west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

Wednesday, March 13, 2024
WELL WORK PERMIT
Horizontal / Re-Work

COLUMBIA GAS TRANSMISSION, LLC
1700 MACCORKLE AVENUE SE

CHARLESTON, WV 25314

Re: Permit approval for RIPLEY 12411
47-035-02460-00-00

This well work permit 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 any additional specific 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 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.

Per 35 CSR 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- 0450.

James A. Martin
Chief

Operator's Well Number: RIPLEY 12411
Farm Name: HITE, DELBERT
U.S. WELL NUMBER: 47-035-02460-00-00
Horizontal Re-Work
Date Issued: 3/13/2024

03/15/2024

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

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 within 30 days of commencement of drilling.

4703502460W

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	Jackson	Ravenswood	Sandywille, WV
		Operator ID	County	District	Quadrangle

2) Operator's Well Number: Ripley 12411 3) Elevation: 616.2

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: 4810' TVD

6) Proposed Total Depth: 9100' MD Feet Formation at Proposed Total Depth: Oriskany

7) Approximate fresh water strata depths: 1200' TVD

8) Approximate salt water depths: 1510 - 1650' TVD

9) Approximate coal seam depths: None reported by driller

10) Approximate void depths,(coal, Karst, other): None reported by driller

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)

Enlarge existing access road and build well pad to accommodate drill rig footprint. Pull 2-3/8" tubing, plugback existing storage well with a bottom cement plug in storage zone, set 7" cast iron bridge plug, cut and pull all of the free 7" casing, set cement plug into inside of the existing 9-5/8" casing shoe. Set 9-5/8" CIBP and 9-5/8" cased hole whipstock, mill window out of the 9-5/8" casing. Directionally air drill 8-1/2" hole to bottom of the Onondaga limestone caprock, install new 7" casing, 2 stage cement to surface, run CBL log. Drill 6-1/8" borehole as per Geologist, openhole completion. Acid stimulate reservoir section using 10,000 gallons HCl acid. Reconnect leadline. Reclaim.

13) **CASING AND TUBING PROGRAM**

TYPE	SPECIFICATIONS			FOOTAGE	INTERVALS	CEMENT
* existing	Size	Grade	Weight per ft	For Drilling	Left in Well	Fill -up (Cu. Ft.)
Conductor	13-3/8 *	J-55	48	261	261	280 sx to surf
Fresh Water	9-5/8*	K-55	36	1911	1911	510 sx to surf
Coal						
Intermediate						
Production	7	N-80	26	5593	5593	682 sx to surf
Tubing						
Liners						

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2-1-24

Packers: Kind: _____
Sizes: _____
Depths Set _____

03/15/2024

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WELL JOB PLAN — STS Well Engineering & Technology — PAGE 1 — DATE JOB PREPARED: 1/31/2024 — LAST PROFILE UPDATE:

Objective: Plug back, sidetrack and redrill

TITLE:	Plug back and sidetrack, drill new lateral			WORK TYPE:	MOD
FIELD:	Ripley	WELL ID:	12411	LEASE #:	52507
STATE:	WV	SHL (Lat/ Long)	38.892091	-81.68892	API: 47-035-02460
DIST/TWP:	Ravenswood	BHL (Lat/Long)	38.896342	-81.68889	CNTY: Jackson
					WELLLINE #: X59W12411
					FORMATION: refer to MISC INFORMATION section

EXISTING TUBULAR CONFIGURATION	OD (inches)	WEIGHT (PPF)	GRADE	THREAD	DEPTH MD KB (ft) TOP	BOTTOM
Conductor						
Surface	13-3/8	48.0	J-55		0	261
Intermediate	9-5/8	36.0	K-55		0	2365
Production	7	23.0	N-80		0	5230
Tubing	2-3/8	4.7	J-55		0	5222

Original Well		Sidetrack Well	
TD:	5355 MD KB	TD:	9071 MD KB
	4847 TVD		**4810 TVD**
KB-GL:	12'	KB-GL:	19'

CSG DEPTH — WELLBORE SCHEMATIC

Refer to "Wellbore Diagram" tabs

Refer to "Wellbore Diagram" tab

Perforations	Openhole completion thru Oriskany
Wellhead	API 5k 7" flowstring x 9-5/8" support, 2-3/8" wellhead connection

D.H. EQUIPMENT		TYPE	DEPTH (ft)
PACKER INFO:	Upper		
	Lower		
NIPPLE PROFILE INFO:	Upper		
	Lower		
SSSV INFO:			

CEMENT INFO		TOC MD KB (ft)
13-3/8	Cemented to surface with 280 sx Class "A". Circulated 18 bbls to pit.	0
9-5/8	Cemented to surface with 410 sxs Mid-App 222 & 100 sxs STD. 10bbls to pit. Volumentrically however, the TOC is calcualated at 760'. May have to squeeze.	0 or ~760'
7	Cemented with 135 sxs Class "A". TOC 4544' per 06.19.99 Baker SBT.	4544

MISC INFORMATION

REFER TO WELL SUMMARY RPT, WELLBORE DIAGRAM, ELOG, ETC. (see spreadsheet tabs below)

Kill Fluid Calculation — ** Note that kill fluid calculation tabs are hidden*

Maximum calculated bottom-hole pressure (for reference only):	1922	psig	** input*
Maximum storage field surface pressure (MAOP):	1675	psig	** input*
Well TD (original well):	4847	ft TVD	** input*
Top of the RBP plugback (~4850 MD):	4366	ft TVD	** input*
Calculated maximum BH pressure at top of zone:	1876	psig	** output Kill Fluid (TOZ)*
Kill fluid density at top of zone @: 200 psi OB	9.15	ppg	** output Kill Fluid (TOZ)*
Top of Oriskany (new lateral drill):	4802	ft TVD	** input*
Calculated maximum BH pressure at depth of BP:	1896	psig	** output Kill Fluid (BP)*
Kill fluid density at depth of BP @: 200 psi OB	8.39	ppg	** output Kill Fluid (BP)*
Required minimum kill fluid density (plugback):	**9.2**	ppg	** greater of the two*
Required minimum kill fluid density (lateral drill):	**8.4**	ppg	** greater of the two*

Current AOF:	9,814 MCF/D
Top historical AOF:	20,186 MCF/D
Last MVRT:	N/A
SBT:	TOC per 06.19.99 Baker SBT @ 4544' MD. - Good cement quality to 4710' KB. Partial quality to 4544' MD KB.

PROPOSED YEAR:	2024	ERCB PERMIT REQD:	YES____	NO__X__	(Internal) PDS Required: YES_____ NO_____
		DT. APPLIED:	ISSUED:		
PREPARED BY:	Maria Medvedeva	REVIEWED BY:	James Amos		APPROVED: Brent Criser
PREP DATE:	1/31/2024				

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WELL JOB PLAN	STS Well Engineering & Technology	PAGE 2	DATE JOB PREPARED: 1/31/2024
Objective: Plug back, sidetrack and redrill			LAST PROFILE UPDATE:

TITLE:	Plug back and sidetrack, drill new lateral				WORK TYPE:	MOD
FIELD:	Ripley	WELL:	12411			
STAT:	WV	SHL (Lat/Long):	38.892091	-81.68892	API:	47-035-02460
TWP:	Ravenswood	BHL (Lat/Long):	38.896342	-81.68889	CNTY:	Jackson

PROCEDURE

NOTE: Cement used will be API Class A, slurry weight 15.6ppg, slurry yield 1.18 cuft/sk or API Class L, slurry weight 15.6ppg, slurry yield 1.14 cuft/sk, as per the approved WVDEP Variance Order No.2022-13. All spacers will be 6% Bentonite gel.

1 Obtain State well work permit, EM&CP, pipeline crossing evaluation, call before you dig, etc. Prepare site specific SPCC.
2 Notify landowner.
3 Obtain General Work Permit and Wellsite Review & Turnover Form from Operations.
4 Notify Reservoir Engineering & Geosciences (REG) of intent to take well out of service.
5 Notify environmental inspector prior to beginning work. If required, notify State/Federal regulatory agencies prior to beginning work.
6 Disconnect well line.
7 Prepare access road and well site. Install ECD's per EM&CP.
8 Service all serviceable wellhead valves.
9 Document and report to WE&T the initial casing and annular pressures.
10 Blow down all annuli, replace fittings as needed, and leave annuli open to atmosphere for monitoring.
11 Load / top 7" x 9-5/8", 9-5/8" x 13-3/8" annuli with kill fluid. Document volumes.
12 Kill well with minimum 9.2 ppg viscosified fluid. After well is dead spot 10 bbls LCM pill on bottom.
13 Dig around base of wellhead to uncover casing tops and remove cement if present.
14 MIRU service rig.
15 Remove wellhead equipment down to the tubing spool.
16 Screw in 2-3/8" nipple with full port valve into top of hanger.
17 Strip over and NU 7-1/16" Cameron 5K BOPE (blind / shear + pipe + anular). Will need kill and choke outlets below blind / shear.
18 Function and pressure test BOPE to low (250 psig) and high (2500 psig).
19 Unseat hanger, PU and remove hanger, wash to TD.
20 If able to wash to TD then install balanced cement plug from TD to ~4850'
21 If not able to wash to TD round trip to PU 2-3/8" DP with cut-lip shoe and install balanced cement plug from TD to ~4850'
22 PU above cement top, reverse circulate to clean tubulars, pull 10 joints, close pipe rams, and WOC a minimum of 8 hrs.
23 RIH and tag cement. If cement top is deeper than 5000' then spot a second balanced cmt plug.
24 Install a CIBP as close to above the cement top as feasible.
25 Top off 7" with kill fluid and perform 500 psig pressure test to verify integrity of BP.
26 Release all annular pressure and top off. Verify well is static.
27 ND BOPE.
28 Weld pulling nipple on 7" casing, pull seals and slips.
29 NU 11" BOPE (blind ram + pipe ram + annular) on top of the casing head. Need kill / choke outlets below blind / shear.
30 Function and pressure test BOPE to low (250 psig) and high (2500 psig). Report results to WE&T engineer.
31 Wireline freepoint 7" casing. Cut and pull all 7" casing that is free.
Note: Per 1999 Baker SBT log, good 7" TOC is ~ 4710', marginal top / stringers up to ~4544'.
32 Obtain CBL inside 9-5/8" casing. Provide digital copy of log to WE&T engineer and consult to confirm next steps.
Note: per well records 9-5/8" TOC is at surface, however, volumetrically TOC is potentially just at ~760'.
33 Install balanced cement plugs from CIBP to +/-1900', depth to be adjusted per log data. This will serve as a bottom for whipstock / window milling.
Note: per 9-5/8" historic tally there may or may not be a collar at ~1894'. We DO NOT want to cut through a collar while milling the window.
34 If 9-5/8" TOC is not at surface per CBL from step 32, perforate above the TOC of 9-5/8" casing, attempt to circulate to surface or establish injection.
35A If circulation to surface established, consult with WE&T engineer for procedure:
> Circulate kill weight fluid until good kill density fluid is returned.
> RIH with sliding-sleeve style cement retainer on work string.
> Set retainer above perfs.
> Establish circulation.
> Squeeze cement behind 9-5/8" casing to surface.
> Disengage from retainer, reverse circulate to clean tubulars, and TOH.
> WOC 24 hours. Obtain CBL.

35B If no circulation to surface, but injection established, consult with WE&T engineer for procedure:
> RIH with sliding-sleeve style cement retainer on work string.
> Set retainer above perfs.
> Establish injection.
> Disengage from retainer and spot cement at bottom of work string.
> Squeeze cement behind 9-5/8" casing to surface.
> Disengage from retainer, reverse circulate to clean tubulars, and TOH.
> WOC 24 hours. Obtain CBL.

PREPARED BY:	Maria Medvedeva	REVIEWED BY:	James Amos	APPROVED:	Brent Criser
PREP DATE:	1/31/2024				

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03/15/2024

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WELL JOB PLAN	STS Well Engineering & Technology	PAGE 3	DATE JOB PREPARED: 1/31/2024
Objective: Plug back, sidetrack and redrill			LAST PROFILE UPDATE:

TITLE:	Plug back and sidetrack, drill new lateral				WORK TYPE:	MOD
FIELD:	Ripley	WELL:	12411			
STAT:	WV	SHL (Lat/Long):	38.892091	-81.68892	API:	47-035-02460
DIST/TWP:	Ravenswood	BHL (Lat/Long):	38.896342	-81.68889	CNTY:	Jackson

PROCEDURE (continued)

35C If circulation / injection is not established, perforate (per WE&T engineer) and repeat process above in 100' interval until annular barrier is installed.
36 TIH with 8-3/4" steel tooth roller-cone bit and drill cement. Wash down to top of balanced cement plug at ~1900', circulate clean, and TOOH.
37 ND BOPE and install wellhead.
38 RDMO service rig.
39 MIRU Precision drilling rig.
40 Document and report to WE&T the initial casing and annular pressures.
41 Blow down all annuli, replace fittings as needed, and leave annuli open to atmosphere for monitoring.
42 Top off 9-5/8" and 9-5/8" x 13-3/8" annuli with kill fluid. Document volumes.
43 Remove wellhead equipment.
44 NU 13" BOPE (blind ram + pipe ram + annular) on top of the casing head. Need kill / choke outlets below blind / shear.
45 Function and pressure test BOPE to low (250 psig) and high (2500 psig). Report results to WE&T engineer.
46 **Pick up and RIH with 9 5/8" Baker WindowMaster whipstock with SilverBack window mill assembly as per vendor represenatives.** Fill the drillpipe a minimum of every 10 stands on the trip in the hole with the assembly. Avoid any sudden starts and stops while RIH with whipstock.
Note: Ensure running string is stationary prior to insertion of the slips and that slips are removed slowly when releasing the work string to RIH. These precautions are required to avoid any weakening of the whipstock shear mechanisms and / or to avoid early set.
47 Orient the whipstock (reference Directional Plan for whipstock orientation).
48 Set the whipstock at ~1911' as per Baker procedure.
49 Fully displace the well to 9.0 ppg milling fluid before milling the window.
53 Mill window plus 20-30' of new formation. Use ditch magnets to collect the metal shavings. Clean regularly.
54 Work the mill through the window to confirm the window milling is complete and circulate well clean (minimum of 2 BU). Pump a high-vis sweep to remove metal shavings and make every effort to remove all of the sweep pill from the mud system as it is circulated to surface.
55 Pull mill into the casing above the top of the whipstock.
56 Conduct an FIT to 2050 psi equivalent at window exit.
57 POOH. LD milling assembly. Once out of the hole, inspect and document mill gauge.
58 Flush the stack / lines to remove metal debris that may have settled out in these areas.
59 Ensure BOP equipment is operable by functioning the rams.
60 **PU sufficient DP to TD the 8-1/2" intermediate section.**
61 MU 8-1/2" drillout BHA and RIH.
62 Drill remaining tangent section from window exit as per directional plan to depart from the mother bore / magnetic interference.
63 POOH and LD BHA.
64 PU 8-1/2" air BHA, initiate air, and stage back in hole unloading fluid.
65 Drill to KOP as per directional plan, flow check and TOOH.
66 PU curve BHA, TIH.
67 Directionally drill to 7" casing point as per directional plan. Casing point is targeted for the bottom of the Onondoga Lime caprock.
68 TOOH laying down.
69 RU to run casing. Change pipe rams to 7" casing rams and pressure test.
70 Run 7" 26# L-80 SMLS R3 VAM21 casing and 2-stage cement to surface via DV tool. Recommened to use Baker-Lok thread compound on shoe track.
Note: DV tool / Inflatable & Swellable Packers placement targeted for ~50 - 60' TVD above Marcellus shale. Final placement to be determined RT.
71 WOC until tail cement compressive strength reaches 500 psi based on UCA cement test results.
72 MIRU ND / NU / testing crew.
73 Pull and unset rig slips on the 7" casing.
74 Unbolt and lift BOP stack above A-section of wellhead using BOP winches.
75 Pull 75% of free string weight and drop slips in casing head (do not pull more than free string weight). Cut off / dress 7" casing. Install primary seals.
76 Pressure test wellhead to 2100 psig for 30 minutes.
77 **Install 11" 5M x 7-1/16" 5M DSA, 7-1/16" 5M double ram (blind bottom + pipe ram top), and annular.**
78 MU and TIH with 6-1/8" hole drilling BHA.
79 Pressure test BOPs and choke system to 250 and 2100 psig for 30 minutes with fresh water in hole. This also serves as 1.2 SF casing pressure test.
80 Maximum pressure drop 10%.
81 **Replace wellbore fluid with drilling fluid – pre-treat for cement contamination.**
82 Drill out shoe track and 20 ft of new hole.
83 Obtain CBL (bring tractor, pack-off to run under pressure if needed). If pressure required to facilitate acoustic coupling, apply 800 psig and re-run CBL.
84 Load hole and perform FIT to 0.45 psi/TVD ft equivalent @ casing shoe. Do not exceed 0.50 psi/ft.

PREPARED BY:	Maria Medvedeva	REVIEWED BY:	James Amos	APPROVED:	Brent Criser
PREP DATE:	1/31/2024				

03/15/2024

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WELL JOB PLAN	STS Well Engineering & Technology	PAGE 4	DATE JOB PREPARED: 1/31/2024
Objective: Plug back, sidetrack and redrill			LAST PROFILE UPDATE:

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STAT:	WV	SHL (Lat/Long):	38.892091	-81.68892	API:	47-035-02460
DIST/TWP:	Ravenswood	BHL (Lat/Long):	38.896342	-81.68889	CNTY:	Jackson

PROCEDURE (continued)

85 TBIH with 6-1/8" hole drilling BHA. Drill to well TD as per geologist.
86 Pump hi-vis sweep (either 25 bbl 80-sec vis or 5 gal concentrated polymer). Circulate a minimum of 2x BU. Flow check.
87 TOOH laying down. Keep hole full and monitor pit levels.
88 Install blank barrier in wellhead.
89 ND BOP.
90 Install remainder of the wellhead. Pull the blank barrier out.
91 RDMO drilling rig.
92 MIRU CTU
93 RIH unloading fluid out of wellbore. Clean to MTD.
94 Perform 10,000 gallons of 15% HCl treatment.
95 RDMO CTU.
96 Flow well, If well won't flow, unload with nitrogen.
97 Perform final 45-min flowback test.
98 Notify WE&T Project Support that well is back in-service.
99 Reclaim R&L.
100 Reconnect well line.
101 Paint wellhead and well line.
102 Commission well by completing, processing, and retain for records the Wellsite Review and Turnover Form.
103 Notify RE&G that well is ready for storage service.

PREPARED BY:	Maria Medvedeva	REVIEWED BY:	James Amos	APPROVED:	Brent Criser
PREP DATE:	1/31/2024				

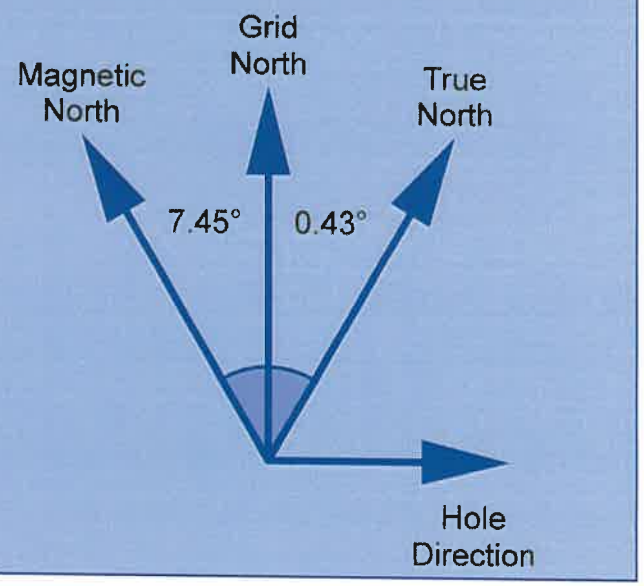
03/15/2024

Proposal Report for 12411

REFERENCE DATA			
Ellipsoid	Clarke - 1866	Unit System	Feet
Coord. System	NAD27 Universal Transverse Mercator, Zone 17 North	North Ref.	Grid North
Mag. Model	International Geomagnetic Reference Field 2020	Vertical Ref.	Mean Sea Level
Calc. Date	27 Mar, 2023		

LOCATION DATA			
RKB Elevation	616.24ft above MSL	Total Field	51,200.2 nT
Map North	14,123,271.15 N	Magnetic Dip	65.79°
Map East	1,444,322.18 E	Declination	-7.88°
Latitude	38.89166883° N	Convergence	-0.43°
Longitude	81.68918653° W	Earth's Gravity Field (Ge)	1.000084Gn

NORTH REFERENCE DATA	
Magnetic Model	International Geomagnetic Reference Field 2020
Calculation Date	Monday, March 27, 2023
Declination	-7.88°
Inclination/Dip	65.79°
Horizontal Component	20,994.4 nT
Northerly Component	20,795.9 nT
Easterly Component	-2,880.1 nT
Vertical Component	46,697.9 nT
Total Field Strength	51,200.2 nT
Grid North is 0.43 degrees West of True North (Grid Convergence) Magnetic North is 7.88 degrees West of True North (Magnetic Declination) Magnetic North is 7.45 degrees West of Grid North (Magnetic Convergence)	
To convert a True Direction to a Grid Direction, Add 0.43 degrees. To convert a Magnetic Direction to a True Direction, Subtract 7.88 degrees. To convert a Magnetic Direction to a Grid Direction, Subtract 7.45 degrees.	



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03/15/2024

slb

TC Energy

Borehole:	Well:	Field:	Structure:
Ripley 12411 ST01	Ripley 12411	WV Jackson County (NAD 27 UTM Zone 17N)	TC Energy Ripley 12411

Gravity & Magnetic Parameters
Model: HDGM 2023 Dip: 65.81° Date: 09-Jan-2024
MagDec: -8.319° FS: 51283.268nT Gravity FS: 999.303mgn (9.80665 Based)

Surface Location NAD27 Universal Transverse Mercator, Zone 17 North, US Feet
Lat: N 38 53 29.68 Northing: 14123210.4ftUS Grid Conv: -0.4328°
Lon: W 81 41 21.81 Easting: 1444276.57ftUS Scale Fact: 0.99964401

Miscellaneous
Slot: Ripley 12411 TVD Ref: RKB (635.000 ft above MSL)
Plan: TC Energy Ripley 12411 ST01 Rev4 SLS 09Jan24

Surface Location
Northing: 14123210.388421 Easting: 1444276.56661679 Latitude: N 38 53 29.68 Longitude: W 81 41 21.81 VSec Azimuth: 170.76

Target Description			Grid Coord						Local Coord	
Target Name	Shape	Dimension	Latitude	Longitude	Northing	Easting	TVD	VSec	N(+)/S(-)	E(+)/W(-)
Ripley 12411 ST01 BHL	Point	N/A	N 38 52 50.75	W 81 41 13.12	14119287.60	1444917.81	4810.00	3995.94	-3944.12	641.47
Ripley 12411 ST01 LP	Point	N/A	N 38 53 22.46	W 81 41 1.98	14122468.51	1445826.18	4810.00	981.22	-742.16	1549.17

PART	Seq.	Survey Tool / Survey Tool Code	Vendor/Tool	Hole Size (in)	Casing Size (in)	Expected Max Incl (°)	MD From (ft)	MD To (ft)	Survey Frequency (ft)	[illegible]	[illegible]	Comments/Contingency
1	1	A020Oa_GYRO-NS		17.5	13.375		0	281		1.682	1.678	
1	2	A020Oa_GYRO-NS		17.5	13.375		281	1819		8.118	8.102	
1	3	A020Oa_GYRO-NS		12.0	9.625		1819	1928	1/100.00	8.189	8.168	
1	4	B008Mb_MWD+IGRF		8.5	7		1928	5582.94	1/100.00	58.098	22.943	
1	5	B008Mb_MWD+IGRF		8.5	7		5592.94	9071.038	1/100.00	117.734	45.414	

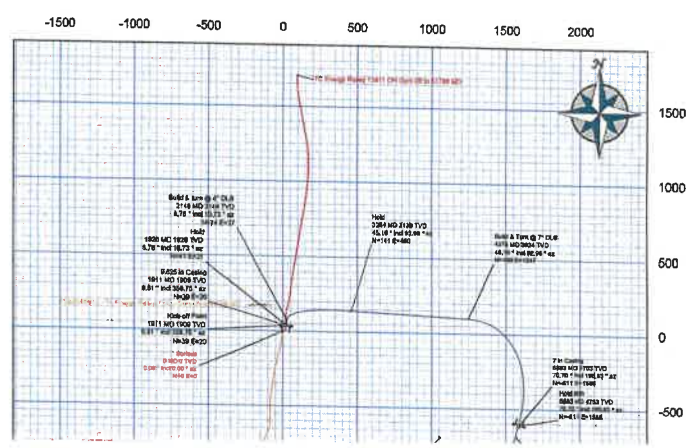
Critical Points

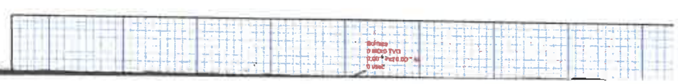
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
13.375 in Casing	272.00	1.52	66.18	271.96	2.16	-1.61	3.54	1.09
Red Rock	980.34	0.50	11.15	980.00	-3.91	6.63	16.45	0.88
Salt Sand	1520.34	1.64	56.67	1520.00	-10.60	14.07	21.15	1.28
Big Lime	1659.38	1.81	7.11	1659.00	-13.12	16.97	22.61	0.77
Big Injun	1815.68	6.12	346.48	1815.00	-21.78	25.62	21.63	4.38
9.625 in Casing	1911.00	8.81	358.75	1909.42	-34.76	38.52	20.39	4.08
Kickoff Point	1911.00	8.81	358.75	1909.42	-34.76	38.52	20.39	4.08
Hold	1928.00	8.78	10.73	1926.20	-37.37	41.21	20.60	12.30
Build & turn @ 4° DLS	2144.00	8.78	10.73	2143.64	-66.85	74.12	26.83	0.00
Coffee Shale	2270.83	9.96	40.44	2265.00	-84.63	91.41	35.47	4.00
Berea	2296.33	10.48	46.37	2290.00	-87.28	94.71	38.64	4.00
Hold	3363.66	45.16	92.96	3139.48	-64.88	140.53	459.86	4.00
Brown Shale	3980.81	45.16	92.86	3645.00	42.61	114.27	967.44	4.00
Build & Turn @ 7° DLS	4378.10	45.16	92.99	3923.76	101.74	98.79	1247.33	0.00
Onondaga	5583.75	69.23	194.31	4693.00	632.88	-584.46	1593.50	0.00
7 in Casing	5592.94	70.70	195.83	4703.00	667.67	-610.94	1599.37	7.00
Hold EOB	5592.94	70.70	195.83	4703.00	667.68	-610.94	1599.37	7.00
Build @ 4° DLS	5672.94	70.70	195.83	4729.44	938.07	-683.58	1585.77	7.00
[illegible]	6004.55	83.96	195.83	4802.00	1318.48	-994.15	1477.72	0.00
Landing Point	6186.41	90.00	195.83	4809.94	1354.58	-1139.03	1438.65	4.00
Ripley 12411 ST01 BHL	9071.04	90.00	195.83	4810.00	3995.94	-3944.12	641.47	4.00

Grid
Mag
True

Grid North
Tot Corr (M->G -7.886°)
Mag Dec (-8.319°)
Grid Conv (-0.433°)

EW (ft) Scale = 1:300.00(ft)





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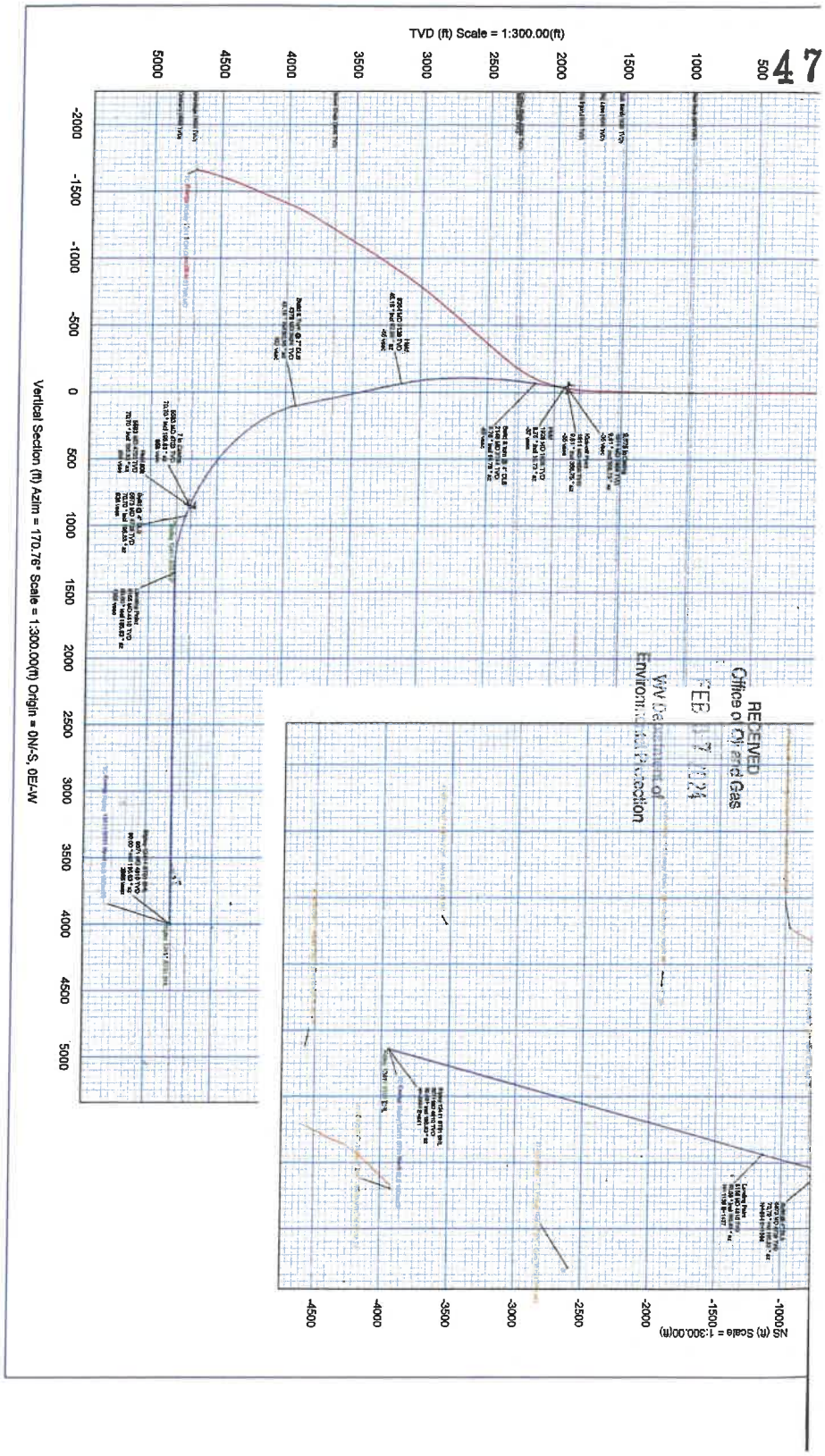
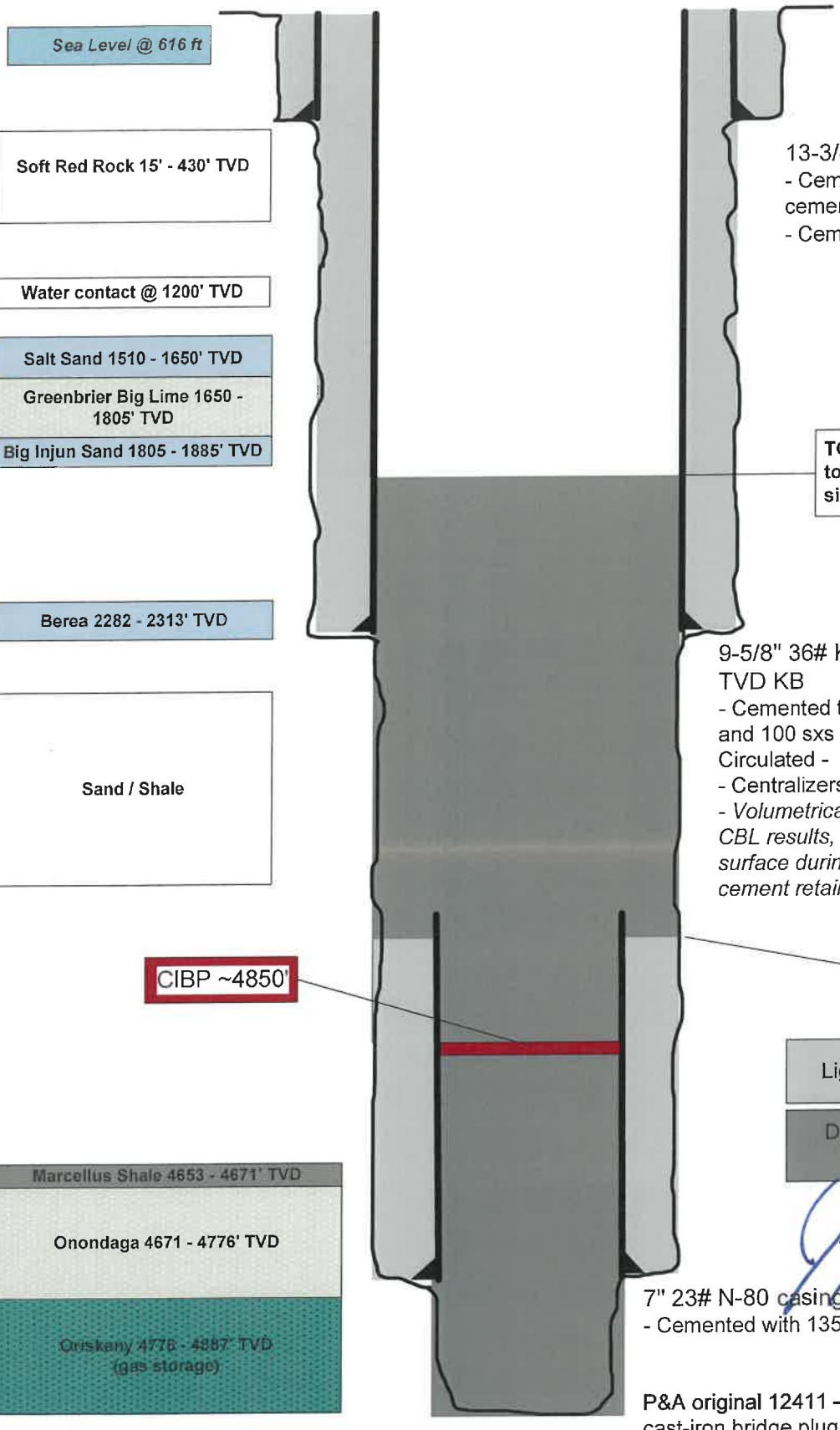


2-1-24

4703502460W

~ not to scale ~

RIPLEY 12411
Plugback
(as of 01.24.24)



13-3/8" 48# J-55 csg @ 261' MD / TVD KB
- Cemented to surface with 280 sx Class "A" cement. Circulated 18 bbls of cement to pit.
- Cement basket at 50'

TOC ~ 1911'. This will be the base to set whipstock assembly for sidetrack window milling

9-5/8" 36# K-55 8rd csg @ 2365' MD / 2316' TVD KB
- Cemented to surface with 410 sxs Mid-App 222 and 100 sxs STD (2% CaCl 1/4 lbs flocele). Circulated - 10 bbls cement to pit per historic record
- Centralizers on joints 1 - 3
- *Volumetrically calculated TOC is 760' → based on CBL results, may have to perf and squeeze to surface during plugback of the original well via a cement retainer*

TOC per 06.19.99 Baker SBT @ 4544' MD. - Good cement quality to 4710' KB - Partial quality to 4544' MD KB

Light grey fill indicates original cmt

Dark grey fill indicates cmt placed during workover

2-1-24

7" 23# N-80 casing @ 5230' MD / 4739' TVD KB
- Cemented with 135 sxs Class "A". Flag joint at 4230' (9.65').

TD 5355' MD KB

P&A original 12411 – pull tubing, set bottom cmt plug, set cast-iron bridge plug, cut & pull 7" from ~4500, cmt into 9-5/8" csg for whipstock base, perf & cmt squeeze 9-5/8" to surface as needed

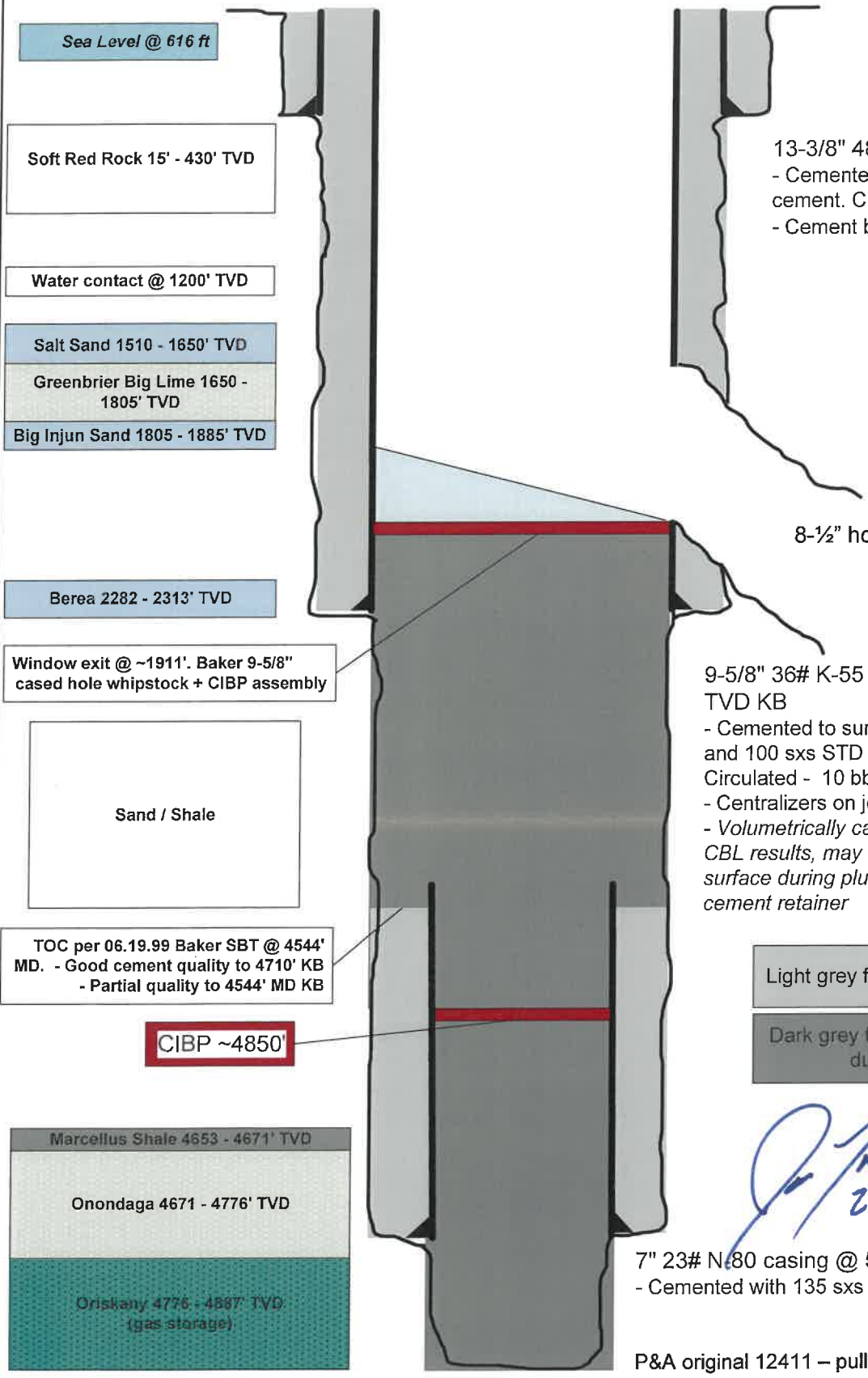
03/15/2024

4703502460W

~ not to scale ~

RIPLEY 12411
ST Window
(as of 01.24.24)

Well Pad Elevations
Pre Construction: 616 ft
Post Construction: 616 ft
KB: 19 ft



13-3/8" 48# J-55 csg @ 261' MD / TVD KB
- Cemented to surface with 280 sx Class "A" cement. Circulated 18 bbls of cement to pit.
- Cement basket at 50'

8-½" hole section for new 7" flowstring

9-5/8" 36# K-55 8rd csg @ 2365' MD / 2316' TVD KB
- Cemented to surface with 410 sxs Mid-App 222 and 100 sxs STD (2% CaCl 1/4 lbs flocele). Circulated - 10 bbls cement to pit per historic record
- Centralizers on joints 1 - 3
- *Volumetrically calculated TOC is 760' → based on CBL results, may have to perf and squeeze to surface during plugback of the original well via a cement retainer*

Light grey fill indicates original cmt

Dark grey fill indicates cmt placed during workover

2-1-24

RECEIVED
Office of Oil and Gas
FEB 07 2024
WV Department of
Environmental Protection

7" 23# N-80 casing @ 5230' MD / 4730' TVD KB
- Cemented with 135 sxs Class "A". Flag joint at 4230' (9.65').

P&A original 12411 – pull tubing, set bottom cmt plug, set cast-iron bridge plug, cut & pull 7" from ~4500, cmt into 9-5/8" csg for whipstock base, perf & cmt squeeze 9-5/8" to surface as needed

03/15/2024

4703502460W

Well Pad Elevations
Pre Construction: 616 ft
Post Construction: 616 ft
KB: 19 ft

~ not to scale ~

RIPLEY 12411 ST

(as of 01.24.24)

Softest Red Rock
32 - 447' TVD

Red Rock
980 - 1010' TVD

Original 9" TOC possibly at 760', per CBL log to be perf'ed and squeezed to surf during plugback

Water contact @ 1200' TVD

Salt Sand 1510 - 1650' TVD

Greenbrier Big Lime 1650 - 1805' TVD

Big Injun Sand 1805 - 1885' TVD

Coffee Shale
2265 - 2290' TVD

Berea 2290 - 2296' TVD

8-1/2" hole

KOP @ 2148 ft MD GL

Existing Surf 13-3/8" 48# J-55 csg @ 261' MD / TVD
- Cemented to surface with 280 sx Class "A" cement.
Circulated 18 bbls of cement to pit.
- Cement basket at 50'

Temperature: 120 F Reservoir / 60 F Surface
Max surface operating pressure 1675 psig

Existing Intermediate 9-5/8" 36# K-55 8rd csg
Set CIBP & cased hole whipstock, mill window at ~1909' TVD / 1911' MD

2-1-24

LP @ 4810 TVD

~1537 ft w/ backbuild

~2916 ft

TD ~4810 ft TVD
(~9,071 ft MD)

6-1/8" hole

Oriskany SS 4788 - 4823 ft TVD GL

Marcellus Shale 4680 - 4693' TVD

Onondaga 4693 - 4802' TVD

Oriskany 4802 - 4865' TVD
(gas storage)

7" Flowstring @ ~4703 ft TVD GL (~5593 ft MD GL)
26 ppf N-80 ERW w/ premium thread
Internal Yield: 7240 psi (SF = 4.3 relative to max reservoir press)
Collapse: 5410 psi (SF =2.3 relative to 0.50 psi/ft overburden gradient)
Body Yield Strength: 604 Klbs (SF = 4.1 relative to dry pipe weight)
Joint Strength: 519 Klbs (SF = 3.5 relative to dry pipe weight)
Uniaxial Bend Ratio: 4 and 7 deg/100 ft
2 stage cement to surface – middle of the stage collar @ ~62' TVD above Marcellus top
(middle of a 12' competent zone, to be confirmed by RE&G)

~3996 ft

03/15/2024

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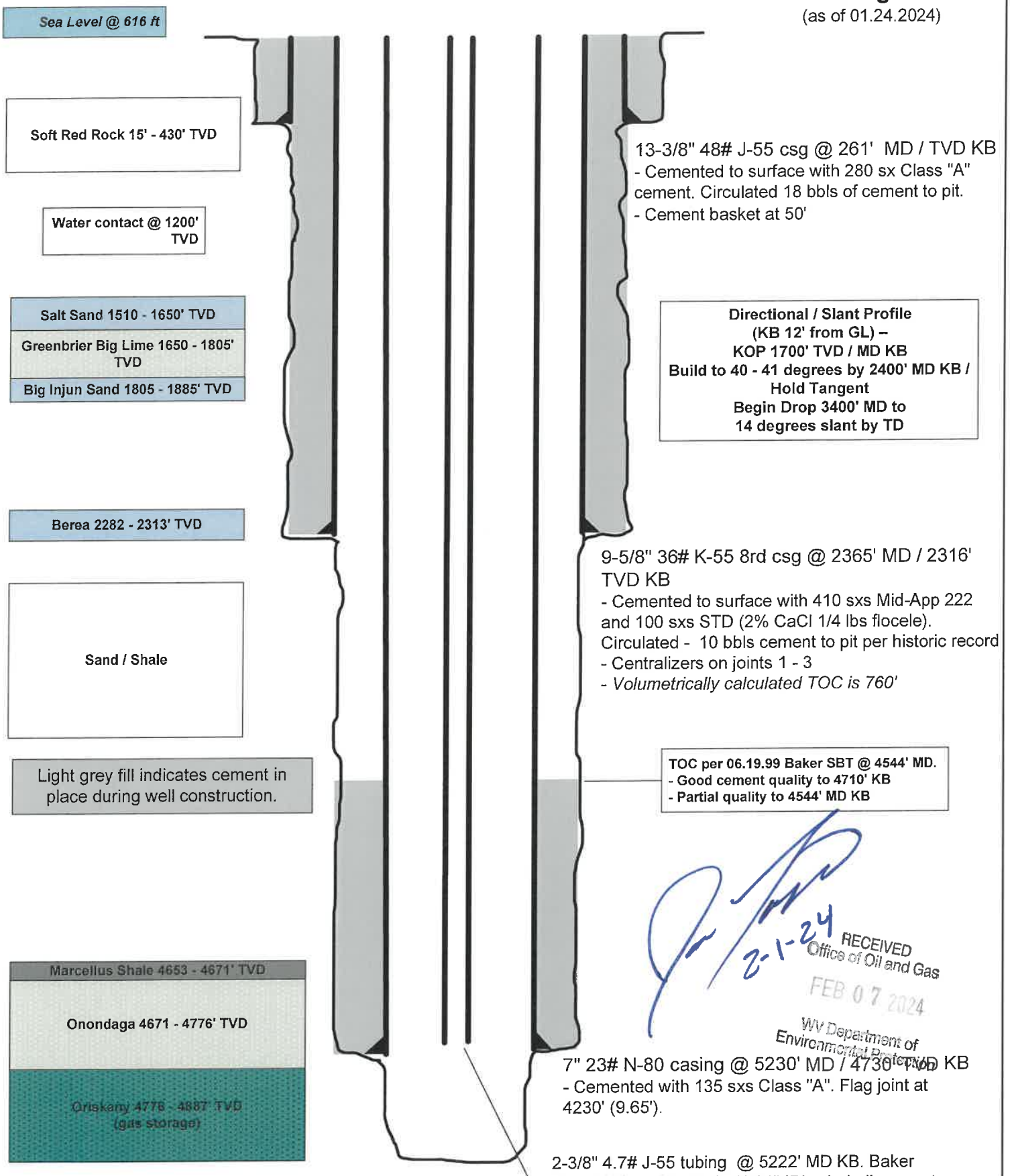
~ not to scale ~

RIPLEY 12411
Existing Well
(as of 01.24.2024)



2-1-24

RECEIVED
Office of Oil and Gas
FEB 07 2024
WV Department of Environmental Protection

03/15/2024

4703502460W

Columbia Gas Transmission Corporation

NOTICE OF STORAGE WELL STATUS CHANGE

FORWARD ORIGINAL ONLY TO STORAGE DEPARTMENT

Area	Storage Field	Farm Name
St. Albans	Ripley	D. & K. Hite

Company Well Number	Township-District	County	State	Lease-Deed No.	Acres	Effective Date
12411	Ravenswood	Jackson	WV	52522	73	12/09/99

Last Active Well on Farm: No

(This Block for Storage Department Use Only)

☐ Surrender Lease ☐ Renew Lease ☐ Other

WELL STATUS PRIOR TO THIS REPORT

☐ STORAGE –ACTIVE ☐ STORAGE -SPECIAL ☐ STORAGE-OBSERVATION

x DRILLING ☐ ABANDONED ☐ PRODUCTION

WELL STATUS CHANGE OR WORK PERFORMED

☐ STORAGE –ACTIVE ☐ STORAGE -SPECIAL ☐ STORAGE-OBSERVATION

x NEW DRILL ☐ REDRILLED FOR STORAGE ☐ PLUGGED AND ABANDONED

☐ SOLD ☐ PURCHASED FOR STORAGE ☐ OTHER (See Remarks)

Remarks:

Drilled new directional storage well in the Oriskany Sandstone. Casing as follows:

13-3/8" 48#/ft H-40 @261'KB cemented to surface w/280 sx neat
9-5/8" 36#/ft K-55 @ 2365' md KB cemented to surface w/100 sx neat and 410 sx Mid App
7" 23#/ft N-80 @ 5230' md KB cemented w/ 135 sx neat
2-3/8" 4.7#/ft J-55 @ 5222'md KB

TD at 5355' md KB

Stimulated Oriskany w/ Deltafrac 517 bbls water 166mscf N2 27600# 20/40 sand

Well work started 6/3/99
Well work complete 7/15/99

NOTED BY:	Initials:	Date:
Reservoir Services Engineer:		
Storage Services Engineer: J.V. McCallister	Initials: JVM	Date: 12/09/99
Field Services Investments:	Initials:	Date:
SM database changed by:	Initials:	Date:
Storage wellbook changed by:	Initials:	Date:

AUTHORIZATION FOR WORK PERFORMED	Classification: 51-107-01161-W22212-4441 Permit Number: 47-035-02460	Compiled By: J.V. McCallister Date: 12/09/99

4703502460

KellyDown - Version: 4.01.03.00

AS BUILT DOWN HOLE SURVEY
FOR ORIGINAL DIRECTIONAL DRILLED WELL
OF 7/14/99

TC Energy
12411

True North Directional Services
Proposal Report

Existing Ripley 12411 Directional Well Profile Gyro Survey

Monday, March 27, 2023

UWI No. 47-035-02460

Surface Coordinates: 14,123,271.15 N, 1,444,322.18 E (38.89166883° N , 81.68918653° W)
Grid Coordinate System: NAD27 Universal Transverse Mercator, Zone 17 North

Surface Coordinates relative to 12411: 0.00 N, 0.00 E (Grid)

Kelly Bushing Elevation: 616.24ft above Mean Sea Level
Kelly Bushing Elevation: 0.00ft above Ground Level
Ground Level: 616.24ft above Mean Sea Level

Proposal Ref: pro1344

03/15/2024
Pg 1/3

Proposal Report for 12411

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)		Northings (ft)	Eastings (ft)	Map Northings (ft)	Map Eastings (ft)	Geographical Latitude (° ' ")	Geographical Longitude (° ' ")	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.00	0.00	-616.24	0.00 N	0.00 E	14,123,271.15 N	1,444,322.18 E	38.89166883° N	81.68918653° W	0.00	
100.00	0.84	136.33	100.00	-516.24	0.53 S	0.51 E	14,123,270.62 N	1,444,322.68 E	38.89166739° N	81.68918474° W	-0.50	0.840
200.00	1.44	108.23	199.98	-416.26	1.45 S	2.21 E	14,123,269.70 N	1,444,324.38 E	38.89166489° N	81.68917874° W	-1.33	0.803
300.00	1.76	70.33	299.94	-316.30	1.33 S	4.85 E	14,123,269.82 N	1,444,327.02 E	38.89166528° N	81.68916946° W	-1.05	1.082
400.00	1.40	40.43	399.90	-216.34	0.12 N	7.08 E	14,123,271.27 N	1,444,329.26 E	38.89166930° N	81.68916164° W	0.52	0.886
500.00	0.28	145.23	499.89	-116.35	0.85 N	8.02 E	14,123,272.00 N	1,444,330.19 E	38.89167132° N	81.68915838° W	1.30	1.496
600.00	1.55	51.03	599.88	-16.36	1.50 N	9.21 E	14,123,272.65 N	1,444,331.38 E	38.89167313° N	81.68915421° W	2.02	1.595
700.00	1.75	62.73	699.84	83.60	3.05 N	11.62 E	14,123,274.20 N	1,444,333.79 E	38.89167744° N	81.68914579° W	3.70	0.391
800.00	1.80	66.43	799.79	183.55	4.37 N	14.41 E	14,123,275.53 N	1,444,336.59 E	38.89168114° N	81.68913600° W	5.19	0.125
900.00	1.05	21.73	899.76	283.52	5.85 N	16.19 E	14,123,277.01 N	1,444,338.37 E	38.89168524° N	81.68912978° W	6.77	1.287
1,000.00	0.20	333.53	999.76	383.52	6.86 N	16.45 E	14,123,278.01 N	1,444,338.63 E	38.89168802° N	81.68912889° W	7.79	0.929
1,100.00	1.40	23.03	1,099.75	483.51	8.14 N	16.85 E	14,123,279.29 N	1,444,339.03 E	38.89169154° N	81.68912752° W	9.09	1.279
1,200.00	1.35	87.93	1,199.72	583.48	9.31 N	18.51 E	14,123,280.46 N	1,444,340.68 E	38.89169478° N	81.68912173° W	10.35	1.476
1,300.00	1.05	358.93	1,299.71	683.47	10.27 N	19.67 E	14,123,281.42 N	1,444,341.84 E	38.89169744° N	81.68911768° W	11.37	1.696
1,400.00	1.21	6.83	1,399.69	783.45	12.23 N	19.78 E	14,123,283.38 N	1,444,341.95 E	38.89170284° N	81.68911735° W	13.34	0.223
1,500.00	1.65	57.43	1,499.66	883.42	14.05 N	21.12 E	14,123,285.21 N	1,444,343.29 E	38.89170787° N	81.68911270° W	15.24	1.285
1,600.00	1.30	7.73	1,599.63	983.39	15.95 N	22.48 E	14,123,287.11 N	1,444,344.66 E	38.89171312° N	81.68910795° W	17.21	1.280
1,700.00	2.07	6.53	1,699.59	1,083.35	18.87 N	22.84 E	14,123,290.02 N	1,444,345.02 E	38.89172114° N	81.68910676° W	20.14	0.771
1,800.00	6.26	346.23	1,799.31	1,183.06	25.96 N	21.75 E	14,123,297.12 N	1,444,343.92 E	38.89174060° N	81.68911079° W	27.16	4.378
1,900.00	9.92	359.43	1,898.30	1,282.06	39.88 N	20.36 E	14,123,311.03 N	1,444,342.54 E	38.89177879° N	81.68911602° W	40.98	4.081
2,000.00	15.94	357.03	1,995.72	1,379.48	62.23 N	19.57 E	14,123,333.38 N	1,444,341.74 E	38.89184015° N	81.68911942° W	63.24	6.043
2,100.00	23.07	6.13	2,089.94	1,473.70	95.47 N	20.95 E	14,123,366.62 N	1,444,343.13 E	38.89193148° N	81.68911543° W	96.51	7.730
2,200.00	30.93	9.63	2,178.98	1,562.74	140.36 N	27.36 E	14,123,411.51 N	1,444,349.53 E	38.89205491° N	81.68909412° W	141.69	8.016
2,270.00	36.30	16.43	2,237.27	1,621.03	178.01 N	36.24 E	14,123,449.17 N	1,444,358.41 E	38.89215851° N	81.68906391° W	179.79	9.359
2,300.00	38.25	14.73	2,261.15	1,644.91	195.51 N	41.11 E	14,123,466.67 N	1,444,363.29 E	38.89220668° N	81.68904724° W	197.54	7.350
2,400.00	41.32	6.33	2,338.04	1,721.80	258.32 N	52.64 E	14,123,529.48 N	1,444,374.81 E	38.89237943° N	81.68900841° W	260.91	6.185
2,500.00	40.92	6.73	2,413.37	1,797.13	323.66 N	60.12 E	14,123,594.81 N	1,444,382.29 E	38.89255903° N	81.68898385° W	326.56	0.479
2,600.00	41.89	10.33	2,488.39	1,872.15	389.04 N	69.95 E	14,123,660.19 N	1,444,392.12 E	38.89273880° N	81.68895104° W	392.40	2.571
2,700.00	42.68	10.33	2,562.37	1,946.13	455.23 N	82.01 E	14,123,726.38 N	1,444,404.19 E	38.89292085° N	81.68891039° W	459.17	0.790
2,800.00	43.64	10.13	2,635.31	2,019.07	522.54 N	94.16 E	14,123,793.70 N	1,444,416.34 E	38.89310599° N	81.68886947° W	527.07	0.970
2,900.00	43.32	10.13	2,707.87	2,091.63	590.28 N	106.27 E	14,123,861.43 N	1,444,428.45 E	38.89329228° N	81.68882872° W	595.38	0.320
3,000.00	41.40	8.53	2,781.76	2,165.52	656.76 N	117.21 E	14,123,927.91 N	1,444,439.39 E	38.89347509° N	81.68879203° W	662.38	2.202
3,100.00	40.66	11.33	2,857.21	2,240.96	721.41 N	128.52 E	14,123,992.56 N	1,444,450.70 E	38.89365289° N	81.68875400° W	727.57	1.981
3,200.00	39.64	10.73	2,933.64	2,317.40	784.69 N	140.86 E	14,124,055.84 N	1,444,463.04 E	38.89382696° N	81.68871231° W	791.45	1.091
3,300.00	39.68	9.63	3,010.63	2,394.39	847.51 N	152.15 E	14,124,118.66 N	1,444,474.32 E	38.89399972° N	81.68867432° W	854.81	0.703

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03/15/2024
Pg 3/3

Proposal Report for 12411

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)		Northings (ft)	Eastings (ft)	Map Northings (ft)	Map Eastings (ft)	Geographical Latitude (° ' ")	Geographical Longitude (° ' ")	Vertical Section (ft)	Dogleg Rate (°/100ft)
3,400.00	36.84	7.43	3,089.14	2,472.90	908.72 N	161.37 E	14,124,179.88 N	1,444,483.55 E	38.89416805° N	81.68864353° W	916.45	3.149
3,500.00	35.31	5.73	3,169.97	2,553.73	967.21 N	168.13 E	14,124,238.37 N	1,444,490.31 E	38.89432883° N	81.68862131° W	975.23	1.828
3,600.00	34.15	2.13	3,252.16	2,635.92	1,024.02 N	172.07 E	14,124,295.18 N	1,444,494.24 E	38.89448495° N	81.68860900° W	1,032.18	2.356
3,700.00	32.74	0.93	3,335.60	2,719.36	1,079.11 N	173.55 E	14,124,350.27 N	1,444,495.73 E	38.89463629° N	81.68860524° W	1,087.26	1.557
3,800.00	31.99	358.93	3,420.07	2,803.83	1,132.64 N	173.50 E	14,124,403.79 N	1,444,495.67 E	38.89478330° N	81.68860685° W	1,140.69	1.307
3,900.00	32.19	358.03	3,504.79	2,888.55	1,185.74 N	172.09 E	14,124,456.90 N	1,444,494.27 E	38.89492913° N	81.68861320° W	1,193.63	0.518
4,000.00	32.69	353.33	3,589.20	2,972.96	1,239.20 N	168.04 E	14,124,510.35 N	1,444,490.22 E	38.89507585° N	81.68862885° W	1,246.77	2.570
4,100.00	31.61	349.93	3,673.87	3,057.63	1,291.83 N	160.32 E	14,124,562.98 N	1,444,482.50 E	38.89522025° N	81.68865737° W	1,298.87	2.107
4,200.00	31.30	347.43	3,759.18	3,142.94	1,342.99 N	150.09 E	14,124,614.14 N	1,444,472.27 E	38.89536055° N	81.68869469° W	1,349.36	1.341
4,300.00	27.74	349.33	3,846.18	3,229.94	1,391.23 N	140.13 E	14,124,662.38 N	1,444,462.30 E	38.89549284° N	81.68873099° W	1,396.96	3.681
4,400.00	23.06	350.03	3,936.49	3,320.25	1,433.41 N	132.42 E	14,124,704.56 N	1,444,454.60 E	38.89560854° N	81.68875918° W	1,438.63	4.690
4,500.00	21.93	348.73	4,028.88	3,412.64	1,471.01 N	125.39 E	14,124,742.17 N	1,444,447.56 E	38.89571167° N	81.68878491° W	1,475.77	1.235
4,600.00	22.31	349.03	4,121.52	3,505.28	1,507.96 N	118.13 E	14,124,779.12 N	1,444,440.30 E	38.89581300° N	81.68881141° W	1,512.25	0.396
4,700.00	22.69	348.23	4,213.91	3,597.67	1,545.48 N	110.58 E	14,124,816.63 N	1,444,432.76 E	38.89591589° N	81.68883892° W	1,549.27	0.488
4,800.00	23.93	353.23	4,305.76	3,689.51	1,584.51 N	104.26 E	14,124,855.66 N	1,444,426.43 E	38.89602295° N	81.68886218° W	1,587.87	2.334
4,900.00	18.74	356.03	4,398.87	3,782.63	1,620.70 N	100.75 E	14,124,891.85 N	1,444,422.93 E	38.89612227° N	81.68887545° W	1,623.80	5.288
5,000.00	19.25	355.13	4,493.43	3,877.19	1,653.15 N	98.24 E	14,124,924.30 N	1,444,420.42 E	38.89621135° N	81.68888514° W	1,656.06	0.588
5,100.00	13.91	2.83	4,589.25	3,973.01	1,681.60 N	97.44 E	14,124,952.75 N	1,444,419.61 E	38.89628949° N	81.68888872° W	1,684.42	5.763
5,178.00	14.48	356.03	4,664.87	4,048.63	1,700.70 N	97.23 E	14,124,971.85 N	1,444,419.40 E	38.89634192° N	81.68888997° W	1,703.47	2.258

All data is in Feet unless otherwise stated. Directions and coordinates are relative to Grid North.
Vertical depths are relative to 12411. Northings and Eastings are relative to 12411.

The dogleg severity is in Degrees per 100 feet.
Vertical Section is from 12411 calculated along an azimuth of 3.27° (Grid).

Based upon minimum curvature calculations, at a measured depth of 5,178.00ft,
the bottom hole displacement is 1,703.47ft, in the direction of 3.27° (Grid).

4703502460W

Received
Office of Oil & Gas
Permitting
OCT 18 1999
WV Division of
Environmental Protection

14-Apr-99
API # 47- 35-02460
Revised _____

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas
Well Operator's Report of Well Work

Farm name: HITE, DELBERT Operator Well No.: RIPLEY 12411

LOCATION: Elevation: 615.00 Quadrangle: SANDYVILLE

District: RAVENSWOOD County: JACKSON
Latitude: 9100 Feet South of 38 Deg. 55Min. 0 Sec.
Longitude 6450 Feet West of 81 Deg. 40 Min. 0 Sec.

Company: COLUMBIA GAS TRANSMISSION
P. O. BOX 1273
CHARLESTON, WV 25325-1273

Agent: RICHARD L. COTY

Inspector: HOMER DOUGHERTY
Permit Issued: 04/16/99
Well work Commenced: 06/02/99
Well work Completed: 07/14/99
Verbal Plugging
Permission granted on: _____
Rotary X Cable _____ Rig
Total Depth (feet) 5355'
Fresh water depths (ft)
Not Reported
Salt water depths (ft)
Not Reported
Is coal being mined in area (Y/N)? No
Coal Depths (ft): Not Reported

Casing & Tubing	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
Size 13-3/8",	48 lb.	261'	280 sx Neat to Surface
9-5/8",	36 lb.	2365'	To Surface 410 sx Mid App 222 100 sx Neat
7",	23 lb.	5230'	135 sx Neat
2-3/8",	4.7 lb.	5222'	

OPEN FLOW DATA * Storage well - rates and pressures vary. 4778' TVD-4804' TVD

Producing formation Oriskany Pay zone depth (ft) 5278'MD-5304'MD
Gas: Initial open flow N/A MCF/d Oil: Initial open flow N/A Bbl/d
Final open flow N/A MCF/d Final open flow N/A Bbl/d
Time of open flow between initial and final tests N/A Hours
Static rock Pressure N/A psig (surface pressure) after N/A Hours

Second producing formation _____ Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after _____ Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

For: COLUMBIA GAS TRANSMISSION CORP.
By: Paul Amick, Sr. Storage Engineer
Date: October 11, 1999

03/15/2024

4703502460W

FORMATION	TOP (TVD)	TOP (MD)	BOTTOM (TVD)	BOTTOM (MD)
Salt Sands	1506'	1510'	1641'	1645'
Big Lime	1645'	1650'	1791'	1796'
Injun	1800'	1804'	1881'	1885'
Sunbury	2252'	2287'	2276'	2318'
Berea	2276'	2318'	2308'	2359'
Onondaga	4673'	5170'	4778'	5278'
Oriskany	4778'	5278'	4804'	5304'
Helderberg	4804'	5304'	Not Penetrated	Not Penetrated
TD				5355' (MD)

Pumped an N2-Assist Deltafrac Treatment using 500 gallons of 28% HCL, 517 bbls of water, 166 MSCF N2 and 27,600 lbs of 20/40 sand.

4703502460W

"Pipeline"

Select County: (035) Jackson Select datatypes: (Check All)
Enter Permit #: 02460
Get Data Reset
Location Production Plugging
Owner/Completion Stratigraphy Sample
Pay/Show/Water Logs Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 35 Permit = 02460 Link to all digital records for well

Report Time: Wednesday, March 13, 2024 11:59:37 AM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4703502460	Jackson	2460	Ravenswood	Sandyville	Ripley	38.891805	-81.689157	440233.6	4304995.8

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4703502460	7/14/1999	Dvtd Orgnl Loc	Completed	Delbert R/K Hite		12411			Delbert/K Hite	Columbia Natural Resources, Inc. (CNR)			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O
4703502460	7/14/1999	6/2/1999	615	Ground Level	Elk-Pca(Ssnvl)	Oriskany	Oriskany	Miscellaneous Well	Unsuccessful	Storage	Rotary	unknown	5355		5355		0	0	0	

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4703502460	7/14/1999	Horizon	Storage	Deviated	5278	Oriskany	5304	Oriskany	0	0			

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4703502460	Dvtd Orgnl Loc	Oriskany	Well Record	5278	Deviated Drlg	0	Reasonable	615	Ground Level

Wireline (E-Log) Information:
* There is no Scanned/Raster Log data for this well

* There is no Digitized/LAS Log data for this well

* There is no Scanned or Digital Logs available for download

There is no Plugging data for this well

There is no Sample data for this well

03/15/2024

4703502460W

WW-2A
(Rev. 6-14)

1). Date: 02/01/2024

2.) Operator's Well Number Riplev 12411

3.) API Well No.: State 47- County 035 - Permit 02460

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

4) Surface Owner(s) to be served:
(a) Name David and Marcella Curry
Address 259 Crooked Run Road
Ripley, WV 25271

(b) Name
Address

(c) Name
Address

6) Inspector Joe Taylor
Address 1478 Claylick Rd
Ripley, WV 25271
Telephone

5) (a) Coal Operator
Name Not operated
Address

(b) Coal Owner(s) with Declaration
Name Not operated
Address

Name
Address

(c) Coal Lessee with Declaration
Name Not operated
Address

RECEIVED
Office of Oil and Gas
FEB 07 2024
WV Department of
Environmental Protection

TO THE PERSONS NAMED ABOVE TAKE NOTICE THAT:

___ Included is the lease or leases or other continuing contract or contracts by which I hold the right to extract oil and gas

OR

x Included is the information required by Chapter 22, Article 6, Section 8(d) of the Code of West Virginia (see page 2)

I certify that as required under Chapter 22-6 of the West Virginia Code I have served copies of this notice and application, a location plat, and accompanying documents pages 1 through ___ on the above named parties by:

___ Personal Service (Affidavit attached)
x Certified Mail (Postmarked postal receipt attached)
___ Publication (Notice of Publication attached)

I have read and understand Chapter 22-6 and 35 CSR 4, and I agree to the terms and conditions of any permit issued under this application.

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, 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.

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
Rebecca Kennedy Warnick
TC/ENERGY / COLUMBIA GAS TRANSMISSION
1700 MACCORKLE AVE., SE
LAND DEPT
Charleston WV 25325
My Commission Expires June 30, 2026

Well Operator Columbia Gas Transmission, LLC
By: Maria Medvedeva
Its: Senior Wells Engineer Storage Technical Services
Address: 1700 MacCorkle Ave SE
Charleston WV 25314-1273
Telephone: 304-410-4313
Email: maria_medvedeva@tcenergy.com

Subscribed and sworn before me this 1st day of February, 2024

Rebecca Warnick Notary Public

My Commission Expires 6/30/26

Oil and Gas Privacy Notice

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a 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 depprivacyofficer@wv.gov

03/15/2024

4703502460W

Columbia Gas Transmission, LLC
1700 MacCorkle Ave., SE, Charleston, WV, USA 25314

TC Energy

February 1st, 2024

David and Marcella Curry
259 Crooked Run Road
Ripley, WV 25271

Acknowledgement of Receipt of Documents

We acknowledge the receipt of copies of the Columbia Gas Transmission Ripley 12411 (API 47-035-02460) WVDEP Office of Oil and Gas wellwork permit application -

1) Cover Letter
2) State of West Virginia Department of Environmental Protection, Office of Oil and Gas Well Work Permit Application
   - Form WW-2B
   - Form WW-2A
   - Form WW-2A Surface Waiver
   - Form WW-2A Coal Waiver
   - Form WW-2A1
   - Form WW-2B1
   - Form WW-9
   - Form WW-9-GPP
3) Well Job Plan – Plugback and sidetrack, redrill
4) Wellbore Schematics
5) Sidetrack Directional Plan
6) Ripley 12411 Sidetrack PLAT
7) Ripley 12411 Topo Map
8) Location Civil Design Package
9) Ripley 12411 Historic Well Record
10) Ripley 12411 Gyro Survey

Marcella Curry David Curry
Name of Individual

RECEIVED
Office of Oil and Gas
FEB 07 2024
WV Department of
Environmental Protection

Marcella Curry
Signature of Individual

02-01-2024
Date

2-1-24

www.tcenergy.com

03/15/2024

4703502460W

WW-2A Surface Waiver
(4/16)

SURFACE OWNER WAIVER

County Jackson

Operator Columbia Gas Transmission LLC
Operator well number Ripley 12411

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 57th 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 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...".

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Office of Oil and Gas
FEB 07 2024
WV Department of
Environmental Protection

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, WW-9, 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

_____ Date _____
Signature

_____
Print Name

FOR EXECUTION BY A CORPORATION, ETC.

Company Name _____
By _____
Its _____ Date

_____
_____
Signature Date

03/15/2024

4703502460W

WW-2A Coal Waiver

COAL OPERATOR, OWNER, OR LESSEE WAIVER

* coal not operated

County Jackson
Operator Columbia Gas Transmission LLC Operator's Well Number Ripley 12411

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 57th St. SE
Charleston, WV 25304
(304) 926-0499 extension 1654

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

_____ Date _____
Signature

FOR EXECUTION BY A CORPORATION, ETC.

Company Name _____
By _____
Its _____ Date _____

_____
Signature Date

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WV Department of
Environmental Protection

03/15/2024

4703502460W

WW-2A1
(Rev. 1/11)

Operator's Well Number Ripley 12411

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
SHL	Sallie L. Hite	United Fuel Gas Company	Lease # 1052507-000	Bk 84 / Pg 203
BHL	Cordia Regnaud	United Fuel Gas Company	# 1052758	Bk 85 / Pg 108
	Russell and Mary Hupp GL Regnaud and Irene Regnaud	United Fuel Gas Company	# 1052757	Bk 85 / Pg 141
	PF Bonto and Tammie Bonto	United Fuel Gas Company	# 1052791	Bk 84 / Pg 542
	Otis Coast and Katie Coast	United Fuel Gas Company	# 1052785	Bk 84 / Pg 542
	Russell and Mary Hupp	United Fuel Gas Company	# 1052790	Bk 84 / Pg 550
	Otis Coast Katie Coast	United Fuel Gas Company	# 1052786	Bk 84 / Pg 527

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:

- 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

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WV Department of
Environmental Protection

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: Maria Medvedeva
Senior Wells Engineer Storage Technical Services

03/15/2024

4703502460W

WW-2B1
(5-12)

Well No. Ripley 12411

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 _____
Sampling Contractor _____

Well Operator Not applicable - sidetracking an existing underground natural gas storage well
Address _____
_____
Telephone _____

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.

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WV Department of
Environmental Protection

03/15/2024

4703502460W

WW-9
(5/16)

API Number 47 - 035 - 02460
Operator's Well No. Ripley 12411

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) Sandy Creek Quadrangle Sandyville, WV

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

Will a pit be used? Yes ☐ No ☑

If so, please describe anticipated pit waste: N/A

Will a synthetic liner be used in the pit? Yes ☐ No ☑ If so, what ml.? N/A

Proposed Disposal Method For Treated Pit Wastes:

_____ Land Application (if selected provide a completed form WW-9-GPP)
■ Underground Injection (UIC Permit Number 34-167-23862)
_____ Reuse (at API Number _____)
✓ Off Site Disposal (Supply form WW-9 for disposal location)
■ Other (Explain Mud Master Permit 64054; Reserve Environmental Services (WMGR 123SW008)
Nichols SWD Premit #34-167-23862

Will closed loop system be used? If so, describe: yes - steel flow line to tanks

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. air, fresh water, polymer drilling fluid

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

Additives to be used in drilling medium? NaCl, KCl, biocide, soda ash, polymer, bentonite, attapulgite, starch, surfactant, CaCO3

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

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

-Landfill or offsite name/permit number? To be managed by Waste Management and US Ecology for disposal at permitted landfill

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on April 1, 2016, 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.

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FEB 07 2024
WV Department of
Environmental Protection

Company Official Signature _____ 2-1-24

Company Official (Typed Name) Maria Medvedeva

Company Official Title Senior Wells Engineer Storage Technical Services

Subscribed and sworn before me this 1st day of February, 2024, 20

Rebecca Warnick Notary Public

My commission expires 6/30/26

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
Rebecca Kennedy Warnick
TC/ENERGY / COLUMBIA GAS TRANSMISSION
1700 MACCORKLE AVE., SE
LAND DEPT
Charleston WV 25325
My Commission Expires June 30, 2026

03/15/2024

4703502460W

Form WW-9

Operator's Well No. Ripley 12411

Proposed Revegetation Treatment: Acres Disturbed 12.95 Acres Refer to Ripley Well Pad Package Prevegetation pH 6-7

Lime 2 Tons/acre or to correct to pH 7-8

Fertilizer type 10-10-10

Fertilizer amount 600 lbs/acre

Mulch hay or straw @ 2 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual rye	40	Orchard Grass and/or Tall Fescue	29
		Birdsfoot Trefoil (Empire)	9
		Annual Rye	12

Attach:
Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, provide water volume, include dimensions (L, W, D) of the pit, and dimensions (L, W), and area in acres, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Joe Taylor

Comments:

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Office of Oil and Gas
FEB 07 2024
WV Department of
Environmental Protection

Title: OOG Inspector Date: 2-1-24

Field Reviewed? (X) Yes ( ) No

03/15/2024

4703502460W

WW-9- GPP
Rev. 5/16

Page 1 of 2
API Number 47 - 035 - 02460
Operator's Well No. Ripley 12411

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

Operator Name: Columbia Gas Transmission, LLC

Watershed (HUC 10): Sandy Creek Quad: Sandyville, WV

Farm Name: Sallie Hite

1. List the procedures used for the treatment and discharge of fluids. Include a list of all operations that could contaminate the groundwater.

No fluids planned to be discharged.

No fertilizer will be stored on site. Fuel, oil, and lubricants will be stored on site, but located within secondary containment. Accidental spills from construction equipment, well treatment fluids, and produced well fluids are the only possible source of contamination to groundwater. Drilling and flowback fluids to be stored in tanks. All accumulated fluids to be hauled off site to UIC disposal facility.

2. Describe procedures and equipment used to protect groundwater quality from the list of potential contaminant sources above.

Earthen berm to be constructed around perimeter of well pad with storm water sumps to control release of captured precipitation.

Construction and well servicing equipment will be monitored and inspected daily for leaks. Tanks to be monitored daily for leaks. Spill kits will be on site.

3. List the closest water body, distance to closest water body, and distance from closest Well Head Protection Area to the discharge area.

Sandy Creek is at a distance of 0.27 miles NE

The Ravenswood Municipal Water Works (WV3301810) is the closest Well Head Protection Area at a distance of 5.04 miles NW from discharge area.

4. Summarize all activities at your facility that are already regulated for groundwater protection.

N/A

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5. Discuss any existing groundwater quality data for your facility or an adjacent property.

03/15/2024

4703502460W

WW-9- GPP
Rev. 5/16

API Number 47 - 035 - 02460
Operator's Well No. Ripley 12411

N/A

6. Provide a statement that no waste material will be used for deicing or fill material on the property.

No waste material will be used for deicing or fill material on the property.

7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

During routine tailgate and JSA meetings groundwater protection will be a topic of discussion.

8. Provide provisions and frequency for inspections of all GPP elements and equipment.

No fertilizer will be stored on site. Fuel, oil, and lubricants will be stored on site, but located within secondary containment. Spills from construction equipment, well treatment fluids, and produced well fluids are the only possible source of contamination to groundwater.

All construction and well servicing equipment will be monitored and inspected daily for leaks or spills.

Signature:

Date: 02/01/2024

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Office of Oil and Gas
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WV Department of
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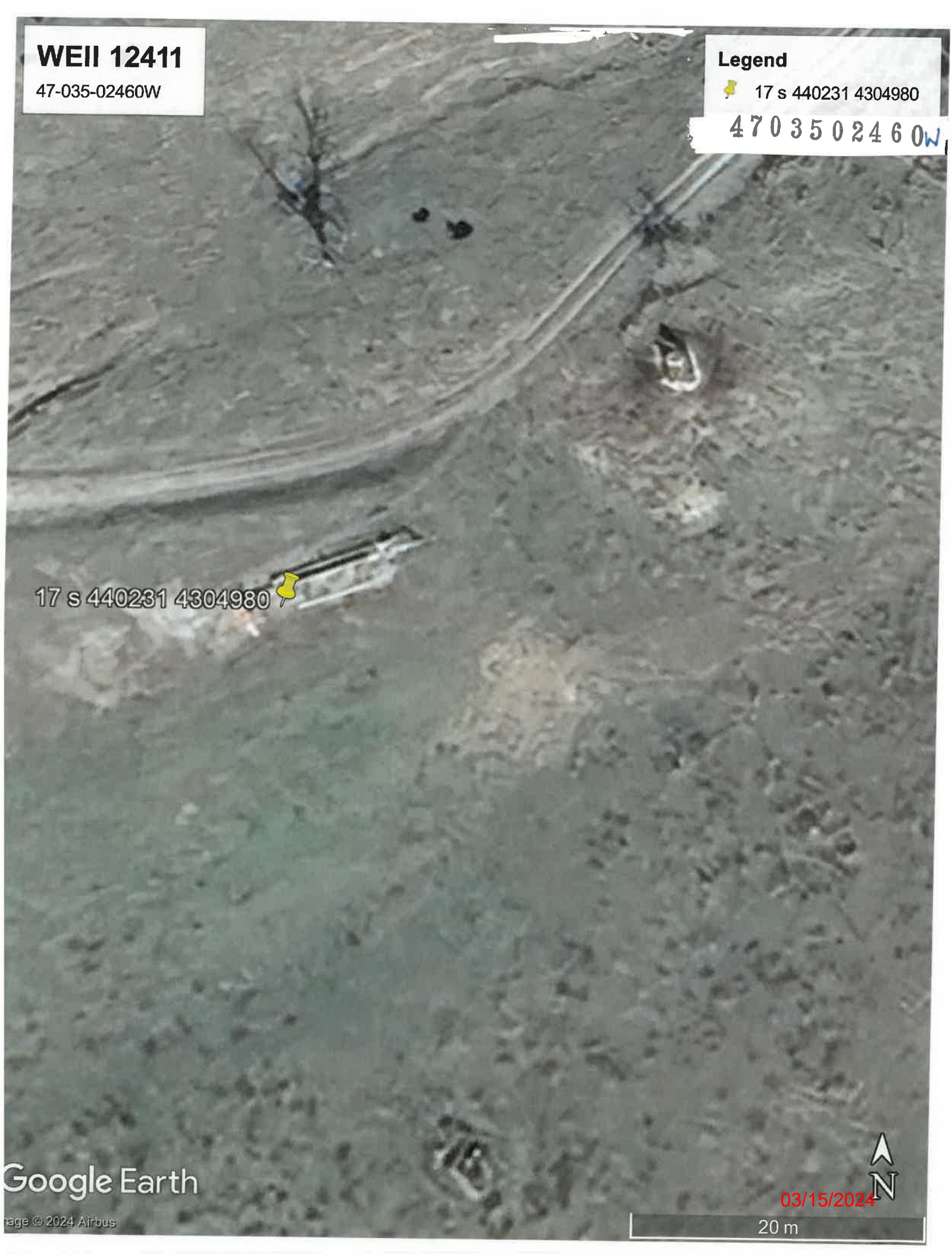
03/15/2024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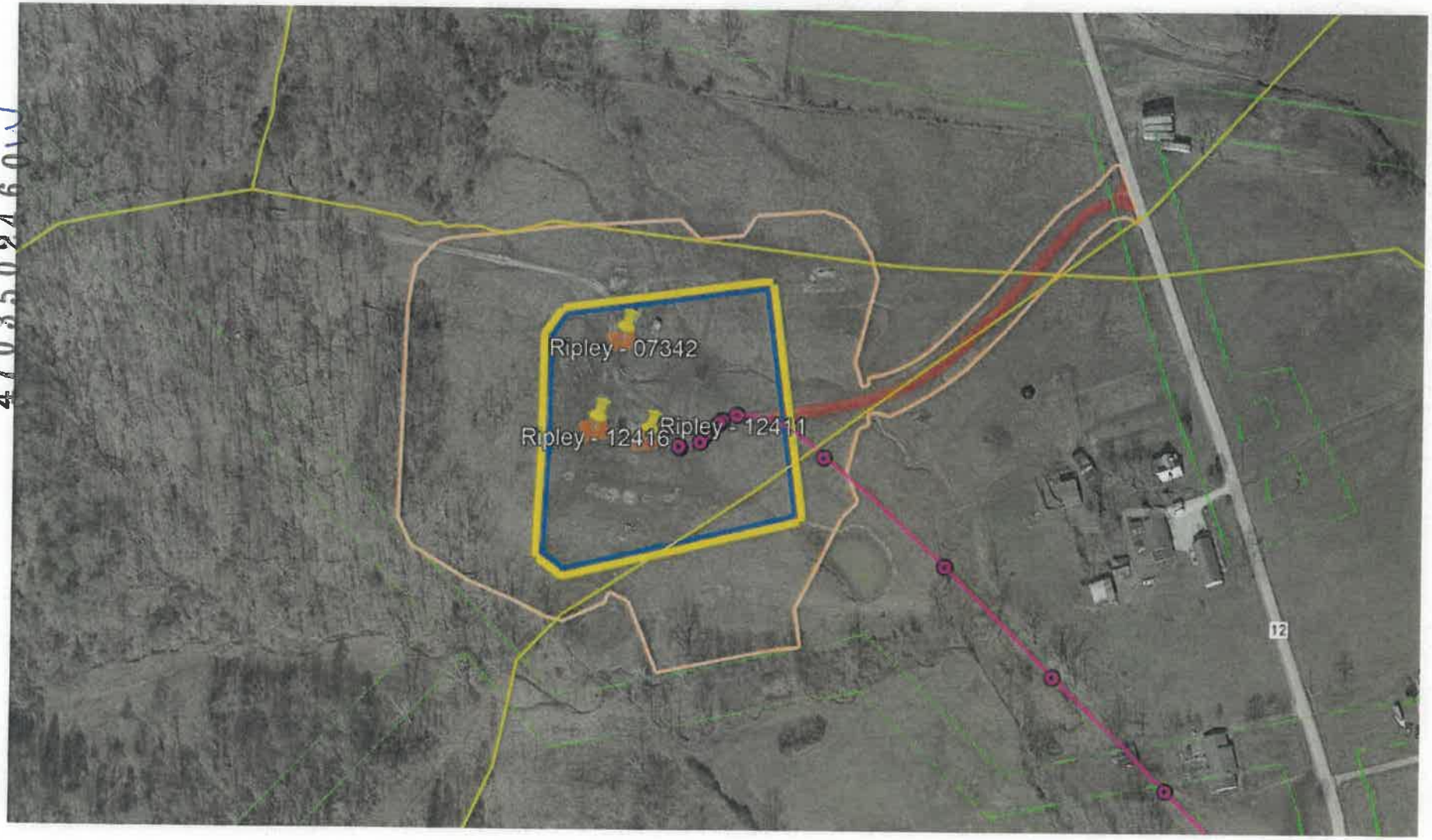

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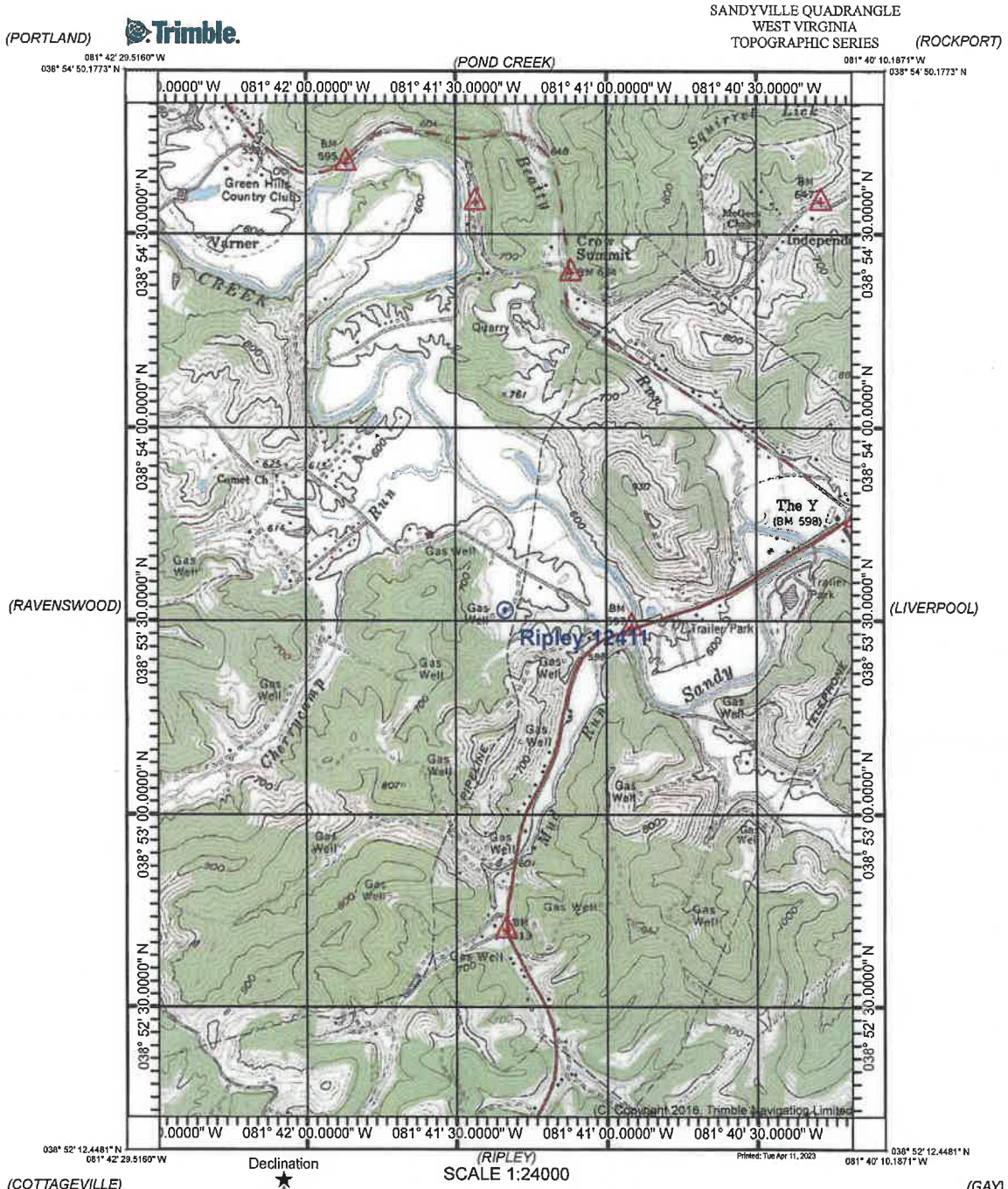


Produced by Trimble Terrain Navigator Pro
Topography based on USGS 1:24,000 Maps

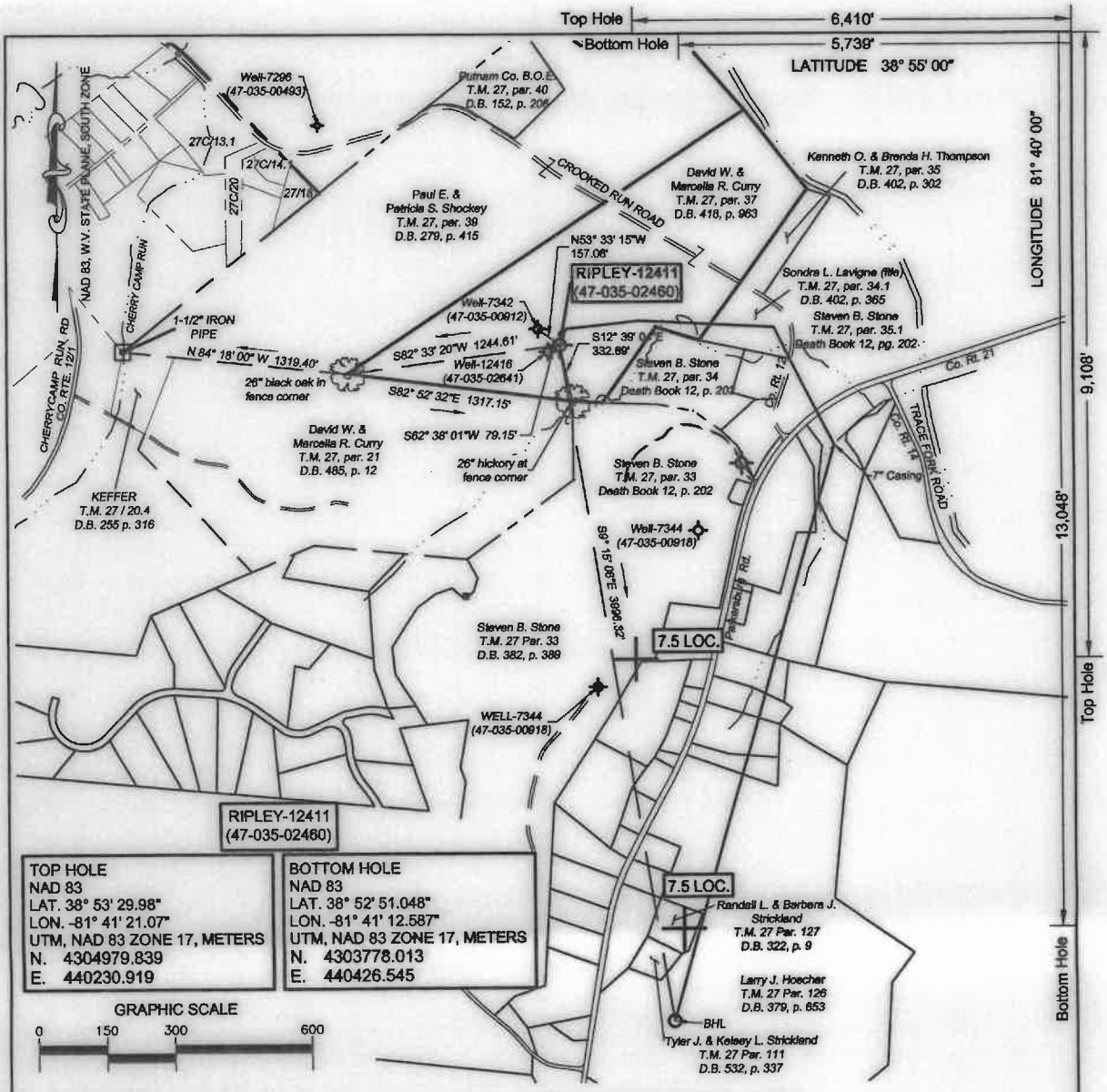
North American 1983 Datum (NAD83)

To place on the predicted North American 1927 move the projection lines 9M N and 13M E

38081-H5-TM-024
SANDYVILLE, WV
JAN 1, 1988

2-1-24

03/15/2024



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

FILE No 2201-2345-001-011
DRAWING No. RIPLEY-12411
SCALE 1"=800'
MINIMUM DEGREE OF ACCURACY 1:200
PROVEN SOURCE OF ELEVATION TRIMBLE R10 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) R. Thaw

ROBERT F. THAW PS #965

ROBERT F. THAW LICENSED No. 965 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

FORM IV-6 (8-78)

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

DATE JANUARY 22 2024
OPERATOR'S WELL No. 12411
API WELL No. 47 (STATE) 035 (COUNTY) — 02460W (PERMIT)

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION ___ STORAGE X DEEP X SHALLOW ___
LOCATION: ELEVATION 616.2' WATER SHED SANDY CREEK
DISTRICT RAVENSWOOD COUNTY JACKSON
QUADRANGLE SANDYVILLE, WV
SURFACE OWNER DAVID W. & MARCELLA R. CURRY ACREAGE 37.82
OIL & GAS ROYALTY OWNER SALLIE L. HITE (SUR.) OTIS & Katie Coast (BHL)
LEASE ACREAGE 38.5 (SUR.) 50 (BHL) LEASE NO. 1052507 (SUR.) 1052786 (BHL) SEE WW-2A1
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE ___
STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___
OTHER PHYSICAL CHANGE IN WELL (SPECIFY) REWORK
PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___
TARGET FORMATION ORISKANY ESTIMATED DEPTH 4810' TVD/9100' MD
WELL OPERATOR COLUMBIA GAS TRANSMISSION, LLC DESIGNATED AGENT MARIA MEDVEDEVA
ADDRESS PO BOX 1273, CHARLESTON, WV 25325-1273 ADDRESS 1700 MACCORKLE AVE., S.E. CHARLESTON, WV 25314

03/15/2024

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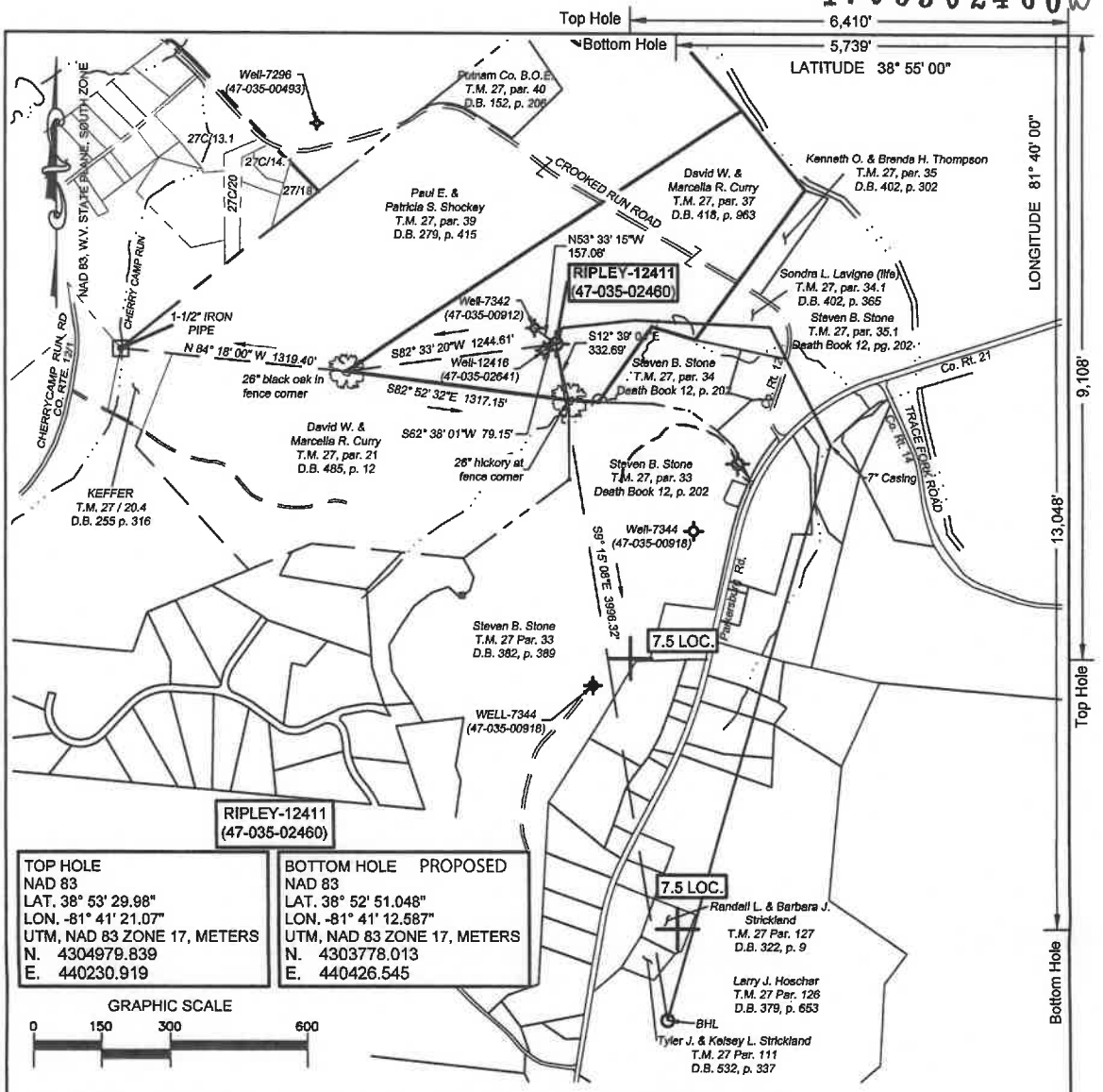

TOP HOLE	BOTTOM HOLE PROPOSED
NAD 83	NAD 83
LAT. 38° 53' 29.98"	LAT. 38° 52' 51.048"
LON. -81° 41' 21.07"	LON. -81° 41' 12.587"
UTM, NAD 83 ZONE 17, METERS	UTM, NAD 83 ZONE 17, METERS
N. 4304979.839	N. 4303778.013
E. 440230.919	E. 440426.545

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

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(SIGNED) R. Thaw
ROBERT F. THAW PS #965

ROBERT F. THAW LICENSED No. 965 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

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DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
NITRO, WV

DATE JANUARY 22 2024
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API WELL No. 47 035 — 02460
STATE COUNTY PERMIT

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03/15/2024

4703502460W

Columbia Gas Transmission, LLC
1700 MacCorkle Ave., SE, Charleston, WV, USA 25314

TC Energy

February 1st, 2024

WV DEP – Office of Oil & Gas
601 57th Street, SE
Charleston, WV 25304-2345

Enclosed is a well workover permit application for the following Columbia Gas Transmission existing storage well:

Ripley 12411 (API 47-035-02460)

Please email to address below, and return hardcopies of permits to:

Columbia Gas Transmission
1700 MacCorkle Ave SE
Charleston, WV 25314
Attn: Maria Medvedeva

CK # 34700
$900.00
2/1/2024

If you have questions, feel free to call.

Regards,

Maria Medvedeva
Senior Wells Engineer
Well Engineering & Technology
Columbia Gas Transmission, LLC
Mob: 304-410-4313
maria_medvedeva@tcenergy.com