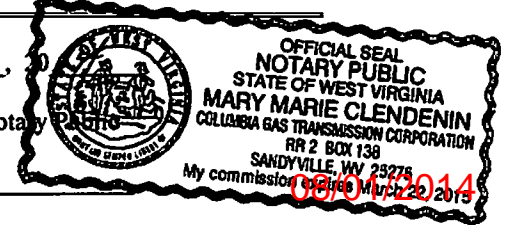
Company Official Title Senior Engineer

Office of Oil and Gas  
WV Dept. of Environmental Protection

Subscribed and sworn before me this 25th day of June

Mary Marie Clendenin Notary

My commission expires March 22, 2015



Form WW-9

Operator's Well No. Rockport 12593

Proposed Revegetation Treatment: Acres Disturbed 9.3 ✓ Prevegetation pH 6.0

Lime 2 Tons/acre or to correct to pH 6.5

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

Mulch 2 Tons/acre

Seed Mixtures

Area I		Area II	
Seed Type	lbs/acre	Seed Type	lbs/acre
Orchard Grass	20	Orchard Grass	20
Ledino Clover	10	Ledino Clover	10
Annual Rye	20	Annual Rye	20
<u>Alfalfa (multi-year)</u>	<u>10</u>	<u>Alfalfa (multi-year)</u>	<u>10</u>

*per landowner request*

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: \_\_\_\_\_

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

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

Jamie Strawn  
Inspector

Date: 6/26/2014

Field Reviewed?  Yes  No

Received

JUN 30 2014





Google earth



<b>Reclamation Plan 1 of 2 - Overview</b>
<b>Rockport storage well 12593</b>
<ul style="list-style-type: none"> <li>- Crushed limestone to be applied to existing access road</li> <li>- Drainage along existing road to be maintained</li> <li>- Well site to be constructed per details on Reclamation Plan 2 of 2</li> <li>- BMPs to be utilized per WV DEP &amp; FERC requirements</li> </ul>

08/01/2014

*Janice [Signature]*

Office of Oil and Gas  
WV Dept. of Environmental Protection

JUN 30 2014

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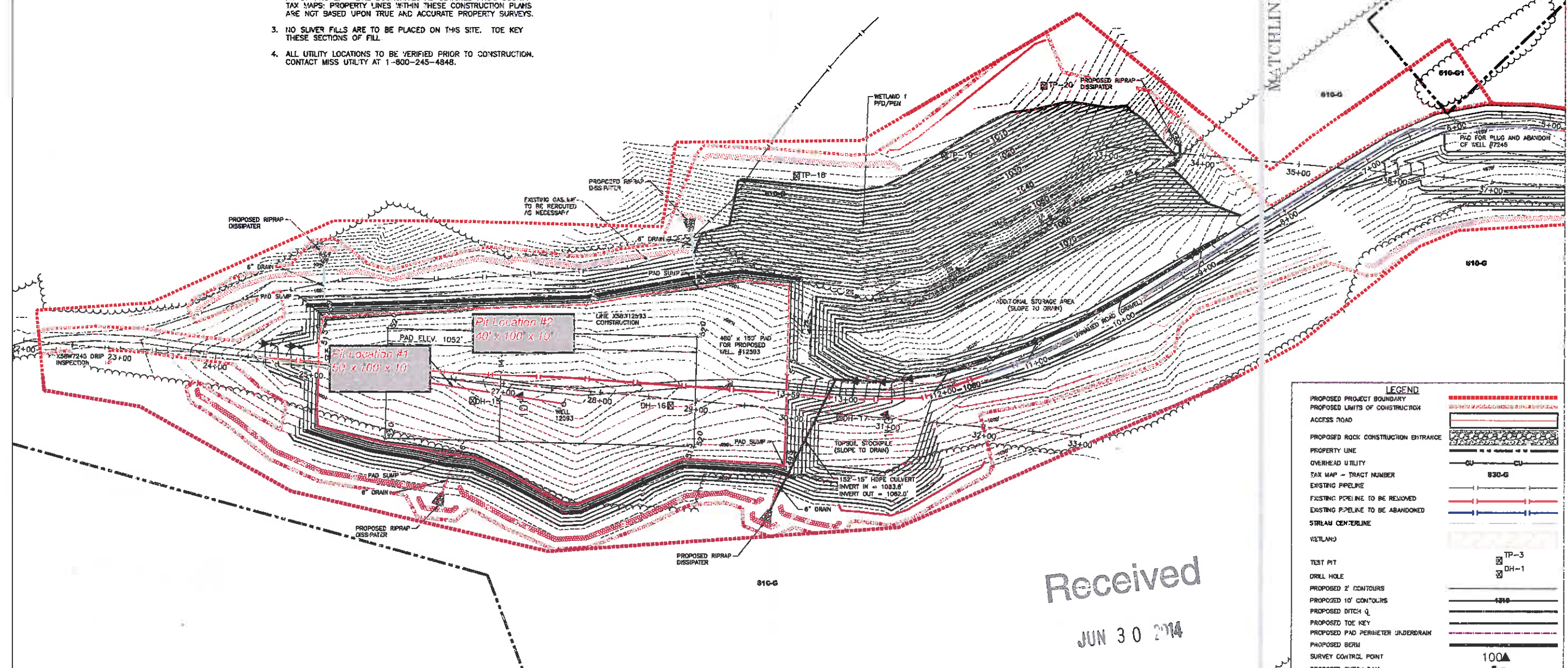


WOOD & WRT COUNTIES, WEST VIRGINIA  
STEELE DISTRICT

MATCHLINE SEE SHEET 5



- NOTES:
1. THE EARTHWORK VOLUME FOR THE ENTIRE SITE OF PROPOSED WELL #12593 AND PLUG AND ABANDON WELL #7245 (SEE SHEET 5) IS APPROXIMATELY 43,338 CU. YDS. OF CUT; 54,025 CU. YDS. OF FILL. THE FILL QUANTITY SHOWN REFLECTS THE ANTICIPATED SWELL FACTOR EXPECTED OF THE VARIOUS CUT MATERIALS TO BE ENCOUNTERED. THE SITE SPECIFIC SWELL FACTOR USED HERE WAS COMPUTED FROM DATA OBTAINED DURING THE SUBSURFACE INVESTIGATIONS.
  2. PROPERTY LINE INFRACTION REPRESENTS AN APPROXIMATE BEST FIT OF PROPERTY LINE BOUNDARIES AS OBTAINED FROM COUNTY TAX MAPS. PROPERTY LINES WITHIN THESE CONSTRUCTION PLANS ARE NOT BASED UPON TRUE AND ACCURATE PROPERTY SURVEYS.
  3. NO SLIVER FILLS ARE TO BE PLACED ON THIS SITE. TOE KEY THESE SECTIONS OF FILL.
  4. ALL UTILITY LOCATIONS TO BE VERIFIED PRIOR TO CONSTRUCTION. CONTACT MISS UTILITY AT 1-800-245-4848.



**LEGEND**

- PROPOSED PROJECT BOUNDARY
- PROPOSED LIMITS OF CONSTRUCTION
- ACCESS ROAD
- PROPOSED ROCK CONSTRUCTION ENTRANCE
- PROPERTY LINE
- OVERHEAD UTILITY
- TAX MAP - TRACT NUMBER
- EXISTING PIPELINE
- EXISTING PIPELINE TO BE REMOVED
- EXISTING PIPELINE TO BE ABANDONED
- STREAM CENTERLINE
- WETLAND
- TEST PIT
- DRILL HOLE
- PROPOSED 2' CONTOURS
- PROPOSED 10' CONTOURS
- PROPOSED DITCH Q
- PROPOSED TOE KEY
- PROPOSED PAD PERIMETER UNDERDRAIN
- PROPOSED BERM
- SURVEY CONTROL POINT
- PROPOSED CHECK DAM
- PROPOSED 36" SILT SOCK OR SUPER SILT FENCE
- PROPOSED 24" SILT SOCK OR SUPER SILT FENCE
- PROPOSED SILT FENCE

Received

JUN 30 2014

Office of Oil and Gas  
WV Dept. of Environmental Protection

*Jamie ce/20/2014*

Reclamation Plan 2 of 2 - Detail  
Rockport storage well 12593

FOR PERMITTING  
6/12/2014



COLUMBIA GAS TRANSMISSION  
ROCKPORT EFFICIENCY  
WELL PAD PLAN - WELL #12593

No.	REVISIONS	APPROVED BY	DATE	No.	REVISIONS	APPROVED BY	DATE	REFERENCE
							08/01/2014	

DATE	BY	DESCRIPTION	DRAWING NUMBER	SHEET	ISSUE
06/12/2014	HMM		D-101	04 OF 06	F



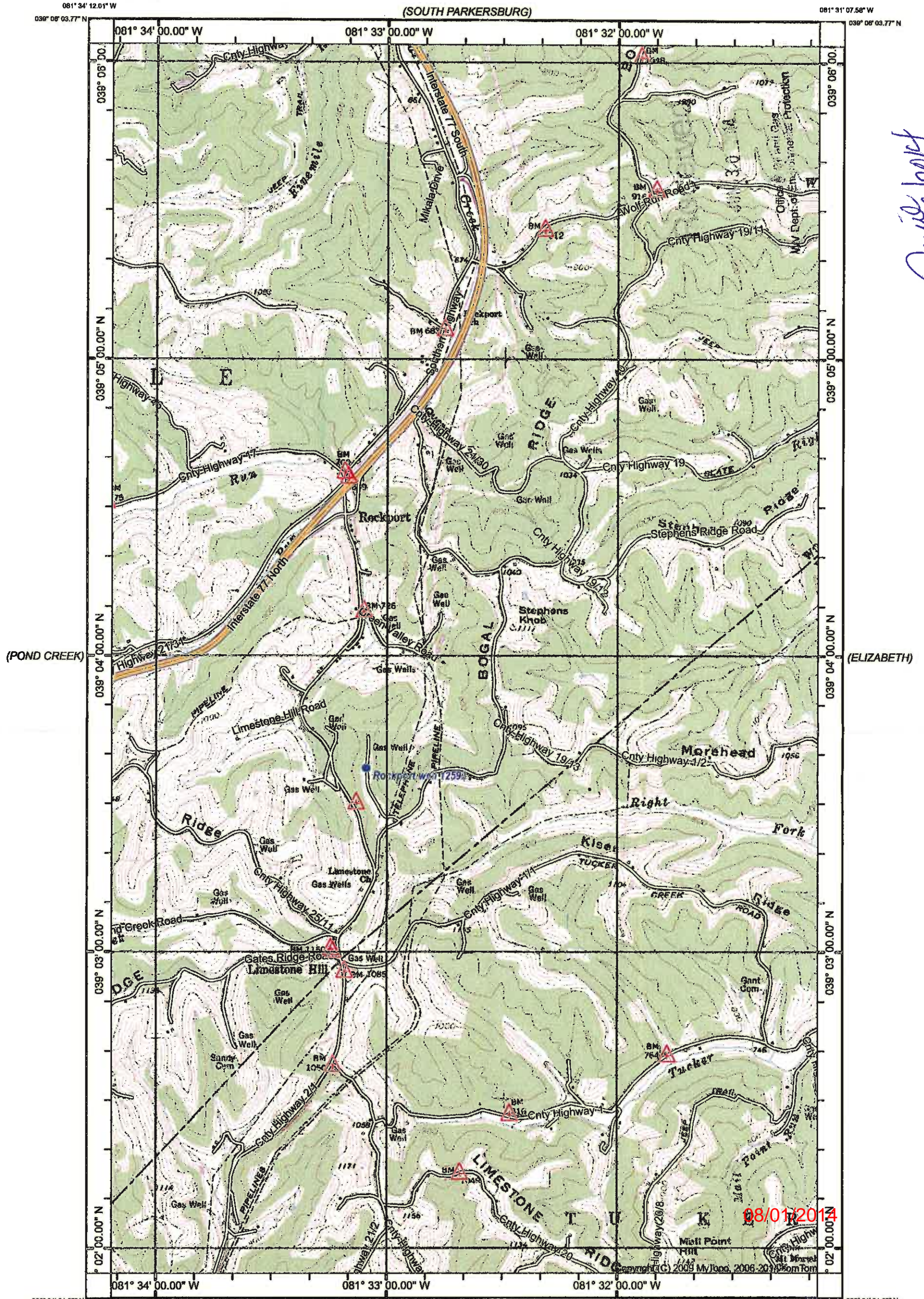
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(LUBECK)



ROCKPORT QUADRANGLE  
WEST VIRGINIA  
TOPOGRAPHIC SERIES

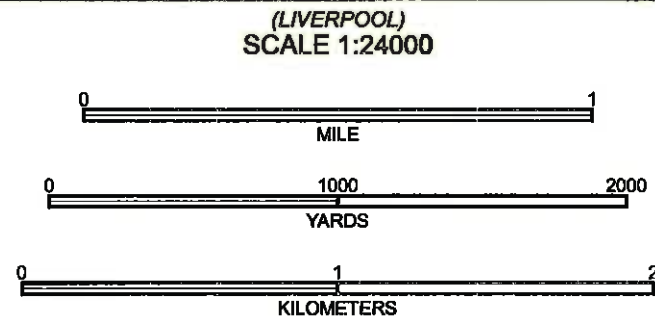
(KANAWHA)



*Quinn Campbell*

(SANDYVILLE)

Produced by MyTopo Terrain Navigator  
Topography based on USGS 1:24,000 Maps  
North American 1983 Datum (NAD83)  
Polyconic Projection  
To place on the predicted North American 1927 move the  
projection lines 9M N and 13M E



CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM 1929

ROCKPORT, WV  
1960

(REEDY)



2,790'

LATITUDE 39 05'00"

LONGITUDE 81 32'30"

8,366'



<b>BOTTOM HOLE LOCATION</b>
LAT. 39°0'50"
LONG. 81°32'59"
<b>UTM METERS NAD 83</b>
N=4324010.2
E=452441.3
TOTAL DEPTH=5405' TVD
TOTAL DEPTH=5819' MD

LAT.=39°03'37.34"  
LONG.=81°33'05.31"

UTM METERS (NAD83)  
N=4323620.88  
E=452287.27

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

FILE No 14-100-019  
DRAWING No. 14-100-019  
SCALE 1"=1000'  
MINIMUM DEGREE OF ACCURACY 1:200  
PROVEN SOURCE OF ELEVATION TRIMBLE PRO XH GPS UNIT

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 DIVISION OF ENVIRONMENTAL PROTECTION.

(SIGNED) *Richard J. Prine*  
RICHARD J. PRINE PS #851



STATE OF WEST VIRGINIA  
DIVISION OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS  
NITRO, WV

DATE JUNE 9 20 14  
OPERATOR'S WELL No. 12593  
API WELL No. 47 STATE 107 COUNTY WOOD PERMIT 01750T

WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL   
(IF "GAS") PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION 1079 WATER SHED TYGART CREEK  
DISTRICT STEELE COUNTY WOOD  
QUADRANGLE ROCKPORT

SURFACE OWNER CARL & DIANNE WADE ACREAGE 49.95  
OIL & GAS ROYALTY OWNER O.H. BLAIR (SURFACE) LEASE ACREAGE 56.5 (BOTTOM HOLE)  
A.J. HOLBERT, ET AL (BOTTOM HOLE) LEASE No. 104616T (SURFACE) 1050678 (BOTTOM HOLE)

PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_

PLUG AND ABANDON  CLEAN OUT AND REPLUG

TARGET FORMATION ORISKANY ESTIMATED DEPTH 5405 (TVD) 5819 (MD)  
WELL OPERATOR COLUMBIA GAS TRANSMISSION, LLC DESIGNATED AGENT PAUL AMICK  
ADDRESS PO BOX 1273, CHARLESTON, WV ADDRESS P.O. BOX 1273, CHARLESTON W.V.  
25325-1273 25325-1273

08/01/2014

FORM IV-6 (8-78)



**WV DEP OFFICE OF OIL & GAS  
DEEP WELL DRILLING PROCEDURES and SITE SAFETY PLAN**

*COLUMBLA GAS TRANSMISSION CORPORATION*

WV Operator ID 307032

Rockport Storage Well 12593  
API Permit No. 47 - 107 - XXXXX - 00 - 00  
Surface: Carl E & Dianne L Wade  
Lease: O H Blair  
Steele District - Wood County, WV

The following Deep Well Drilling Procedure and Site Safety Plan prepared by:

By: James E. Amos Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: Senior Storage Engineer - Columbia Gas Transmission, LLC

Received

JUN 30 2014

Office of Oil and Gas  
WV Dept. of Environmental Protection

08/01/2014

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Office of Oil and Gas  
West Dept. of Environmental Protection

08/01/2014



Dwelling

Access Road to State Creek Rd

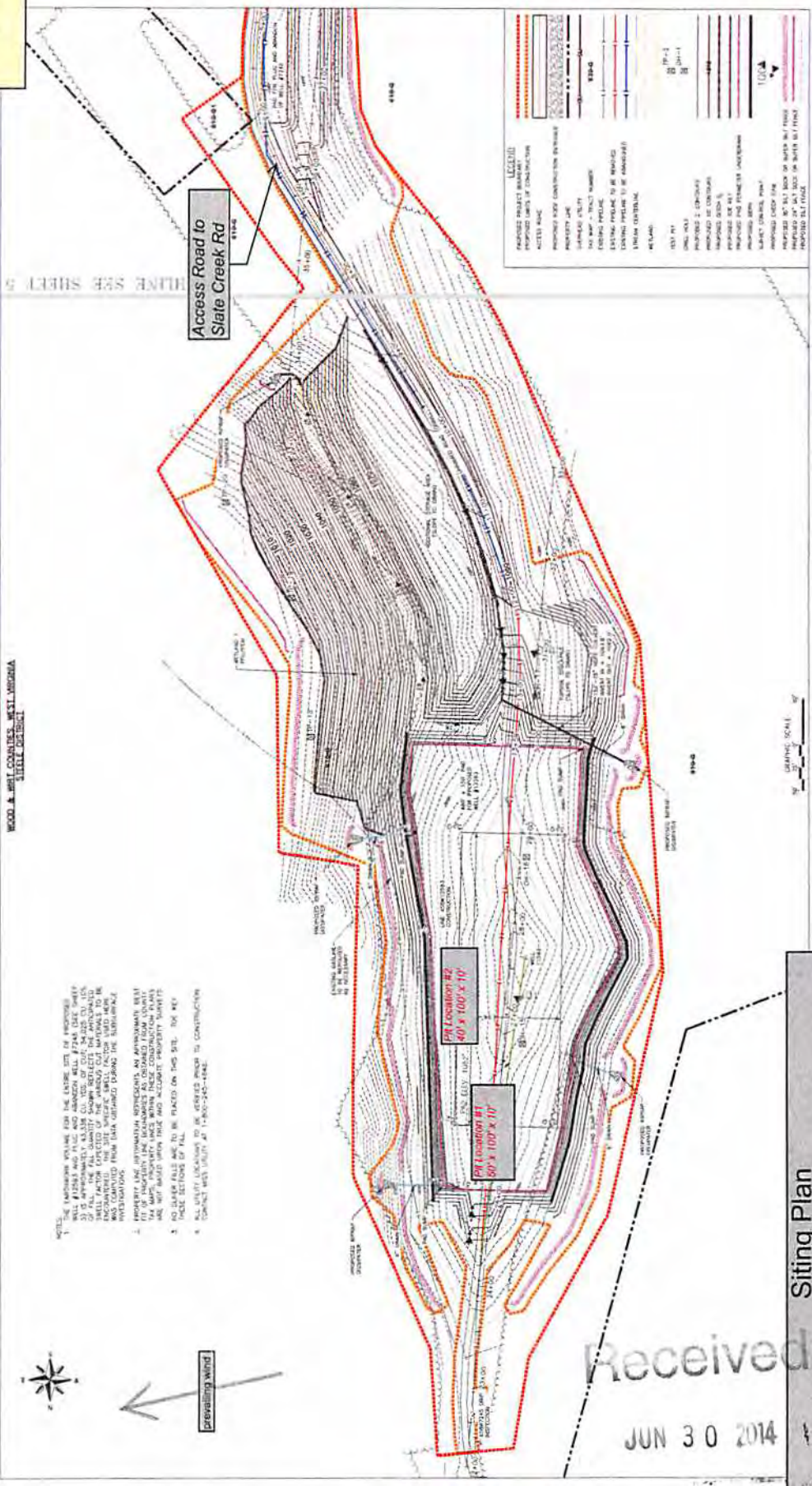
WOOD & WELL CONSULTING, WEST VIRGINIA  
SHELL OILFIELD

PLINE SEE SHEET 5

- 1. THE LARGEST VOLUME FOR THE ENTIRE SET OF PROPOSED WELLS, PIPES AND PILING AND ANCHOR WELL PILES (SEE SHEET 5) SHALL BE THE TOTAL QUANTITY SHOWN IN THIS PLAN. THE QUANTITY SHOWN IN THIS PLAN IS BASED ON THE ASSUMPTIONS LISTED IN THE NOTES AND THE DATA PROVIDED IN THE ATTACHED INFORMATION. THE QUANTITY SHOWN IN THIS PLAN MAY BE MODIFIED BY THE FIELD ENGINEER DURING THE SURVEILLANCE PERIOD.
- 2. APPROXIMATE DIMENSIONS AND ANCHOR WELLS SHALL BE FIT TO THE PROPOSED LAYOUT AND OBTAINED FROM COUNTY RECORDS AND THE FIELD ENGINEER. THE QUANTITY SHOWN IN THIS PLAN IS BASED ON THE ASSUMPTIONS LISTED IN THE NOTES AND THE DATA PROVIDED IN THE ATTACHED INFORMATION. THE QUANTITY SHOWN IN THIS PLAN MAY BE MODIFIED BY THE FIELD ENGINEER DURING THE SURVEILLANCE PERIOD.
- 3. NO CLEARANCE SHALL BE REQUIRED ON THIS SITE. THE WELLS SHALL BE LOCATED IN THE FIELD AS SHOWN ON THIS PLAN.
- 4. ALL WELLS LOCATIONS TO BE VERIFIED PRIOR TO CONSTRUCTION. CONTACT W&W OFFICE AT 1-800-245-1848.



prevailing wind



**LEGEND**

PROPOSED WELLS	---
PROPOSED PIPING	---
PROPOSED PILING	---
PROPOSED ANCHOR WELLS	---
PROPOSED 2" CEMENT	---
PROPOSED 4" CEMENT	---
PROPOSED 6" CEMENT	---
PROPOSED 8" CEMENT	---
PROPOSED 10" CEMENT	---
PROPOSED 12" CEMENT	---
PROPOSED 14" CEMENT	---
PROPOSED 16" CEMENT	---
PROPOSED 18" CEMENT	---
PROPOSED 20" CEMENT	---
PROPOSED 22" CEMENT	---
PROPOSED 24" CEMENT	---
PROPOSED 26" CEMENT	---
PROPOSED 28" CEMENT	---
PROPOSED 30" CEMENT	---
PROPOSED 32" CEMENT	---
PROPOSED 34" CEMENT	---
PROPOSED 36" CEMENT	---
PROPOSED 38" CEMENT	---
PROPOSED 40" CEMENT	---
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PROPOSED 78" CEMENT	---
PROPOSED 80" CEMENT	---
PROPOSED 82" CEMENT	---
PROPOSED 84" CEMENT	---
PROPOSED 86" CEMENT	---
PROPOSED 88" CEMENT	---
PROPOSED 90" CEMENT	---
PROPOSED 92" CEMENT	---
PROPOSED 94" CEMENT	---
PROPOSED 96" CEMENT	---
PROPOSED 98" CEMENT	---
PROPOSED 100" CEMENT	---

Siting Plan  
Rockport storage well 12593

FOR PERMITTING  
6/12/2014

W&W  
MCKENZIE  
COLUMBIA GAS TRANSMISSION  
ROCKPORT EFFICIENCY  
WELL PAD PLAN - WELL #12593  
DATE: 06/12/2014  
DRAWN BY: [Name]  
CHECKED BY: [Name]

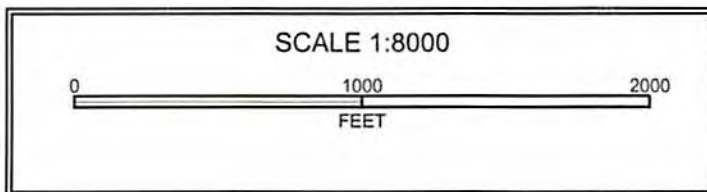
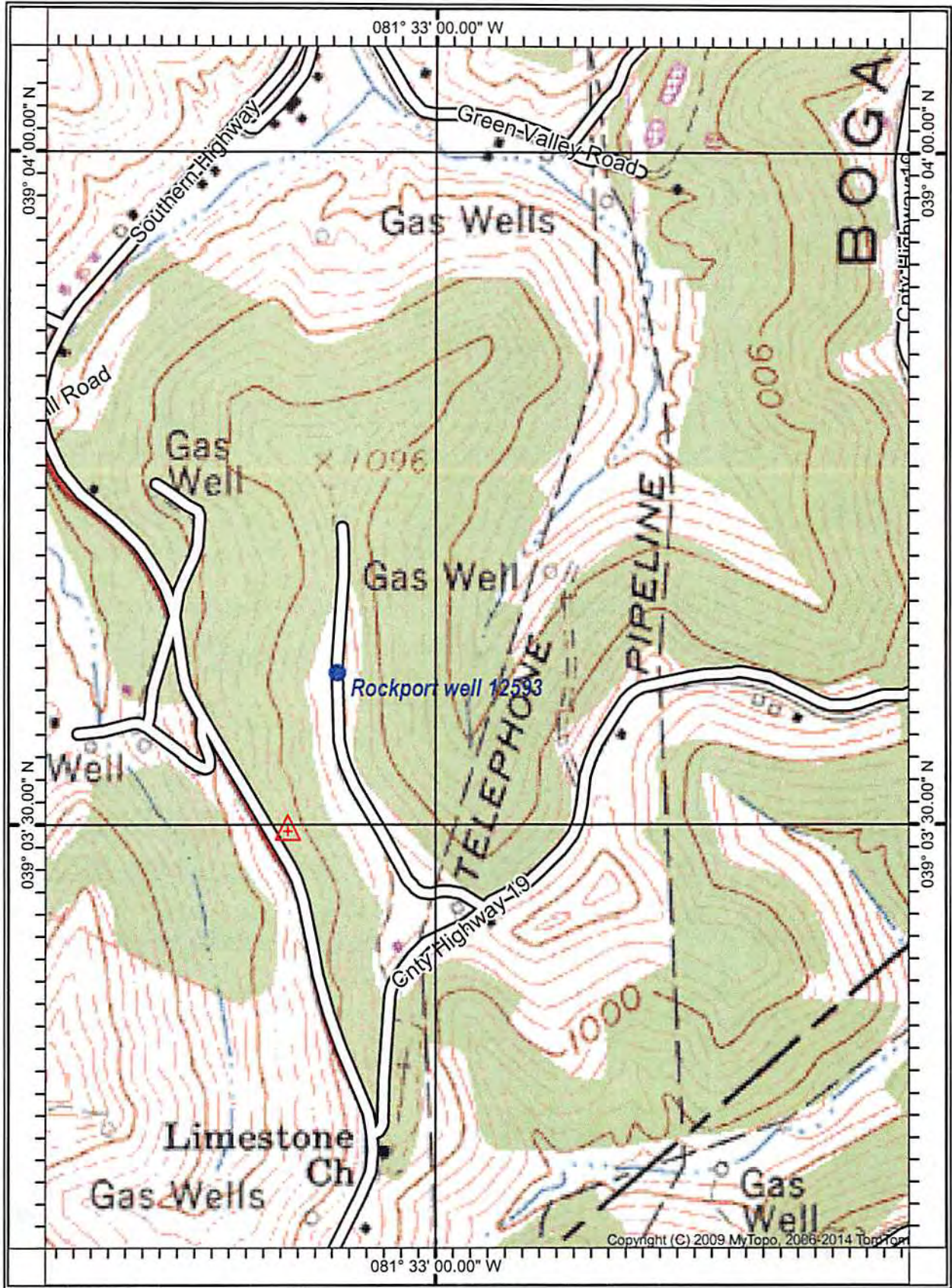
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## CONTACTS and TELEPHONE NUMBERS

Emergency

<u>County/State</u>	<u>Fire</u>	<u>EMS</u>	<u>Police</u>
Wood Co, WV	911	911	911

Non-emergency

Pond Creek Volunteer Fire Dept    304-474-3111 Camden Clark Memorial Hospital    304-424-2111	I-77 north to Rt 50 Exit Left (west) on Rt 50 Approx 0.5 mile right on 7 <sup>th</sup> Ave Exit Right on to 7 <sup>th</sup> Ave Approx 4 miles to hospital on left
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Incident Reporting

Columbia Operations Monitoring Center	800-835-7191
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Spill Reporting

Columbia Operations Monitoring Center	800-835-7191
WV DEP – Office of Oil & Gas	800-642-3074

Material Safety Data Sheets (MSDS)

Safetec Global Solutions (24 hour service)	800-704-9215
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Columbia Personnel

<u>Name</u>	<u>Office</u>	<u>Cell</u>	<u>Home</u>
Paul Amick	304-357-3445	304-545-5052	304-755-5052
Jim Amos	304-373-2412	304-483-0073	304-489-3077
Rick Conley		330-464-8709	
Dave Reynolds		330-464-9038	330-427-2228
Steve Simmons	304-373-2413	304-590-5528	304-373-9997

Rig and Crew

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WV DEP O&G State Inspector

Wood County	Jamie Stevens	cell: 304-206-7775
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## WELL CONSTRUCTION PROGRAM

### General Well Information

Storage Well: Rockport 12593  
API Permit: 47 - 107 - ~~?????~~ - 00 - 00  
Surface Owner: Carl E & Dianne L Wade  
Lease: O H Blair (surface)  
A J Holbert (bottom-hole)  
Location: Rockport Quad, Steele District, Wood Co, WV  
Elevation: Pre Site Prep: 1079 ft GL  
Post Site Prep: 1052 ft GL (per HMM)  
Rig KB: 16 ft

#### Directions to well:

##### From North

I-77 to Rockport Exit (~10 miles south of Parkersburg)  
Left on Rt 21 south  
3 miles turn left on to Slate Creek Road at top of hill before church  
*(DO NOT PARK ON BLACK TOP PAVEMENT OF CHURCH)*  
0.1 mile turn left in to Tri-County Church parking lot  
Travel around left side of church  
Lease road in back of church lot – follow to site

##### From South

I-77 to Rockport Exit (~15 miles south of Parkersburg)  
Right on Rt 21 south  
1.6 miles turn left on to Slate Creek Road at top of hill before church  
*(DO NOT PARK ON BLACK TOP PAVEMENT OF CHURCH)*  
0.1 mile turn left in to Tri-County Church parking lot  
Travel around left side of church  
Lease road in back of church lot – follow to site

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### Concise Procedure

Spud and seat 20 ft of 20" conductor pipe. Drill 17-1/2" hole to +/- 400 ft GL. Run 13-3/8" casing and cement to surface. Drill 12-1/4" hole to +/- 2310 ft GL (50' below base of Salt Sand). Run 9-5/8" casing and cement to surface. Drill 8-3/4" hole to kick-off point at +/- 2360 ft GL. Directionally drill to a depth 20 ft above the top of Oriskany at +/- 5685 ft MD GL. Run 7" casing and cement bottom 1000 ft. Run cement bond log. Drill 6-1/8" hole to a total depth of +/- 5819 ft MD GL. Obtain electric logs. Install wellhead equipment. Fracture stimulate.

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**WELL CONSTRUCTION PROGRAM**

<b>Casing Program</b>					
<b>Type</b>	<b>Planned Setting Depth</b>	<b>Size</b>	<b>Weight</b>	<b>Grade</b>	<b>Planned Cement Top</b>
Conductor	20 ft GL	20"	0.281W 59 ppf	B-35	none
Surface	400 ft GL	13-3/8"	48 ppf	H-40 ERW	surface
Intermediate	2310 ft GL	9-5/8"	36 ppf	J-55 ERW	surface
Production	5685 ft GL	7"	23 ppf	N-80 ERW	1000 ft of coverage

<b>Geologic Prognosis</b>				
<b>Formation</b>	<b>Lithology</b>			<b>Comments</b>
		<b>TVD GL</b>	<b>MD GL</b>	
Salt Sand	sandstone	1950 - 2258 ft	1950 - 2258 ft	* GL is post site prep
KOP	shale	2360 ft	2360 ft	
Berea horizon	sandstone	2617 - 2619 ft	2619 - 2621 ft	storage reservoir
Marcellus	soft black shale	5161 - 5173 ft	5575 - 5587 ft	
Onondaga	limestone	5173 - 5291 ft	5587 - 5705 ft	
Oriskany	sandstone	5291 - 5341 ft	5705 - 5755 ft	
Helderberg	limestone	5341 - 5405 ft	5755 - 5819 ft	
TD		5405 ft	5819 ft	
<i>Gas/water contact</i>		???? ft	???? ft	

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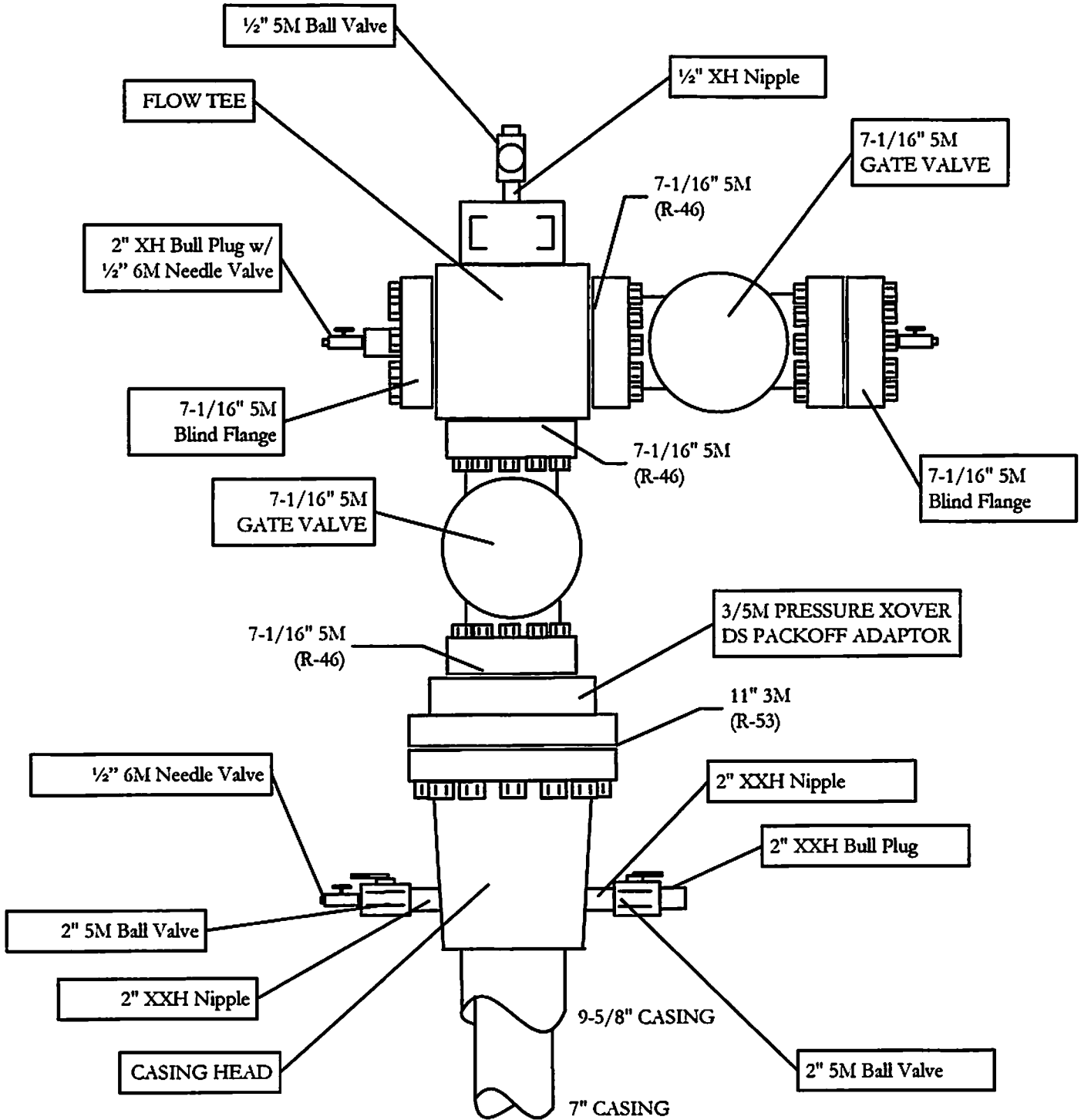
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# WELLHEAD SCHEMATIC

## 9-5/8" x 7" x 7" x 7" API 3/5M



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## BOP REQUIREMENTS

### Description of BOP's to be Installed on each Casing String

Casing – 13-3/8"	BOP Type: Annular Size: 13" Pressure Rating: 2000 psi	
Casing – 9-5/8"	BOP Type: Annular Size: 9" Pressure Rating: 3000 psi	BOP Type: Double Ram Size: 9" Pressure Rating: 3000 psi
Casing – 7"	BOP Type: Annular Size: 7-1/16" Pressure Rating: 3000 psi	BOP Type: Double Ram Size: 7-1/16" Pressure Rating: 3000 psi

### BOP Installation and Pressure Testing

1. The 13" annular BOP will be installed when nipping up on the 13-3/8" casing. The head will be pressure tested to 500 psi or higher.
2. The 9" BOP stack will be installed when nipping up on the 9-5/8" casing. The rams will be pressure tested to a minimum of 2500 psi, and the annular to 2000 psi.
3. The 7-1/16" BOP stack will be installed when nipping up on the 7" casing. The rams will be pressure tested to a minimum of 2500 psi, and the annular to 2000 psi.
4. The in-line kelly cock will be pressure tested when each of the BOP stacks are tested.

### Personnel with Well Control Certifications

Jim Amos (Columbia Gas Transmission)  
Paul Amick (Columbia Gas Transmission)  
Rick Conley (Columbia Gas Transmission)  
Dave Reynolds (Columbia Gas Transmission)  
Steve Simmons (Columbia Gas Transmission)

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### Recording of Significant Drilling Events

A detailed record of significant drilling events will be recorded in Columbia Gas Transmission's well log book or in their digital morning reporting system. The State inspector will be notified upon any significant events, including but not limited to: encountering hydrogen sulfide gas and well control events.

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## WELL FLARING OPERATIONS

### Flare Line Installation

1. Flaring operations are not planned. In the event of a well control situation that warrants flaring, a minimally rated 3000 psi double choke manifold with 4-1/2" panic line and 2-3/8" choke lines will be installed. The lines will be a minimum of 175 ft in length. They will be anchored with chains to pipe tubs or anchors and/or buried with dirt.

### Ignition Methods and Notification

1. Primary – Burn barrel and/or propane torch.
2. Backup – Marine flare pistol.

\* Local fire department will be notified prior to flaring operations.

### Minimum Distance of Clearing of Flammable Material

All flammable material will be kept a minimum distance of 150 ft from flare.

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## WELL KILLING OPERATIONS

In the event well killing operations are required, industry accepted best practices will be utilized. There will be at minimum one person on site at all times that holds a Well Control Certification.

### Inventory of Materials to be used to Mix Kill Weight Fluid

Maximum surface pressure is 1800 psig for Rockport Storage. Maximum reservoir pore pressure is estimated to be less than 2100 psi. A column of fresh water (8.33 ppg) at reservoir depth will exert 2275 psi in hydrostatic pressure. This creates an overbalance of 175 psi.

There will be approximately 300 bbls of pre-mixed viscosified drilling fluid on site, and a minimum of 300 bbls of fresh water. Additives and chemicals sufficient to mix 200 bbls drilling fluid will be stored on site, and extra material available at Specialty Oilfield Services shop in PA if needed.

### Mixing and Fluid Pumping

Either rig mud pumps or dispatched service company will be utilized for mud mixing and pumping in the event of a well control event.

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## HYDROGEN SULFIDE OPERATIONS

Mobile monitors will be utilized to detect the presence of H<sub>2</sub>S. A detector will be kept in the dog house for use by rig personnel to monitor rig floor and cellar area. Columbia Gas personnel will wear personal monitors at all times.

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