

State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work

API 47 - 051 - 01898 County Marshall District Clay  
Quad Glen Easton Pad Name Hicks Field/Pool Name \_\_\_\_\_  
Farm name Thomas E. Hicks Well Number Hicks M02H  
Operator (as registered with the OOG) Chevron Appalachia, LLC (49449935)  
Address 700 Cherrington Parkway City Coraopolis State PA Zip 15108

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 501975.800 Easting 1626571.650  
Landing Point of Curve Northing 502577.410 Easting 1625064.710  
Bottom Hole Northing 512836.360 Easting 1616508.790

Elevation (ft) 1177 GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine  
Mud Type(s) and Additive(s)  
Synthetic - Barite, fluid loss, emulsifiers, rheological control

Date permit issued 2/23/2017 Date drilling commenced 10/17/2017 Date drilling ceased 5/28/2019  
Date completion activities began 10/20/2019 Date completion activities ceased 2/21/2020  
Verbal plugging (Y/N) N Date permission granted \_\_\_\_\_ Granted by \_\_\_\_\_

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft n/a Open mine(s) (Y/N) depths N  
Salt water depth(s) ft n/a Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 698' and 1290' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

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Reviewed by:  
*June Wilson*  
4/15/2020

API 47-051 - 01898 Farm name Thomas E. Hicks Well number Hicks M02H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	26"	20"	60'	N	X-52 / 78.67		Y
Surface	17-1/2"	13-3/8"	476'	N	J-55 / 54.50		Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2007'	N	L-80 / 40		Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	20544	N	P110EC / 20		Y
Tubing							
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Bulk Cement					Surface	8
Surface	Class A	394	15.6	1.20	473	Surface	8
Cement Squeeze	Class A	255	15.2	1.26	323	Surface	8
Intermediate 1	Class A	675	15.6	1.19	804	Surface	8
Intermediate 2							
Intermediate 3							
Production	Class A	4402	14.5	1.17	5167	Surface	8
Tubing							

Drillers TD (ft) 20621 Loggers TD (ft) 20621

Deepest formation penetrated Marcellus Plug back to (ft) \_\_\_\_\_

Plug back procedure \_\_\_\_\_

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Kick off depth (ft) 5051'

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Check all wireline logs run  caliper  density  deviated/directional  induction  neutron  resistivity  gamma ray  temperature  sonic

Well cored  Yes  No  Conventional  Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_

SURFACE: (1) on shoe track with stop collar and (1) per joint over coupling to surface.  
INTERMEDIATE: (1) on shoe track with stop collar and (1) per 3 joints over coupling.  
PRODUCTION: (1) centralizer every joint in the lateral and curve and (1) every other joint from KOP to surface.

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS See attached Perforation and Stimulation reports.

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_





API: 47-051-01898	Farm Name: Thomas E. Hicks	Well Number: Hicks M02H
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PERFORATION RECORD					
Stage No.	Perforation Date	Perforated From TMD Ft.	Perforated To TMD Ft.	Number of Perforations	Formation(s)
1	10/30/2019	20311	20410	47	Marcellus
2	10/30/2019	20109	20269	47	Marcellus
3	10/31/2019	19909	20069	47	Marcellus
4	10/31/2019	19709	19869	47	Marcellus
5	10/31/2019	19509	19669	47	Marcellus
6	10/31/2019	19309	19469	47	Marcellus
7	10/31/2019	19109	19269	47	Marcellus
8	11/1/2019	18909	19069	47	Marcellus
9	11/1/2019	18709	18869	47	Marcellus
10	11/4/2019	18509	18669	47	Marcellus
11	11/5/2019	18309	18469	47	Marcellus
12	11/5/2019	18109	18269	47	Marcellus
13	11/5/2019	17909	18069	47	Marcellus
14	11/5/2019	17709	17869	47	Marcellus
15	11/6/2019	17509	17669	47	Marcellus
16	11/6/2019	17309	17469	47	Marcellus
17	11/6/2019	17109	17269	47	Marcellus
18	11/6/2019	16909	17069	47	Marcellus
19	11/8/2019	16709	16869	47	Marcellus
20	11/8/2019	16509	16669	47	Marcellus
21	11/8/2019	16309	16469	47	Marcellus
22	11/9/2019	16109	16269	47	Marcellus
23	11/9/2019	15909	16069	47	Marcellus
24	11/9/2019	15709	15869	47	Marcellus
25	11/9/2019	15509	15669	47	Marcellus
26	11/10/2019	15309	15469	47	Marcellus
27	11/10/2019	15109	15269	47	Marcellus
28	11/10/2019	14909	15069	47	Marcellus
29	11/10/2019	14709	14869	47	Marcellus
30	11/11/2019	14509	14669	47	Marcellus
31	11/11/2019	14309	14469	47	Marcellus
32	11/11/2019	14109	14269	47	Marcellus
33	11/12/2019	13909	14069	47	Marcellus
34	11/12/2019	13709	13869	47	Marcellus
35	11/12/2019	13509	13669	47	Marcellus
36	11/12/2019	13309	13469	47	Marcellus
37	11/13/2019	13109	13269	47	Marcellus
38	11/13/2019	12909	13069	47	Marcellus
39	11/13/2019	12709	12869	47	Marcellus
40	11/13/2019	12509	12669	47	Marcellus
41	11/14/2019	12309	12469	47	Marcellus
42	11/14/2019	12109	12269	47	Marcellus
43	11/14/2019	11909	12069	47	Marcellus
44	11/15/2019	11709	11869	47	Marcellus
45	11/15/2019	11509	11669	47	Marcellus

Please insert additional copies of this page if additional rows/stages are needed.



API: 47-051-01898	Farm Name: Thomas E. Hicks	Well Number: Hicks M02H
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STIMULATION INFORMATION / STAGE								
Complete a separate record for each stimulation stage. (Please insert additional lines for additional stages or additional pages as applicable).								
Stg No.	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	10/30/2019	96.2	8742	8858	3776	400000	9551	n/a
2	10/30/2019	93.8	9065	4596	4121	400531	10577	n/a
3	10/31/2019	95.3	9034	4342	3709	400186	10044	n/a
4	10/31/2019	95.9	9121	3315	4230	400498	10108	n/a
5	10/31/2019	97.3	8834	4430	4146	400091	9993	n/a
6	10/31/2019	98.9	9074	4059	4073	404215	10109	n/a
7	10/31/2019	99.1	8814	4947	4372	400368	10019	n/a
8	11/1/2019	99.3	8761	4234	4062	400456	9967	n/a
9	11/1/2019	99.6	8908	5173	4005	400670	9905	n/a
10	11/4/2019	99.6	8465	3979	4240	400469	10236	n/a
11	11/5/2019	98.6	8415	5242	4297	403009	9696	n/a
12	11/5/2019	99.7	8459	4948	4626	401373	9770	n/a
13	11/5/2019	99.4	8502	5364	4527	401982	9769	n/a
14	11/5/2019	100	8849	5588	4476	400695	9970	n/a
15	11/6/2019	99.4	8528	5386	4285	403964	9922	n/a
16	11/6/2019	99.5	8548	5229	4263	402209	9726	n/a
17	11/6/2019	99.3	8397	4316	4325	400668	9914	n/a
18	11/6/2019	99.7	8560	5127	4333	400769	9815	n/a
19	11/8/2019	99.8	8511	5164	4239	401487	9754	n/a
20	11/8/2019	99.3	8320	5053	4300	401831	9702	n/a
21	11/8/2019	99.3	8176	5621	4095	400587	9875	n/a
22	11/9/2019	98.9	8414	5991	4189	406150	9500	n/a
23	11/9/2019	99.4	8338	4598	4307	400422	9715	n/a
24	11/9/2019	99.2	8272	4779	4296	400208	9691	n/a
25	11/9/2019	99.8	7999	5972	4323	400561	9793	n/a
26	11/10/2019	99.8	7974	3706	4075	400591	9680	n/a
27	11/10/2019	100	8000	3420	3958	401413	9753	n/a
28	11/10/2019	99.7	8205	5009	4116	400130	9730	n/a
29	11/10/2019	100.2	8228	3828	4242	400854	9605	n/a
30	11/11/2019	99.9	8070	3740	4226	400152	9675	n/a
31	11/11/2019	99.8	8164	4891	4015	400180	9599	n/a
32	11/11/2019	100.1	7911	3643	4288	400676	9623	n/a
33	11/12/2019	100.3	8038	3674	4401	400608	9587	n/a
34	11/12/2019	99.8	8252	4756	4207	400163	9645	n/a
35	11/12/2019	100.3	7888	5375	4320	400167	9537	n/a
36	11/12/2019	100.2	8075	4824	4272	400567	9529	n/a
37	11/13/2019	99.7	8212	5582	4207	400853	9521	n/a
38	11/13/2019	99.9	7990	5407	4334	400087	9512	n/a
39	11/13/2019	100.3	7959	5758	5283	399946	9504	n/a
40	11/13/2019	100.3	8222	4755	4363	401548	9459	n/a
41	11/14/2019	99.5	8278	4793	4880	399948	9628	n/a
42	11/14/2019	99.9	8302	5527	4749	399915	9585	n/a
43	11/14/2019	89.9	7596	5223	4437	400306	9372	n/a
44	11/15/2019	94	7811	5491	4366	400992	9351	n/a
45	11/15/2019	94	7612	6524	4678	400139	9451	n/a

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 Cabot Corporation





API: 47-051-01898

Farm Name: Thomas E. Hicks

Well Number: Hicks M02H

Lithology/Tops	MD Top	MD Base	TVD Top	TVD Base	Describe rock type and record quantity and type of fluid (Freshwater, Brine, Oil, Gas, H2S, Etc.)
<b>Pittsburgh Coal</b>	698	704	676	682	coal
<b>Conemaugh</b>	704	1096	704	1096	shale & siltstone transitioning to shale & limestone at base; gas shows
<b>Allegheny</b>	1096	1304	1096	1304	limey siltstones and shales; oil show
<b>Clairion Coal</b>	1290	1,297	1290	1297	coal
<b>Salt Sands</b>	1,304	1,545	1304	1544	interbedded sands and shales; gas shows
<b>Mauch Chunk</b>	1,545	1,666	1544	1665	sandy/silty shales
<b>Big Lime</b>	1,666	1,733	1665	1731	siltstone transitioning to limestone base
<b>Burgoon</b>	1,733	1,952	1731	1947	sandstone
<b>Weir Shale</b>	1,952	2,070	1947	2070	shale; brine
<b>CHQA</b>	<b>6351</b>	6,482	6057	6132	siltstone/shale, gas shows
<b>MDLX</b>	<b>6482</b>	6,527	6132	6158	shale
<b>PYAN</b>	<b>6527</b>	6,580	6158	6187	siltstone/shale, gas show
<b>BRKT</b>	<b>6580</b>	6,623	6187	6210	shale
<b>BRKT.a</b>	<b>6623</b>	6,652	6210	6225	shale
<b>TLLY</b>	<b>6652</b>	6,739	6225	6263	limestone, gas shows
<b>S5</b>	<b>6739</b>	6,975	6263	6331	shale, gas shows
<b>S3</b>	<b>6975</b>	7,056	6331	6346	shale, gas shows
<b>STFD</b>	<b>7056</b>	7,063	6346	6347	limestone
<b>S2.B</b>	<b>7063</b>	7,123	6347	6353	shale, gas shows
<b>S2.A</b>	<b>7123</b>	17,437	6353	6259	shale, gas shows
<b>PRCL</b>	<b>17,437</b>	17,526	6,259	6256	limestone, gas shows
<b>S1.B</b>	<b>17,526</b>	17,577	6,256	6255	shale, gas shows
<b>Alpha</b>	<b>17,577</b>		6,255		shale, gas shows
<b>TD</b>					

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API: 47-051-01898	Farm Name: Thomas E. Hicks	Well Number: Hicks M02H
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DRILLING CONTRACTORS		
Driller	Driller	Driller
Name Rocky Mountain drilling	Name Highlands Drilling LLC	Name Precision Drilling Holdings Company
Address 185 North Vernal Avenue, Suite 2	Address 900 Virginia Street East	Address 10350 Richmond Avenue, Suite 700
City - State - Zip Vernal, UT 84078	City - State - Zip Charlestown, WV 25301	City - State - Zip Houston, TX 77042

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/30/2019
Job End Date:	11/20/2019
State:	West Virginia
County:	Marshall
API Number:	47-051-01898-00-00
Operator Name:	Chevron USA Inc.
Well Name and Number:	Hicks M02H
Latitude:	39.87180800
Longitude:	-80.73495300
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,355
Total Base Water Volume (gal):	27,023,094
Total Base Non Water Volume:	0

## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Chevron	Carrier/Base Fluid	Water	7732-18-5	100.00000	88.30484	None
Sand	JPP	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	99.90000	10.50844	None
FR-11	JPP	Friction reducer	Water	7732-18-5	55.00000	0.03831	None
			CHEMPLEX-Polymer_00019	Trade Secret	25.00000	0.01741	None
			Hydrotreated Petroleum Distillate	84742-47-8	25.00000	0.01741	None
			Sodium Chloride	7647-14-5	15.00000	0.01045	None
			Alcohol Ethoxyate Surfactants	68551-12-2	3.00000	0.00209	None
			Oleic Acid Diethanolamide	93-83-4	3.00000	0.00209	None
			Ammonium Chloride	12125-02-9	2.00000	0.00139	None
			Polyoxyethylene Sorbitan Monoleate	9005-65-6	1.00000	0.00070	None
HCL Acid (7.5%)	JPP	Acidizing	Hydrochloric Acid	7647-01-0	7.50000	0.07948	None
K-BAC 1020	JPP	Biocide					



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Submitted 12/3/19

			Polyethylene glycol	25322-68-3	50.00000	0.01043	None	
			Water	7732-18-5	30.00000	0.00627	None	
			2,2-Dibromo-3-nitropropionamide	10222-01-2	21.00000	0.00439	None	
Scale Hib PE-18	JPP	Scale Inhibitor	Ethylene glycol	107-21-1	40.00000	0.00709	None	
			Proprietary Scale Inhibitor	Proprietary	30.00000	0.00532	None	
7L	JPP	Iron Control Agent	Ammonium glycolate	35249-89-9	20.00000	0.00414	None	
			Ethylene Glycol	107-21-1	20.00000	0.00414	None	
			Hydroxyacetic acid	79-14-1	5.00000	0.00104	None	
Unhib G	JPP	Acid inhibitor	Butyl diglycol	112-34-5	75.00000	0.00067	None	
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00047	None	
			Methanol	67-56-1	5.00000	0.00004	None	
			Formaldehyde	50-00-0	1.00000	0.00007	None	
			Thiourea	62-56-6	1.00000	0.00007	None	
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.								
Other Chemical(s)	Listed Above	See Trade Name(s) List	Water	7732-18-5	55.00000	0.03831		
			Hydrotreated Petroleum Distillate	64742-47-8	25.00000	0.01741		
			Polyethylene glycol	25322-68-3	50.00000	0.01045		
			Sodium Chloride	7647-14-5	15.00000	0.01045		
			Ethylene glycol	107-21-1	40.00000	0.00709		
			Water	7732-18-5	30.00000	0.00627		
			Ammonium glycolate	35249-89-9	20.00000	0.00414		
			Alcohol Ethoxylate Surfactants	6851-12-2	3.00000	0.00209		
			Oleic Acid Diethanolamide	93-83-4	3.00000	0.00209		
			Ammonium Chloride	12125-02-9	2.00000	0.00139		
			Hydroxyacetic acid	79-14-1	5.00000	0.00104		
			Polyoxyethylene Sorbitan Monoleate	9005-65-6	1.00000	0.00070		
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00041		
			Methanol	67-56-1	5.00000	0.00004		
			Formaldehyde	50-00-0	1.00000	0.00001		
			Thiourea	62-56-6	1.00000	0.00001		

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided. Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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**Jackie M. Scholar**  
Regulatory Reporting Coordinator

February 24, 2020

**CERTIFIED MAIL: 7018 1830 0000 6083 3608**

WV DEP  
Office of Oil and Gas  
601 – 57<sup>th</sup> Street  
Charleston, WV 25304

RE: Well Operator's Report of Well Work WR-35  
**Hicks M02H**

Dear Sir/Madam,

Enclosed here within please find one (1) Well Operator's Report of Well Work WR-35, one (1) copy of the Plat on Mylar, one (1) copy of the FracFocus report, and one (1) copy of the Directional Survey for **Hicks M02H, (API 47-051-01898)**.

If you have any questions, please contact me at (412) 865-3422. Thank you.

Sincerely,  
Chevron Appalachia, LLC

Jackie M. Scholar

Enclosures

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Prepared by Baker Hughes  
 Software System: WellArchitect® 5.1

REFERENCE WELLPATH IDENTIFICATION

Operator CHEVRON APPALACHIA, LLC  
 Area Marshall County, WV  
 Field Marshall County  
 Facility Hicks Pad  
 Slot Slot #02  
 Well Hicks M02H  
 Wellbore Hicks M02H AWB  
 Wellpath Hicks M021631'  
 Sidetrack (none)

REPORT SETUP INFORMATION

Projection NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet  
 North Refe TRUE  
 Scale 0.99995  
 Convergen 0.78° West  
 Software S WellArchitect® 5.1  
 User Mccerib  
 Report Ger 6/14/2019 at 9:59:42 AM  
 Database:\WA\_MPL\_EASTERNUS\_Defn/ev190.xml

WELLPATH Local	North	Local East	Easting [US ft]	Northing [US ft]	Latitude	Longitude
Slot Locatic	-14.67	3.19	1626572	501975.8	39°52'18.5"	80°43'05.828"W
Facility Ref			1626569	501990.5	39°52'18.6"	80°43'05.869"W
Field Refer			1644569	516963.8	39°54'48.9"	80°39'17.476"W

WELLPATH DATUM

Calculation Minimum curvature  
 Horizontal Slot  
 Vertical Re Precision 560 (RKB)  
 MD Refere Precision 560 (RKB)  
 Field Vertic Mean Sea Level  
 Precision 5 25.00ft  
 Precision 5 1165.00ft  
 Precision 5 25.00ft  
 Section Ori N 0.00, E 0.00 ft  
 Section Azi 319.20°

WELLPATH DATA + = interpolated/extrapolated station

MD	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dis [ft]	Dir DLS [°]	Build Rate ["/100ft]	Turn Rate ["/100ft]	Comments
0	0	157.21	0	0	0	0	1626572	501975.8	39°52'18.5"	80°43'05.8"	0	0	0	0	
25	0	157.21	0	0	0	0	1626572	501975.8	39°52'18.5"	80°43'05.8"	0	0	0	0	
108	0.15	157.21	0	0	-0.1	-0.1	1626572	501975.7	39°52'18.5"	80°43'05.8"	0.11	157.21	0.18	0.18	189.41 SDI Gyro <17-1/2">(100'-460')
133	0.19	178.13	0	0	-0.17	-0.17	1626572	501975.6	39°52'18.5"	80°43'05.8"	0.18	161.908	0.29	0.16	83.68

158	0.31	189.71	158	-0.24	-0.28	0.05	1626572	501975.5	39°52'18.5	80°43'05.8	0.28	170.654	0.52	0.48	46.32
183	0.39	183.82	183	-0.35	-0.43	0.03	1626572	501975.4	39°52'18.5	80°43'05.8	0.43	176.156	0.35	0.32	-23.56
208	0.28	195.61	208	-0.44	-0.58	0.01	1626572	501975.2	39°52'18.5	80°43'05.8	0.58	179.315	0.52	-0.44	47.16
233	0.31	221.05	233	-0.48	-0.68	-0.05	1626572	501975.1	39°52'18.5	80°43'05.8	0.69	184.505	0.53	0.12	101.76
258	0.37	225.9	258	-0.5	-0.79	-0.16	1626571	501975	39°52'18.5	80°43'05.8	0.81	191.166	0.27	0.24	19.4
283	0.58	240.96	283	-0.48	-0.91	-0.32	1626571	501974.9	39°52'18.5	80°43'05.8	0.97	199.656	0.97	0.84	60.24
308	0.5	244.61	308	-0.42	-1.02	-0.53	1626571	501974.8	39°52'18.4	80°43'05.8	1.15	207.686	0.35	-0.32	14.6
333	0.64	258.31	332.99	-0.32	-1.09	-0.77	1626571	501974.7	39°52'18.4	80°43'05.8	1.34	215.143	0.78	0.56	54.8
358	0.67	251.28	357.99	-0.2	-1.17	-1.04	1626571	501974.7	39°52'18.4	80°43'05.8	1.57	221.802	0.34	0.12	-28.12
383	0.7	249.28	382.99	-0.09	-1.27	-1.33	1626570	501974.6	39°52'18.4	80°43'05.8	1.84	226.251	0.15	0.12	-8
408	0.57	244.42	407.99	-0.01	-1.38	-1.58	1626570	501974.5	39°52'18.4	80°43'05.8	2.1	228.945	0.56	-0.52	-19.44
433	0.67	237.25	432.99	0.04	-1.51	-1.82	1626570	501974.3	39°52'18.4	80°43'05.8	2.36	230.262	0.51	0.4	-28.68
458	0.72	237.95	457.99	0.09	-1.67	-2.07	1626570	501974.2	39°52'18.4	80°43'05.8	2.66	231.097	0.2	0.2	2.8
488	0.73	238.21	467.99	0.11	-1.74	-2.18	1626569	501974.1	39°52'18.4	80°43'05.8	2.79	231.413	0.11	0.1	2.6
551	0.73	240.55	550.98	0.29	-2.28	-3.09	1626569	501973.6	39°52'18.4	80°43'05.8	3.84	233.601	0.04	0	2.82
607	0.93	261.38	606.97	0.61	-2.52	-3.85	1626568	501973.3	39°52'18.4	80°43'05.8	4.6	236.778	0.64	0.36	37.2
645	0.88	255.05	644.97	0.9	-2.64	-4.44	1626567	501973.2	39°52'18.4	80°43'05.8	5.16	239.218	0.29	-0.13	-16.66
676	1.07	267.48	675.96	1.18	-2.72	-4.96	1626567	501973.2	39°52'18.4	80°43'05.8	5.65	241.267	0.91	0.61	40.1
707	1.05	270.11	706.96	1.55	-2.73	-5.53	1626566	501973.2	39°52'18.4	80°43'05.8	6.17	243.729	0.17	-0.06	8.48
738	1.08	272.62	737.95	1.93	-2.71	-6.1	1626566	501973.2	39°52'18.4	80°43'05.9	6.68	246.023	0.18	0.1	8.1
770	0.77	282.37	769.95	2.31	-2.66	-6.62	1626565	501973.2	39°52'18.4	80°43'05.9	7.13	248.133	1.08	-0.97	30.47
801	0.78	278.4	800.95	2.64	-2.58	-7.03	1626565	501973.3	39°52'18.4	80°43'05.9	7.49	249.844	0.18	0.03	-12.81
832	0.71	279.71	831.94	2.95	-2.52	-7.43	1626564	501973.4	39°52'18.4	80°43'05.9	7.84	251.28	0.23	-0.23	4.23
863	0.51	272.47	862.94	3.19	-2.48	-7.75	1626564	501973.4	39°52'18.4	80°43'05.9	8.14	252.275	0.69	-0.65	-23.35
894	0.33	280.05	893.94	3.35	-2.46	-7.98	1626564	501973.5	39°52'18.4	80°43'05.9	8.35	252.887	0.61	-0.58	24.45
926	0.21	329.15	925.94	3.48	-2.39	-8.1	1626564	501973.5	39°52'18.4	80°43'05.9	8.44	253.559	0.78	-0.37	153.44
957	0.39	33.12	956.94	3.57	-2.25	-8.07	1626564	501973.7	39°52'18.4	80°43'05.9	8.38	254.403	1.14	0.58	206.35
988	0.77	77.77	987.94	3.5	-2.12	-7.81	1626564	501973.8	39°52'18.4	80°43'05.9	8.09	254.81	1.82	1.23	144.03
1019	1.04	77.2	1018.93	3.27	-2.01	-7.33	1626564	501973.9	39°52'18.4	80°43'05.9	7.6	254.64	0.87	0.87	-1.84
1050	1.21	63.95	1049.93	3.05	-1.81	-6.76	1626565	501974.1	39°52'18.4	80°43'05.9	7	255.034	1	0.55	-42.74
1082	1.33	72.08	1081.92	2.82	-1.55	-6.11	1626566	501974.3	39°52'18.4	80°43'05.9	6.3	255.799	0.68	0.38	25.41
1113	1.26	74.16	1112.91	2.54	-1.34	-5.44	1626566	501974.5	39°52'18.4	80°43'05.8	5.6	256.138	0.27	-0.23	6.71
1145	0.81	89.83	1144.91	2.24	-1.24	-4.87	1626567	501974.6	39°52'18.4	80°43'05.8	5.03	255.666	1.65	-1.41	48.97
1176	0.57	91.55	1175.91	1.99	-1.25	-4.5	1626567	501974.6	39°52'18.4	80°43'05.8	4.67	254.49	0.78	-0.77	5.55
1207	0.72	127.35	1206.9	1.7	-1.37	-4.19	1626567	501974.5	39°52'18.4	80°43'05.8	4.41	251.883	1.36	0.48	115.48
1238	0.59	262.72	1237.9	1.6	-1.51	-4.19	1626567	501974.4	39°52'18.4	80°43'05.8	4.46	250.205	3.91	-0.42	436.68
1270	1.25	264.64	1269.9	1.89	-1.56	-4.7	1626567	501974.3	39°52'18.4	80°43'05.8	4.96	251.624	2.06	2.06	6
1301	2.03	261.08	1300.89	2.38	-1.68	-5.58	1626566	501974.2	39°52'18.4	80°43'05.9	5.83	253.259	2.54	2.52	-11.48
1332	2.71	264.76	1331.86	3.09	-1.83	-6.86	1626565	501974.1	39°52'18.4	80°43'05.9	7.1	255.043	2.25	2.19	11.87
1363	3.1	263.52	1362.82	3.99	-1.99	-8.42	1626563	501973.9	39°52'18.4	80°43'05.9	8.65	256.681	1.27	1.26	-4
1395	3.75	265.25	1394.76	5.1	-2.18	-10.32	1626561	501973.8	39°52'18.4	80°43'05.9	10.55	258.087	2.06	2.03	5.41
1426	4.26	270.38	1425.69	6.45	-2.25	-12.48	1626559	501973.7	39°52'18.4	80°43'05.9	12.68	259.766	2.01	1.65	16.55
1457	4.79	265.97	1456.59	7.98	-2.34	-14.92	1626557	501973.7	39°52'18.4	80°43'06.0	15.11	261.101	2.04	1.71	-14.23
1488	5.15	266.88	1487.47	9.61	-2.5	-17.6	1626554	501973.5	39°52'18.4	80°43'06.0	17.78	261.906	1.19	1.16	2.94
1519	5.63	269.75	1518.34	11.45	-2.59	-20.51	1626551	501973.5	39°52'18.4	80°43'06.0	20.68	262.816	1.78	1.55	9.26
1550	6.09	268.79	1549.17	13.48	-2.63	-23.68	1626548	501973.5	39°52'18.4	80°43'06.1	23.82	263.669	1.52	1.48	-3.1
1581	6.26	269.99	1579.99	15.64	-2.66	-27.01	1626545	501973.5	39°52'18.4	80°43'06.1	27.14	264.371	0.69	0.55	3.87
1613	6.47	272.16	1611.8	18	-2.59	-30.56	1626541	501973.6	39°52'18.4	80°43'06.2	30.67	265.147	1	0.66	6.78
1644	6.5	277.95	1642.6	20.51	-2.29	-34.04	1626538	501974	39°52'18.4	80°43'06.2	34.12	266.158	2.11	0.1	18.68
1675	6.76	282.29	1673.39	23.29	-1.66	-37.56	1626534	501974.7	39°52'18.4	80°43'06.3	37.6	267.477	1.82	0.84	14
1706	6.55	284.69	1704.18	26.21	-0.82	-41.06	1626531	501975.5	39°52'18.5	80°43'06.3	41.06	268.858	1.12	-0.68	7.74

APS EM +MagVAR MSA <12-1/4">(468')(551"-2008')

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1737	6.76	286.13	1734.97	29.19	0.14	-44.52	1626527	501976.6	39°52'18.5	80°43'06.3	44.52	270.176	0.87	0.68	4.65
1769	7.34	285.77	1766.73	32.48	1.22	-48.3	1626523	501977.7	39°52'18.5	80°43'06.4	48.31	271.442	1.82	1.81	-1.13
1800	7.82	285.7	1797.46	35.89	2.32	-52.23	1626519	501978.8	39°52'18.5	80°43'06.4	52.28	272.548	1.55	1.55	-0.23
1831	7.97	285.17	1828.17	39.43	3.46	-56.34	1626515	501980	39°52'18.5	80°43'06.5	56.44	273.512	0.54	0.48	-1.71
1862	7.94	284.23	1858.87	42.96	4.55	-60.49	1626511	501981.2	39°52'18.5	80°43'06.6	60.66	274.298	0.43	-0.1	-3.03
1893	7.93	284.8	1889.57	46.48	5.62	-64.63	1626507	501982.3	39°52'18.5	80°43'06.6	64.87	274.969	0.26	-0.03	1.84
1925	7.79	283.44	1921.27	50.06	6.69	-68.87	1626503	501983.4	39°52'18.5	80°43'06.7	69.2	275.545	0.73	-0.44	-4.25
1956	7.16	280.78	1952.01	53.28	7.54	-72.81	1626499	501984.3	39°52'18.5	80°43'06.7	73.2	275.909	2.32	-2.03	-8.58
1987	7.17	279.27	1982.77	56.28	8.21	-76.62	1626495	501985.1	39°52'18.5	80°43'06.8	77.06	276.116	0.61	0.03	-4.87
2008	7.16	283	2003.6	58.34	8.72	-79.19	1626493	501985.6	39°52'18.5	80°43'06.8	79.67	276.28	2.22	-0.05	17.76
2090	6.63	273.17	2085.01	65.75	10.13	-88.9	1626483	501987.1	39°52'18.6	80°43'06.9	89.47	276.499	1.58	-0.65	-11.99
2179	5.73	268.45	2173.49	72.13	10.29	-98.47	1626473	501987.4	39°52'18.6	80°43'07.0	99	275.966	1.16	-1.01	-5.3
2268	5.12	264.98	2262.09	77.26	9.82	-106.86	1626465	501987.1	39°52'18.6	80°43'07.1	107.32	275.252	0.78	-0.69	-3.9
2358	4.43	264.31	2351.78	81.61	9.13	-114.32	1626457	501986.5	39°52'18.5	80°43'07.2	114.69	274.564	0.77	-0.77	-0.74
2447	3.98	267.32	2440.54	85.49	8.64	-120.83	1626451	501986.1	39°52'18.5	80°43'07.3	121.14	274.091	0.56	-0.51	3.38
2537	3.73	262.45	2530.34	89.03	8.11	-126.85	1626445	501985.6	39°52'18.5	80°43'07.4	127.11	273.658	0.46	-0.28	-5.41
2626	3.58	264.64	2619.16	92.23	7.47	-132.49	1626439	501985.1	39°52'18.5	80°43'07.5	132.7	273.227	0.23	-0.17	2.46
2716	3.38	265.52	2708.99	95.43	7	-137.93	1626434	501984.7	39°52'18.5	80°43'07.5	138.11	272.906	0.23	-0.22	0.98
2806	3.34	265.53	2798.84	98.55	6.59	-143.19	1626429	501984.3	39°52'18.5	80°43'07.6	143.34	272.635	0.04	-0.04	0.01
2895	3.39	265.85	2887.68	101.66	6.2	-148.4	1626423	501984	39°52'18.5	80°43'07.7	148.53	272.391	0.06	0.06	0.36
2985	2.47	270.12	2977.57	104.52	6.01	-152.99	1626419	501983.9	39°52'18.5	80°43'07.7	153.11	272.249	1.05	-1.02	4.74
3074	0.75	196.95	3066.53	105.46	5.46	-155.08	1626417	501983.4	39°52'18.5	80°43'07.8	155.18	272.015	2.66	-1.93	-82.21
3163	0.74	157.22	3155.53	104.6	4.37	-155.03	1626417	501982.3	39°52'18.5	80°43'07.8	155.09	271.614	0.57	-0.01	-44.64
3253	0.62	164.71	3245.52	103.61	3.36	-154.67	1626417	501981.3	39°52'18.5	80°43'07.8	154.71	271.245	0.17	-0.13	8.32
3342	0.44	196.2	3334.52	102.99	2.57	-154.64	1626417	501980.5	39°52'18.5	80°43'07.8	154.66	270.952	0.38	-0.2	35.38
3432	0.46	227.27	3424.51	102.79	1.99	-155	1626417	501979.9	39°52'18.5	80°43'07.8	155.02	270.737	0.27	0.02	34.52
3521	0.46	247.14	3513.51	102.89	1.61	-155.6	1626416	501979.5	39°52'18.5	80°43'07.8	155.6	270.594	0.18	0	22.33
3610	0.61	259.19	3602.51	103.24	1.38	-156.39	1626415	501979.3	39°52'18.5	80°43'07.8	156.4	270.507	0.21	0.17	13.54
3700	0.53	270.61	3692.5	103.75	1.3	-157.28	1626414	501979.2	39°52'18.5	80°43'07.8	157.28	270.473	0.15	-0.09	12.69
3790	0.53	270.39	3782.5	104.3	1.31	-158.11	1626413	501979.3	39°52'18.5	80°43'07.8	158.12	270.473	0	0	-0.24
3879	0.64	280.43	3871.49	104.96	1.4	-159.01	1626413	501979.4	39°52'18.5	80°43'07.8	159.02	270.504	0.17	0.12	11.28
3969	0.57	290.66	3961.49	105.74	1.65	-159.92	1626412	501979.6	39°52'18.5	80°43'07.8	159.93	270.59	0.14	-0.08	11.37
4059	0.49	277.52	4051.48	106.43	1.86	-160.72	1626411	501979.8	39°52'18.5	80°43'07.8	160.73	270.662	0.16	-0.09	-14.6
4148	0.51	294.05	4140.48	107.07	2.07	-161.46	1626410	501980.1	39°52'18.5	80°43'07.8	161.48	270.734	0.16	0.02	18.57
4238	0.52	277.69	4230.48	107.74	2.29	-162.23	1626409	501980.3	39°52'18.5	80°43'07.9	162.25	270.807	0.16	0.01	-18.18
4328	0.51	293.83	4320.47	108.4	2.5	-163	1626409	501980.5	39°52'18.5	80°43'07.9	163.02	270.879	0.16	-0.01	17.93
4417	0.45	294.94	4409.47	109.08	2.81	-163.68	1626408	501980.8	39°52'18.5	80°43'07.9	163.71	270.983	0.07	-0.07	1.25
4507	0.58	289.73	4499.47	109.8	3.11	-164.43	1626407	501980.8	39°52'18.5	80°43'07.9	164.46	271.084	0.15	0.14	-5.79
4597	0.58	291.95	4589.46	110.6	3.44	-165.28	1626406	501981.2	39°52'18.5	80°43'07.9	165.32	271.191	0.02	0	2.47
4686	0.59	288.45	4678.46	111.4	3.75	-166.14	1626406	501981.8	39°52'18.5	80°43'07.9	166.18	271.293	0.04	0.01	-3.93
4776	0.48	282.81	4768.45	112.18	4	-167.04	1626405	501982.1	39°52'18.5	80°43'07.9	167.09	271.372	0.07	0.02	-6.27
4865	0.48	272.47	4857.45	112.82	4.12	-167.88	1626404	501982.2	39°52'18.5	80°43'07.9	167.93	271.407	0.18	-0.15	-11.62
4955	0.44	282.19	4947.45	113.35	4.21	-168.59	1626403	501982.3	39°52'18.5	80°43'07.9	168.64	271.431	0.1	-0.04	10.8
5044	0.65	274.41	5036.44	113.98	4.32	-169.43	1626402	501982.4	39°52'18.5	80°43'08.0	169.48	271.462	0.25	0.24	-8.74
5134	4.4	285.65	5126.34	117.22	5.29	-173.26	1626398	501983.5	39°52'18.5	80°43'08.0	173.35	271.75	4.18	4.17	12.49
5179	6.07	290.94	5171.15	120.76	6.61	-177.15	1626395	501984.8	39°52'18.5	80°43'08.1	177.27	272.137	3.86	3.71	11.76
5268	7.75	291.34	5259.5	130.21	10.48	-187.13	1626385	501988.8	39°52'18.6	80°43'08.2	187.43	273.204	1.89	1.89	0.45
5357	10.12	290.2	5347.41	142.35	15.36	-200.06	1626372	501993.9	39°52'18.6	80°43'08.3	200.65	274.39	2.67	2.66	-1.28
5447	15.98	291.94	5435.05	160.3	22.73	-218.99	1626353	502001.5	39°52'18.7	80°43'08.6	220.17	275.925	6.53	6.51	1.93
5536	22.22	292.14	5519.11	186.2	33.66	-245.97	1626326	502012.8	39°52'18.8	80°43'08.9	248.26	277.791	7.01	7.01	0.22
5626	29.43	288.37	5600.07	220.39	47.06	-282.77	1626290	502026.7	39°52'18.9	80°43'09.4	286.66	279.448	8.21	8.01	-4.19

BH AT Curve + MagVAR MSA <8-1/2"> (5134)(5179-20606)

BH Navitrak + MagVAR MSA <8-1/2"> (2009)(2090-5134)



5715	38.82	286.07	5673.67	262.62	61.7	-330.43	1626242	502042	39°52'19.1	80°43'10.0	336.15	280.577	10.65	10.55	-2.58
5805	47.91	283.72	5739.04	313.55	77.47	-390.11	1626183	502058.6	39°52'19.2	80°43'10.8	397.73	281.231	10.26	10.1	-2.61
5894	54.96	283.05	5794.48	369.93	93.55	-457.77	1626115	502075.5	39°52'19.4	80°43'11.6	467.23	281.549	7.94	7.92	-0.75
5984	54.96	282.47	5846.16	429.21	109.82	-529.64	1626044	502092.8	39°52'19.5	80°43'12.6	540.9	281.714	0.53	0	-0.64
6073	54.96	282.65	5897.26	487.68	125.67	-600.76	1625973	502109.6	39°52'19.7	80°43'13.5	613.77	281.815	0.17	0	0.2
6163	55.04	284.35	5948.88	547.55	142.88	-672.45	1625901	502127.8	39°52'19.9	80°43'14.4	687.46	281.995	1.55	0.09	1.89
6252	54.92	284.7	5999.96	607.49	161.16	-743	1625831	502147	39°52'20.1	80°43'15.3	760.28	282.238	0.35	-0.13	0.39
6342	54.96	285.69	6051.65	668.56	180.47	-814.1	1625760	502167.3	39°52'20.2	80°43'16.2	833.86	282.499	0.9	0.04	1.1
6431	54.99	286.94	6102.74	729.76	200.94	-884.04	1625690	502188.7	39°52'20.4	80°43'17.1	906.59	282.806	1.15	0.03	1.4
6521	55.24	287.56	6154.21	792.4	222.83	-954.55	1625620	502211.6	39°52'20.7	80°43'18.0	980.21	283.14	0.63	0.28	0.69
6610	58.14	288.73	6203.08	856.12	246	-1025.21	1625550	502235.7	39°52'20.9	80°43'18.9	1054.31	283.493	3.44	3.26	1.31
6699	64.08	294.69	6246.09	925.22	274.91	-1097.49	1625478	502265.6	39°52'21.2	80°43'19.9	1131.39	284.062	8.88	6.67	6.7
6789	69.96	299.31	6281.23	1001.9	312.56	-1171.22	1625405	502304.2	39°52'21.5	80°43'20.8	1212.21	284.942	8.06	6.53	5.13
6878	75.83	301.99	6307.4	1082.51	355.92	-1244.34	1625332	502348.6	39°52'22.0	80°43'21.7	1294.25	285.962	7.2	6.6	3.01
6967	75.76	305.33	6329.24	1165.63	403.74	-1316.15	1625261	502397.3	39°52'22.4	80°43'22.7	1376.68	287.054	3.64	-0.08	3.75
7057	81.97	310.65	6346.63	1252.18	458.08	-1385.65	1625192	502452.6	39°52'23.0	80°43'23.6	1459.41	288.293	9.01	6.9	5.91
7146	88.15	314.33	6354.29	1340.18	517.94	-1450.99	1625128	502513.4	39°52'24.2	80°43'24.4	1540.66	289.644	8.07	6.94	4.13
7236	90.55	314.91	6355.31	1429.88	581.15	-1515.04	1625065	502577.4	39°52'24.8	80°43'26.0	1622.68	290.986	2.74	2.67	0.64
7325	90.18	317.94	6354.75	1518.77	645.62	-1576.38	1625004	502642.7	39°52'25.5	80°43'26.7	1703.46	292.272	3.43	-0.42	3.4
7415	90.4	321.67	6354.29	1608.75	714.35	-1634.45	1624947	502712.2	39°52'25.8	80°43'27.4	1783.74	293.608	4.15	0.24	4.14
7504	90.37	322.8	6353.69	1697.62	784.71	-1688.96	1624894	502783.3	39°52'26.2	80°43'28.1	1862.35	294.92	1.27	-0.03	1.27
7594	90.52	322.07	6352.99	1787.47	856.04	-1743.82	1624840	502855.4	39°52'26.9	80°43'28.1	1942.61	296.146	0.83	0.17	-0.81
7683	90.55	320.47	6352.16	1876.41	925.47	-1799.5	1624785	502925.5	39°52'27.6	80°43'28.9	2023.54	297.216	1.8	0.03	-1.8
7772	90.55	319.05	6351.31	1965.39	993.4	-1856.99	1624728	502994.2	39°52'28.3	80°43'29.6	2106.01	298.145	1.6	0	-1.6
7862	90.55	318.37	6350.44	2055.39	1061.02	-1916.38	1624670	503062.7	39°52'28.9	80°43'30.4	2190.49	298.972	0.76	0	-0.76
7951	90.55	317.61	6349.59	2144.36	1127.15	-1975.94	1624611	503129.6	39°52'29.6	80°43'31.1	2274.82	299.702	0.85	0	-0.85
8041	90.49	318.96	6348.77	2234.35	1194.32	-2035.82	1624552	503197.6	39°52'30.3	80°43'31.9	2360.29	300.398	1.5	-0.07	1.5
8130	90.55	321.68	6347.96	2323.32	1262.81	-2092.64	1624496	503266.8	39°52'30.9	80°43'32.6	2444.14	301.109	3.06	0.07	3.06
8220	90.65	323.36	6347.02	2413.16	1334.23	-2147.4	1624443	503339	39°52'31.6	80°43'33.3	2528.14	301.854	1.87	0.11	1.87
8309	90.58	323.18	6346.07	2501.93	1405.55	-2200.62	1624390	503411	39°52'32.3	80°43'34.0	2611.19	302.567	0.22	-0.08	-0.2
8398	90.65	322.92	6345.11	2590.72	1476.67	-2254.12	1624338	503482.8	39°52'33.1	80°43'34.7	2694.74	303.229	0.3	0.08	-0.29
8488	90.68	324.2	6344.07	2680.45	1549.07	-2307.57	1624285	503555.9	39°52'33.8	80°43'35.4	2779.3	303.873	1.42	0.03	1.42
8577	90.65	322.46	6343.03	2769.21	1620.45	-2360.72	1624233	503628	39°52'34.5	80°43'36.1	2863.36	304.467	1.96	-0.03	-1.96
8667	90.58	320.69	6342.07	2859.13	1690.95	-2416.65	1624178	503699.3	39°52'35.2	80°43'36.8	2949.49	304.981	1.97	-0.08	-1.97
8756	90.43	318.66	6341.28	2948.12	1758.8	-2474.23	1624122	503767.9	39°52'35.8	80°43'37.5	3035.65	305.407	2.29	-0.17	-2.28
8845	90.31	318.85	6340.71	3037.11	1825.71	-2532.91	1624066	503835.6	39°52'36.5	80°43'38.3	3122.32	305.784	0.25	-0.13	0.21
8935	90.31	318.99	6340.22	3127.11	1893.55	-2592.05	1624004	503904.2	39°52'37.2	80°43'39.0	3210.02	306.149	0.16	0	0.16
9025	90.31	318.66	6339.73	3217.1	1961.3	-2651.3	1623947	503972.8	39°52'37.8	80°43'39.8	3297.89	306.492	0.37	0	-0.37
9114	90.46	317.59	6339.14	3306.09	2027.56	-2710.71	1623889	504039.8	39°52'38.5	80°43'40.5	3385.1	306.796	1.21	0.17	-1.2
9204	89.82	316.07	6338.92	3396.01	2093.2	-2772.28	1623828	504106.3	39°52'39.1	80°43'41.3	3473.76	307.055	1.83	-0.71	-1.69
9293	90	314.82	6339.06	3484.81	2156.62	-2834.72	1623767	504170.6	39°52'39.8	80°43'42.1	3561.83	307.263	1.42	0.2	-1.4
9382	90	316.2	6339.06	3573.63	2220.11	-2897.09	1623705	504234.9	39°52'40.4	80°43'42.9	3649.93	307.464	1.55	0	1.55
9472	89.97	316.85	6339.08	3663.53	2285.42	-2959.01	1623644	504301	39°52'41.0	80°43'43.7	3738.83	307.681	0.72	-0.03	0.72
9561	89.82	318.54	6339.24	3752.49	2351.24	-3018.91	1623585	504367.6	39°52'41.7	80°43'44.5	3826.5	307.913	1.91	-0.17	1.9
9650	89.94	317.85	6339.43	3841.48	2417.58	-3078.24	1623527	504434.8	39°52'42.3	80°43'45.3	3914.11	308.145	0.79	0.13	-0.78
9740	89.85	316.96	6339.59	3931.43	2483.83	-3139.15	1623467	504501.8	39°52'43.0	80°43'46.0	4002.96	308.353	0.99	-0.1	-0.99
9829	90.03	318.5	6339.69	4020.4	2549.69	-3199.01	1623408	504568.5	39°52'43.7	80°43'46.8	4090.79	308.556	1.74	0.2	1.73
9918	90.34	320.54	6339.4	4109.39	2617.38	-3256.79	1623351	504637	39°52'44.3	80°43'47.6	4178.2	308.788	2.32	0.35	2.29
10008	90.34	321.35	6338.87	4199.35	2687.27	-3313.49	1623295	504707.6	39°52'45.0	80°43'48.3	4266.22	309.042	0.9	0	0.9
10098	91.72	327.92	6337.25	4288.88	2760.61	-3365.54	1623244	504781.7	39°52'45.7	80°43'48.9	4352.91	309.36	7.46	1.53	7.3
10187	90.77	324.52	6335.31	4377.18	2834.55	-3415.01	1623196	504856.3	39°52'46.5	80°43'49.6	4438.13	309.694	3.97	-1.07	-3.82

10276	90.89	320.99	6334.02	4465.98	2905.38	-3468.86	1623143	504927.8	39°52'47.2	80°43'50.3	4524.85	309.948	3.97	0.13	-3.97
10366	90.83	320.65	6332.67	4555.94	2975.14	-3525.71	1623087	504998.3	39°52'47.9	80°43'51.0	4613.25	310.159	0.38	-0.07	-0.38
10455	91.42	321.7	6330.92	4644.87	3044.46	-3581.5	1623032	505068.4	39°52'48.5	80°43'51.7	4700.62	310.366	1.35	0.66	1.18
10545	91.45	320.25	6328.67	4734.79	3114.35	-3638.15	1622976	505139.39	39°52'49.2	80°43'52.4	4789.08	310.564	1.61	0.03	-1.61
10634	91.51	317.02	6326.37	4823.75	3181.12	-3696.94	1622918	505206.6	39°52'49.9	80°43'53.2	4877.18	310.711	3.63	0.07	-3.63
10724	90.89	314.38	6324.49	4913.55	3245.51	-3759.77	1622856	505271.8	39°52'50.5	80°43'54.0	4966.81	310.801	3.01	-0.69	-2.93
10813	90.49	312.04	6323.41	5002.05	3306.44	-3824.63	1622792	505333.6	39°52'51.1	80°43'54.8	5055.72	310.844	2.67	-0.45	-2.63
10902	90.55	312.79	6322.61	5090.42	3366.47	-3890.34	1622728	505394.5	39°52'51.7	80°43'55.7	5144.69	310.871	0.85	0.07	0.84
10991	109.91	310.77	6321.7	5178.67	3425.76	-3956.7	1622662	505454.7	39°52'52.3	80°43'56.5	5233.67	310.886	2.27	0.08	-2.27
11081	110.81	310.87	6320.94	5267.71	3484.59	-4024.8	1622595	505514.5	39°52'52.9	80°43'57.4	5323.66	310.885	0.33	-0.31	0.11
11170	89.14	314.99	6321.35	5356.15	3545.19	-4089.95	1622530	505575.9	39°52'53.5	80°43'58.2	5412.59	310.919	4.82	-1.35	4.63
11260	90	320.09	6322.02	5446.08	3611.56	-4150.69	1622471	505643.1	39°52'54.1	80°43'59.0	5501.96	311.027	5.75	0.96	5.67
11349	90.58	323.2	6321.57	5534.99	3681.35	-4205.91	1622416	505713.7	39°52'54.8	80°43'59.7	5589.45	311.195	3.55	0.65	3.49
11439	90.58	326.53	6320.66	5624.53	3754.93	-4257.69	1622365	505787.9	39°52'55.6	80°44'00.4	5676.92	311.41	3.7	0	3.7
11528	90.55	327.11	6319.78	5712.74	3829.42	-4306.4	1622318	505863.1	39°52'56.3	80°44'01.6	5762.77	311.645	0.65	-0.03	0.65
11617	90.49	326.82	6318.98	5800.92	3904.03	-4354.91	1622270	505938.3	39°52'57.0	80°44'02.3	5848.65	311.875	0.33	-0.07	-0.33
11706	90.62	325.18	6318.11	5889.29	3977.81	-4404.68	1622222	506012.8	39°52'57.8	80°44'03.0	5934.99	312.085	1.85	0.15	-1.84
11796	90.71	322.88	6317.07	5978.96	4050.64	-4457.53	1622170	506086.3	39°52'58.5	80°44'03.7	6023.06	312.262	2.56	0.1	-2.56
11885	90.58	320.25	6316.07	6067.87	4120.34	-4512.85	1622115	506156.8	39°52'59.2	80°44'04.4	6110.89	312.397	2.96	-0.15	-2.96
11974	90.49	318.25	6315.24	6156.86	4187.76	-4570.94	1622058	506224.9	39°52'59.8	80°44'04.4	6199.26	312.495	2.25	-0.1	-2.25
12064	90.58	317.29	6314.4	6246.82	4254.39	-4631.43	1621999	506292.4	39°53'00.5	80°44'05.2	6288.88	312.57	1.07	0.1	-1.07
12153	90.49	317.91	6313.56	6335.79	4320.11	-4691.44	1621939	506358.9	39°53'01.1	80°44'06.0	6377.53	312.64	0.7	-0.1	0.7
12243	90.58	318.93	6312.72	6425.77	4387.43	-4751.16	1621881	506427.39	39°53'01.8	80°44'06.7	6467.08	312.721	1.14	0.1	1.13
12332	90.49	317.94	6311.89	6514.76	4454.02	-4810.21	1621823	506494.4	39°53'02.5	80°44'07.5	6555.64	312.798	1.12	-0.1	-1.11
12421	90.58	318.21	6311.06	6603.74	4520.23	-4869.67	1621764	506561.4	39°53'03.1	80°44'08.2	6644.26	312.869	0.32	0.1	0.3
12511	90.55	317.06	6310.17	6693.7	4586.73	-4930.31	1621704	506628.7	39°53'03.8	80°44'09.0	6733.95	312.932	1.28	-0.03	-1.28
12600	90.49	318.4	6309.37	6782.66	4652.58	-4990.17	1621645	506695.4	39°53'04.4	80°44'09.8	6822.63	312.995	1.51	-0.07	-1.51
12690	90.62	317.09	6308.5	6872.63	4719.19	-5050.69	1621586	506762.8	39°53'05.1	80°44'10.6	6912.32	313.057	1.46	0.14	-1.46
12779	90.62	314.77	6307.53	6961.47	4783.13	-5112.58	1621525	506827.6	39°53'05.7	80°44'11.4	7001.2	313.093	2.61	0	-2.61
12868	90.65	315.78	6306.55	7050.26	4846.36	-5175.21	1621463	506891.6	39°53'06.3	80°44'12.2	7090.13	313.121	1.14	0.03	1.13
12958	90.74	318.44	6305.45	7140.18	4912.29	-5236.45	1621403	506958.4	39°53'07.0	80°44'13.0	7179.9	313.171	2.96	0.1	2.96
13047	90.92	319.19	6304.16	7229.17	4979.26	-5295.05	1621345	507024.5	39°53'08.3	80°44'14.5	7358.05	313.24	0.87	0.2	0.84
13137	90.8	318.2	6302.81	7319.16	5046.86	-5354.45	1621286	507096.5	39°53'09.0	80°44'15.2	7446.77	313.36	0.83	-0.13	-1.1
13226	90.86	317.46	6301.52	7408.12	5112.81	-5414.19	1621228	507161.3	39°53'09.6	80°44'16.0	7536.51	313.411	0.48	0.07	-0.83
13316	90.68	317.85	6300.32	7498.08	5179.33	-5474.81	1621168	507228.6	39°53'10.3	80°44'16.8	7625.28	313.459	0.83	-0.2	0.43
13405	90.83	317.13	6299.14	7587.03	5244.93	-5534.94	1621109	507295.39	39°53'10.9	80°44'17.6	7714.14	313.495	0.83	0.17	-0.81
13494	90.86	315.99	6297.83	7675.78	5309.54	-5596.13	1621048	507360.5	39°53'11.6	80°44'18.4	7804.04	313.525	1.28	0.03	-1.28
13584	90.8	316.18	6296.53	7765.73	5374.37	-5658.55	1620987	507426.1	39°53'11.6	80°44'18.4	7892.91	313.558	0.8	-0.35	0.72
13673	90.49	316.82	6295.52	7854.68	5438.92	-5719.81	1620926	507491.5	39°53'12.2	80°44'19.2	7982.52	313.617	4.37	0.03	4.37
13763	90.52	320.75	6294.73	7944.65	5506.61	-5779.09	1620868	507560.39	39°53'12.9	80°44'19.9	8071.01	313.685	2.23	0.03	-2.22
13852	90.58	318.77	6293.88	8033.64	5574.54	-5836.58	1620812	507628.7	39°53'13.5	80°44'20.7	8160.74	313.732	1.64	0.07	-1.64
13942	90.62	317.29	6292.93	8123.62	5641.45	-5896.76	1620752	507696.4	39°53'14.2	80°44'21.4	8249.41	313.786	3.09	0.04	3.09
14031	140.31	320.04	6291.97	8212.6	5708.27	-5955.53	1620694	507764.39	39°53'14.9	80°44'22.2	8338.86	313.854	0.17	0	0.17
14121	141.21	320.19	6291	8302.58	5777.32	-6013.24	1620638	507833.8	39°53'15.5	80°44'22.9	8427.26	313.924	0.69	-0.11	0.69
14210	90.52	320.8	6290.11	8391.55	5845.99	-6069.86	1620582	507903.3	39°53'16.2	80°44'23.6	8516.67	313.993	0.63	0	-0.63
14300	90.52	320.23	6289.29	8481.53	5915.45	-6127.08	1620526	507973.5	39°53'16.9	80°44'24.4	8605.02	314.065	1.55	0.03	1.55
14389	90.55	321.61	6288.46	8570.48	5984.53	-6183.19	1620471	508043.3	39°53'17.6	80°44'25.1	8694.03	314.152	2.16	-0.1	2.16
14479	90.46	323.55	6287.67	8660.32	6056	-6237.87	1620417	508115.5	39°53'18.3	80°44'25.8	8781.74	314.251	0.88	-0.03	0.88
14568	90.43	324.33	6286.98	8749.01	6127.95	-6290.26	1620365	508188.2	39°53'19.0	80°44'26.5	8870.66	314.341	2.6	0.13	-2.6
14658	90.55	321.99	6286.21	8838.78	6199.97	-6344.21	1620312	508260.9	39°53'19.7	80°44'27.2	8959.35	314.385	7.21	-0.1	-7.21
14747	90.46	315.57	6285.42	8927.73	6266.87	-6402.83	1620255	508328.6	39°53'20.4	80°44'27.9	9048.24	314.434	0.88	-0.03	0.88

14837	90.49	309.11	6284.68	9017.04	6327.46	-6469.31	1620189	508390.1	39°53'21.0	80°44'28.8	9049.24	314.365	7.18	0.03	-7.18
14926	90.31	313.68	6284.06	9105.19	6386.29	-6536.06	1620123	508449.8	39°53'21.6	80°44'29.6	9138.09	314.336	5.14	-0.2	5.13
15015	90.31	316.95	6283.57	9193.97	6449.56	-6598.63	1620061	508513.9	39°53'22.2	80°44'30.4	9227.07	314.345	3.67	0	3.67
15105	90.25	317.91	6283.13	9283.92	6515.84	-6659.52	1620001	508581.39	39°53'22.8	80°44'31.2	9316.94	314.375	1.07	-0.07	1.07
15195	90.46	323.84	6282.58	9373.84	6585.62	-6716.28	1619946	508651.6	39°53'23.5	80°44'31.9	9406.32	314.437	6.59	0.23	6.59
15284	90.37	324.18	6281.93	9462.53	6657.63	-6768.58	1619894	508724.3	39°53'24.2	80°44'32.6	9494.09	314.527	0.4	-0.1	0.38
15373	90.06	322.89	6281.6	9551.27	6729.21	-6821.48	1619842	508796.5	39°53'25.0	80°44'33.3	9582	314.61	1.49	-0.35	-1.45
15463	90.12	322.45	6281.46	9641.1	6800.77	-6876.05	1619789	508868.8	39°53'25.7	80°44'34.0	9671.12	314.685	0.49	0.07	-0.49
15552	90.15	320.52	6281.25	9730.03	6870.41	-6931.47	1619734	508939.2	39°53'26.3	80°44'34.7	9759.5	314.747	2.17	0.03	-2.17
15641	90.09	318.99	6281.06	9819.02	6938.34	-6988.97	1619678	509007.9	39°53'27.0	80°44'35.4	9848.16	314.792	1.72	-0.07	-1.72
15731	90.06	318.89	6280.94	9909.02	7006.2	-7048.08	1619620	509076.6	39°53'27.7	80°44'36.2	9937.92	314.829	0.12	-0.03	-0.11
15820	90.03	317.61	6280.87	9998.01	7072.6	-7107.35	1619561	509143.8	39°53'28.3	80°44'37.0	10026.76	314.86	1.44	-0.03	-1.44
15909	90.55	317.61	6280.42	10086.97	7138.33	-7167.35	1619502	509210.3	39°53'29.0	80°44'37.7	10115.66	314.884	0.58	0.58	0
15999	90.55	327.26	6279.56	10176.72	7209.58	-7222.15	1619448	509282.3	39°53'29.7	80°44'38.4	10204.78	314.95	10.72	0	10.72
16088	91.26	333.91	6278.15	10263.91	7287.05	-7265.83	1619406	509360.3	39°53'30.5	80°44'39.0	10290.45	315.084	7.51	0.8	7.47
16178	91.14	331.55	6276.26	10351.38	7367.03	-7307.05	1619366	509440.9	39°53'31.3	80°44'39.5	10376.23	315.234	2.63	-0.13	-2.62
16267	91.11	327.11	6274.51	10438.96	7443.54	-7352.43	1619321	509518.39	39°53'32.0	80°44'40.1	10462.53	315.353	4.99	-0.03	-4.99
16357	90.58	325.86	6273.19	10528.22	7518.57	-7402.12	1619273	509593.7	39°53'32.8	80°44'40.7	10550.84	315.447	1.51	-0.59	-1.39
16446	90.65	324.75	6272.23	10616.71	7591.74	-7452.78	1619223	509667.5	39°53'33.5	80°44'41.4	10638.53	315.529	1.25	0.08	-1.25
16535	90.55	323.29	6271.3	10705.38	7663.75	-7505.06	1619172	509740.2	39°53'34.2	80°44'42.1	10726.56	315.599	1.64	-0.11	-1.64
16625	90.74	320.83	6270.29	10795.26	7734.72	-7560.39	1619117	509811.9	39°53'34.9	80°44'42.8	10815.98	315.653	2.74	0.21	-2.73
16714	90.58	316.31	6269.26	10884.23	7801.43	-7619.26	1619059	509879.4	39°53'35.5	80°44'43.5	10904.84	315.677	5.08	-0.18	-5.08
16804	90.58	312.03	6268.35	10973.85	7864.12	-7683.8	1618996	509943.39	39°53'36.2	80°44'44.4	10994.78	315.664	4.76	0	-4.76
16893	90.8	310.91	6267.28	11062.04	7923.06	-7750.48	1618930	510002.8	39°53'36.7	80°44'45.2	11083.53	315.631	1.28	0.25	-1.26
16982	90.71	310.53	6266.1	11150.06	7981.11	-7817.93	1618863	510061.8	39°53'37.3	80°44'46.1	11172.2	315.592	0.44	-0.1	-0.43
17072	90.83	310.05	6264.9	11238.96	8039.31	-7886.57	1618795	510120.9	39°53'37.9	80°44'47.0	11261.81	315.549	0.55	0.13	-0.53
17161	90.8	309.8	6263.63	11326.79	8096.42	-7954.82	1618728	510178.9	39°53'38.5	80°44'47.8	11350.38	315.505	0.28	-0.03	-0.28
17251	90.8	312.13	6262.37	11415.85	8155.41	-8022.76	1618661	510238.8	39°53'39.0	80°44'48.7	11440.08	315.47	2.59	0	2.59
17340	90.98	315.89	6260.99	11504.45	8217.23	-8086.76	1618597	510301.5	39°53'39.7	80°44'49.5	11529.03	315.459	4.23	0.2	4.22
17430	91.35	324.47	6259.16	11594.34	8286.28	-8144.32	1618541	510371.3	39°53'40.3	80°44'50.3	11618.62	315.495	9.54	0.41	9.53
17519	91.82	323.76	6256.69	11682.98	8358.36	-8196.47	1618490	510444.1	39°53'41.0	80°44'50.9	11706.59	315.56	0.96	0.53	-0.8
17608	92.19	319.27	6253.58	11771.83	8427.96	-8251.81	1618435	510512.4	39°53'41.7	80°44'51.6	11795.04	315.605	5.06	0.42	-5.04
17698	92.55	317.36	6249.86	11861.73	8495.11	-8311.61	1618376	510582.4	39°53'42.4	80°44'52.4	11884.85	315.626	2.16	0.4	-2.12
17787	92.55	317.96	6245.9	11950.61	8560.83	-8371.49	1618317	510648.9	39°53'43.0	80°44'53.2	11973.71	315.641	0.67	0	0.67
17876	92.49	315.85	6241.98	12039.45	8625.76	-8432.24	1618258	510714.7	39°53'43.7	80°44'54.0	12062.6	315.65	2.37	-0.07	-2.37
17966	92.96	315.41	6237.71	12129.17	8690.02	-8495.1	1618196	510779.8	39°53'44.3	80°44'54.8	12152.5	315.65	0.71	0.52	-0.49
18055	91.14	314.74	6234.52	12217.88	8752.99	-8557.91	1618134	510843.6	39°53'44.9	80°44'55.6	12241.43	315.646	2.18	-2.04	-0.75
18145	90.46	316.66	6233.26	12306.57	8817.39	-8620.75	1618072	510908.8	39°53'45.6	80°44'56.4	12331.42	315.646	2.26	-0.76	2.13
18234	90.49	315.7	6232.53	12396.57	8881.61	-8682.37	1618011	510973.9	39°53'46.2	80°44'57.2	12420.41	315.65	1.08	0.03	-1.08
18323	90.52	317.81	6231.74	12485.48	8946.43	-8743.34	1617951	511039.5	39°53'46.9	80°44'58.0	12509.38	315.658	2.37	0.03	2.37
18413	91.6	319.33	6230.08	12575.46	9013.89	-8802.89	1617892	511107.8	39°53'47.5	80°44'58.8	12599.25	315.679	2.07	1.2	1.69
18502	90.09	321.14	6227.44	12664.4	9151.46	-8917.36	1617780	511174.9	39°53'48.2	80°44'59.6	12686.26	315.742	1.32	-0.84	1.01
18592	90.09	321.15	6227.87	12754.4	9220.77	-8973.19	1617725	511246.9	39°53'48.9	80°44'59.0	12777.66	315.78	0.83	-0.83	0.01
18681	89.35	321.15	6227.44	12843.35	9292.65	-9027.31	1617672	511316.9	39°53'49.6	80°45'00.2	12866.26	315.78	4.17	0.21	4.17
18771	89.54	324.9	6228.74	12933.12	9364.69	-9079.56	1617620	511389.5	39°53'50.3	80°45'01.6	12955.53	315.83	2.02	-0.66	-1.91
18860	88.95	323.2	6229.92	13021.79	9436.72	-9133.5	1617567	511462.3	39°53'51.0	80°45'02.3	13043.61	315.886	1.97	-0.03	-1.92
18950	88.92	323.14	6231.59	13111.56	9507.33	-9187.65	1617514	511535.39	39°53'51.7	80°45'03.0	13132.87	315.935	1.97	1.38	-1.4
19039	90.15	321.89	6232.31	13200.41	9577.3	-9244.26	1617459	511606.4	39°53'52.4	80°45'03.7	13221.29	316.014	1.92	-0.07	-1.92
19129	90.09	320.16	6232.12	13290.36	9644.86	-9302.19	1617402	511677.1	39°53'53.1	80°45'04.4	13310.94	316.014	1.79	0.42	-1.74
19218	90.46	318.61	6231.7	13379.35	9712.22	-9360.35	1617344	511745.4	39°53'53.8	80°45'05.1	13399.78	316.036	1.38	-0.42	1.31
19307	90.09	319.78	6231.27	13468.35	9780.47	-9419.02	1617287	511813.6	39°53'54.4	80°45'05.9	13488.64	316.057	1.04	-0.13	-1.03
19397	89.97	318.85	6231.22	13558.35	9849.24	-9478.85	1617230	511882.6	39°53'55.1	80°45'06.6	13578.5	316.079	1.04	-0.13	-1.03

Environmental Protection

String/Diag	Start MD	End MD	Interval	Start TVD	End TVD	Start N/S	Start E/W	End N/S	End E/W						
[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]						
19486	89.85	318.96	6231.36	13647.35	9847.54	-9477.52	1617229	511950.4	39°53'55.8	80°45'07.4	13667.39	316.097	0.18	-0.13	0.12
19576	90	317.48	6231.48	13737.33	9914.65	-9537.49	1617170	512018.4	39°53'56.4	80°45'08.2	13757.33	316.111	1.65	0.17	-1.64
19665	90.22	317	6231.31	13826.28	9980	-9597.91	1617110	512084.5	39°53'57.1	80°45'08.9	13846.31	316.118	0.59	0.25	-0.54
19755	90.58	318.62	6230.68	13916.25	10046.68	-9658.35	1617051	512152	39°53'57.7	80°45'09.7	13936.26	316.129	1.84	0.4	1.8
19934	90.43	317.23	6229.1	14095.19	10179.53	-9778.29	1616933	512286.5	39°53'59.0	80°45'11.2	14115.16	316.152	0.78	-0.08	-0.78
20023	90.28	316.47	6228.55	14184.12	10244.46	-9839.16	1616873	512352.2	39°53'59.7	80°45'12.0	14204.16	316.156	0.87	-0.17	-0.85
20113	90.18	316.56	6228.19	14274.02	10309.76	-9901.09	1616812	512418.3	39°54'00.3	80°45'12.8	14294.15	316.158	0.15	-0.11	0.1
20202	90.25	316.98	6227.86	14362.94	10374.61	-9962.05	1616752	512484	39°54'01.0	80°45'13.6	14383.15	316.162	0.48	0.08	0.47
20292	90.55	323.7	6227.23	14452.86	10443.85	-10019.5	1616695	512554	39°54'01.7	80°45'14.3	14472.86	316.188	7.47	0.33	7.47
20381	90.95	330.11	6226.06	14541.01	10518.37	-10068	1616648	512629.2	39°54'02.4	80°45'15.0	14560.26	316.253	7.22	0.45	7.2
20471	91.08	328.17	6224.47	14629.64	10595.61	-10114.2	1616603	512707	39°54'03.2	80°45'15.6	14647.99	316.332	2.16	0.14	-2.16
20560	91.2	322.71	6222.69	14718.06	10668.86	-10164.6	1616553	512781	39°54'03.9	80°45'16.2	14735.82	316.386	6.14	0.13	-6.13
20606	91.23	319.5	6221.72	14764.02	10704.65	-10193.5	1616525	512817.1	39°54'04.2	80°45'16.6	14781.65	316.401	6.98	0.07	-6.98
20631	91.23	319.5	6221.18	14789.01	10723.66	-10209.7	1616509	512836.4	39°54'04.4	80°45'16.8	14806.61	316.406	0	0	0 Projected 631'

HOLE AND 631'

String/Diag	Start MD	End MD	Interval	Start TVD	End TVD	Start N/S	Start E/W	End N/S	End E/W
[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]
26in Open	25	85	60	25	85	0	0	-0.05	0.02
20in Concl.	25	85	60	25	85	0	0	-0.05	0.02
17.5in Ope	85	528	443	85	527.98	-0.05	0.02	-2.13	-2.83
13.375in C	25	509	484	25	508.98	0	0	-2.01	-2.63

T A R G E T S

Name	TVD	North	East	Grid East	Grid North	Latitude	Longitude	Shape	Comment
[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[US ft]	[US ft]		
Hicks M021	6208.46	10703.51	-10233.9	1616484	512816.6	39°54'04.2	80°45'17.1	point	
Hicks M021	6355.64	538.16	-1457.9	1625121	502533.7	39°52'23.8	80°43'24.5	point	
Hicks Pad -	6385	-166.85	-149.41	1626420	501811	39°52'16.8	80°43'07.7	polygon	
Hicks Pad -	6385	135.35	449.71	1627023	502105	39°52'19.8	80°43'00.0	polygon	
Hicks Pad -	6385	9339.23	-11687.5	1615012	511472.2	39°53'50.7	80°45'35.7	polygon	
Hicks Pad -	6385	-11118.7	5949.97	1632370	490778	39°50'28.6	80°41'49.5	polygon	
Hicks Pad -	6385	212.96	105.47	1626680	502187.3	39°52'20.6	80°43'04.4	polygon	
Hicks Pad -	6400	1651.79	616.04	1627210	503619	39°52'34.8	80°42'57.9	polygon	
Hicks M011	6508	5614.24	-2293.9	1624354	507620.3	39°53'13.9	80°43'35.2	polygon	
Hicks M021	6508	-481.55	-1143.72	1625422	501509.8	39°52'13.7	80°43'20.4	polygon	
Hicks M031	6508	10188.6	-3345.03	1623365	512208.3	39°53'59.1	80°43'48.7	polygon	
Hicks M041	6508	3036.56	-3436.03	1623177	505058.5	39°52'48.5	80°43'49.9	polygon	
Hicks M051	6508	-3141.45	-2254.81	1624275	498865.4	39°51'47.4	80°43'34.7	polygon	
Hicks M061	6508	845.3	101.24	1626684	502819.6	39°52'26.8	80°43'04.5	polygon	
Hicks M071	6508	845.3	101.24	1626684	502819.6	39°52'26.8	80°43'04.5	polygon	
Hicks Pad -	12460	-393.95	12.97	1626579	501581.7	39°52'14.6	80°43'05.6	polygon	
Hicks Pad -	12460	8372.31	-10762.6	1615924	510492.9	39°53'41.2	80°45'23.9	polygon	

WELLPATH 631'

Log Name/Start MD	End MD	Pos Unc Model
[ft]	[ft]	
01_SDI Gyr	25	468 SDI Keeper v1.04
03_APS EN	468	2008 OWSG MWD rev2 + FR1 + Multi-Station Correction
04_BH Nav	2008	5134 OWSG MWD rev2 + FR1 + Multi-Station Correction
05_BH AT	5134	20606 OWSG MWD rev2 + FR1 + Multi-Station Correction

COMMENTS

Wellpath general comments

API: 47-051-01898-0000

BH Job #: 109804843

Duration: 05/19/2019-06/01/2019

Rig: Precision 560

SDI Gyro <17-1/2>(100'-460)''

APS EM +MagVAR MSA <12-1/4>(468')(551'-2008)''

BH Navitrak + MagVAR MSA <8-1/2> (2009')(2090'-5134)''

BH AT Curve + MagVAR MSA <8-1/2> (5134')(5179'-20606)''

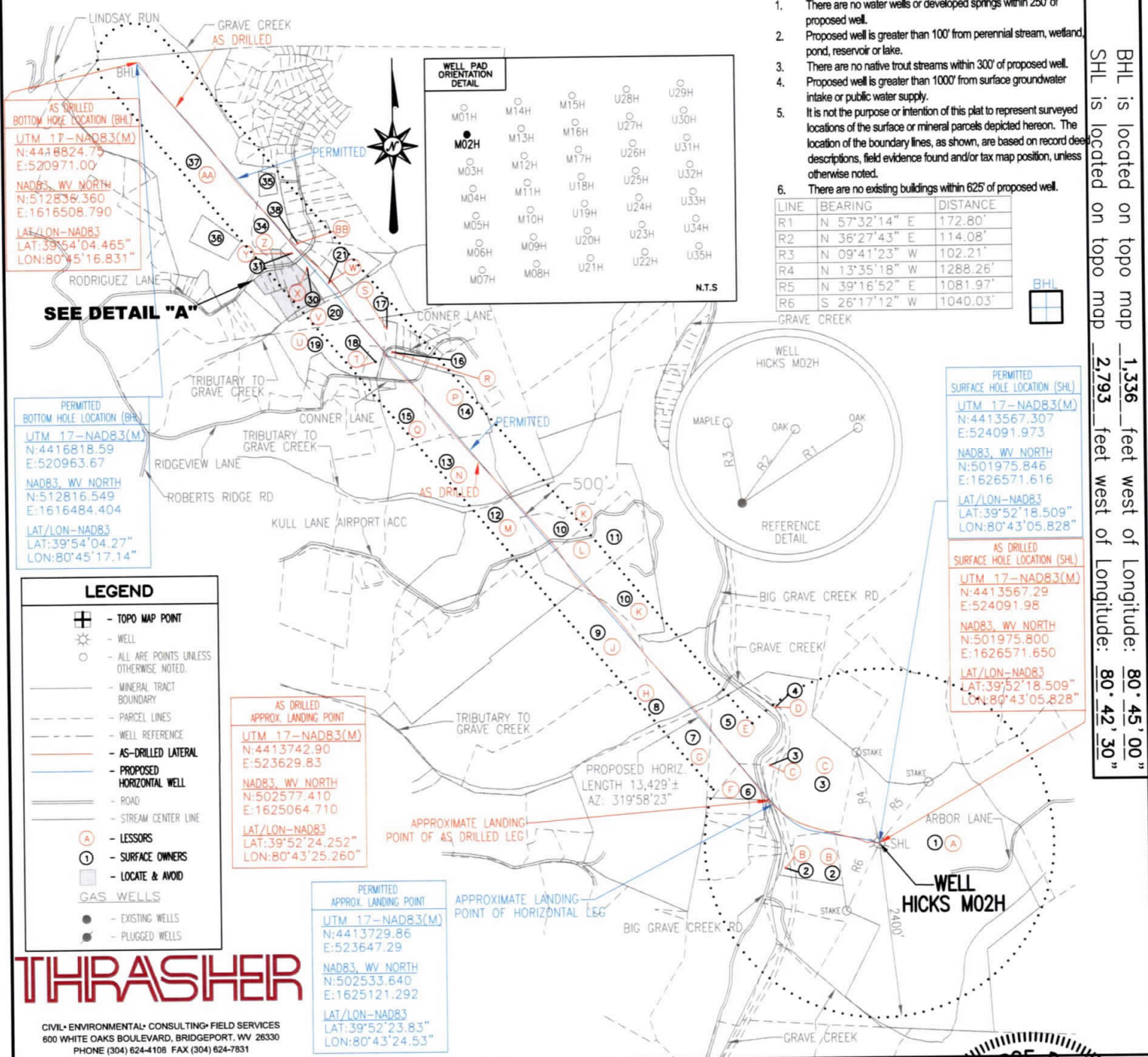
Projected MD at TD: 20,631'

Printed on: 05/19/2019 10:00 AM  
Printed by: [Name]  
End of Document

# AS DRILLED PLAT

BHL is located on topo map 5,640 feet south of Latitude: 39° 55' 00"  
 SHL is located on topo map 1,163 feet south of Latitude: 39° 52' 30"

**SEE PAGE 2 FOR SURFACE OWNERS AND LESSORS**



- NOTES:
- There are no water wells or developed springs within 250' of proposed well.
  - Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
  - There are no native trout streams within 300' of proposed well.
  - Proposed well is greater than 1000' from surface groundwater intake or public water supply.
  - It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, are based on record descriptions, field evidence found and/or tax map position, unless otherwise noted.
  - There are no existing buildings within 625' of proposed well.

LINE	BEARING	DISTANCE
R1	N 57°32'14" E	172.80'
R2	N 36°27'43" E	114.08'
R3	N 09°41'23" W	102.21'
R4	N 13°35'18" W	1288.26'
R5	N 39°16'52" E	1081.97'
R6	S 26°17'12" W	1040.03'

**LEGEND**

- TOPO MAP POINT
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED.
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- WELL REFERENCE
- AS-DRILLED LATERAL
- PROPOSED HORIZONTAL WELL
- ROAD
- STREAM CENTER LINE
- LESSORS
- SURFACE OWNERS
- LOCATE & AVOID
- GAS WELLS
  - EXISTING WELLS
  - PLUGGED WELLS

**THRASHER**  
 CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES  
 600 WHITE OAKS BOULEVARD, BRIDGEPORT, WV 26330  
 PHONE (304) 624-4108 FAX (304) 624-7831

BHL is located on topo map 1,336 feet west of Longitude: 80° 45' 00"  
 SHL is located on topo map 2,793 feet west of Longitude: 80° 42' 30"

FILE #: HICKS M02H-AS DRILLED  
 DRAWING #: HICKS M02H-AS DRILLED  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/2500  
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: George D. Six  
 R.P.E.: \_\_\_\_\_ L.L.S.: P.S. No. 2000



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304

WELL Type:  Oil  Waste Disposal  Production  Deep  Gas  Liquid Injection  Storage  Shallow

WATERSHED: MIDDLE GRAVE CREEK-GRAVE CREEK ELEVATION: 1176.07'

COUNTY/DISTRICT: MARSHALL / CLAY QUADRANGLE: GLEN EASTON, WV 7.5'

SURFACE OWNER: THOMAS E. HICKS ACREAGE: 172.100±

OIL & GAS ROYALTY OWNER: CHRISTA DAWN HICKS, ET AL. ACREAGE: 853.486±

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION   
 PERFORATE NEW FORMATION  PLUG & ABANDON  CLEAN OUT & REPLUG  OTHER CHANGE

(SPECIFY): AS DRILLED

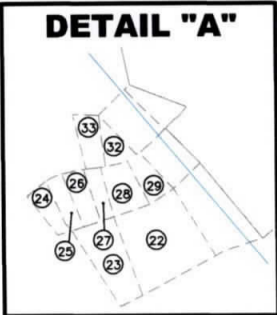
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,600'± TMD: 20,692.4'±

WELL OPERATOR CHEVRON APPALACHIA, LLC DESIGNATED AGENT KENNETH E. TAWNEY  
 Address 800 MOUNTAIN VIEW DRIVE Address 500 LEE STREET, EAST SUITE 1600  
 City SMITHFIELD State PA Zip Code 15478 City CHARLESTON State WV Zip Code 25301-3202

DATE: JANUARY 31, 2020

OPERATOR'S WELL #: HICKS M02H-AS DRILLED

API WELL #: 47 51 01898  
 STATE COUNTY PERMIT



# HICKS M02H PAGE 2 OF 2 AS DRILLED PLAT

	LESSOR	DIST-TM/PAR
A	CHRISTA DAWN HICKS, ET AL.	4-8/37
B	SIDNEY P. POND, ET UX.	4-8/36.1
C	CHESAPEAKE APPALACHIA, LLC.	4-8/35
D	CNX GAS COMPANY LLC	4-8/39
E	CHESAPEAKE APPALACHIA, LLC.	4-8/35.1
F	DENVER O. THOMAS, ET UX.	4-8/32
G	HENRY ASTON, ET UX.	4-8/17
	LEO GAMBLE	
	BILLIE D. BRENNAN	
	BARBARA RIGGLE	
	NOREEN G. MILLER, ET VIR.	
	ANNE LONG HAND, ET VIR.	
	JOHN M. GAMBLE	
	MARGARET M. VERRALL	
	LARRY MCCULLOUGH	
	MARK CARTER GAMBLE	
	CHARLES PAUL GAMBLE, ET UX.	
	CLARICE BURT	
	DONALD CARMICHAEL	
	JANE ANN DAY	
	PEGGY FILLMORE	
	BILLIE JO GARNER	
	ARDITH HOLMES	
	ELEANOR HOLMES	
	GENE LAWSON HOLMES	
	JANICE A. HOLMES	
	MARY HOLMES	
	MITCHELL R. HOLMES	
	RONALD LEMOYNE HOLMES	
	TIM HOLMES	
	VIRGINIA HOLMES	
	MYRNA LOUANN HOLSTINE	
	LYLA LORRAINE HUBBS	
	BONNIE LIBRIZZI	
	MARY LOUISE LIPSKY	
	KAREN V. MAAS	
	VERA MARIE MIDCAP	
	MAVARENE L. REDD	
	EULA RICHARDS BY AIF CAROLYN THOMPSON	
	HELEN M. RINE	
	MARILYN LAVONDA RULONG	
	VIOLET P. STANDIFORD	
	CHRISTINE A. CIOCCIA	
	SHIRLEY DULANEY	
	WILLIAM EARNEST	
	JANE ANN GAMBLE	
	JULIA GAMBLE BY AIF MARY JO DOMBROWSKI	
	HOWARD MCCARDLE	
	JOAN MILLIKEN	
	SHERWIN LEE RUCKMAN	
	BOBBI JO STARK	
	BELINDA S. WEST	
	MARY ELLEN WHIPKEY	
	ROBIN WILLIAMS	
	LLOYD ELWOOD HOLMES	
H	SANDRA KAY WARNER	4-8/16
	PATSY SUE BAYHA	
	HALLIE LU PETERSON	
	LUCRETIA LEE	
	DELLA K. BOONE	
	DENNIS PARSONS	
	DR. CASPER E. CLINE	
	CHARLOTTE L. STROMSLAND	
J	JOHN L. FOX	4-5/54.1
	KAREN M. FOX	
	CHRISTI F. PRESTON	
	JOHN L. FOX, II	
	CYNTHIA S. HAMILTON	
	DOROTHY A. ARGENTA	
	JOAN E. KRESS	
	WILLIAM P. ARGENTA	
	PAUL T. ARGENTA	
	MARY E. PERSINGER	
	JANET C. HUNNELL	
	MICHAEL PERSINGER	
	BETH BLAKE	
	KAREN FOX EVANS	
	WILLIAM B. FOX	
	LINDA SMITH	
	ANN MILLER	
K	MARSHALL COUNTY AIRPORT AUTHORITY	4-4/2
L	MARSHALL COUNTY AIRPORT AUTHORITY	4-4/2.1

	LESSOR	DIST-TM/PAR
M	JOHN L. FOX	4-5/54.5
	KAREN M. FOX	
	CHRISTI F. PRESTON	
	JOHN L. FOX, II	
	CYNTHIA S. HAMILTON	
	DOROTHY A. ARGENTA	
	MARY E. PERSINGER	
	KAREN FOX EVANS	
	BRAD FOX	
	LINDA SMITH	
	ANN MACHELE MILLER	
	JANET C. HUNNELL	
	MICHAEL PERSINGER	
	BETH BLAKE	
	WILLIAM P. ARGENTA	
	PAUL T. ARGENTA	
	JOAN E. KRESS	
N	JAMES L. DRAKE, ET UX.	4-5/46.2
P	ROBERT C. MILLER, ET UX.	4-5/46
Q	MICHAEL W. THOMAS	4-5/46.3
R	RUSSELL M. MCMAHON	4-5/36
S	WAYNE W. KAUFMAN, ET UX.	4-5/35
T	MATTHEW W. GRAY, ET UX.	4-5/34
U	PAUL RINE, ET UX.	4-5/32.1
V	GREGORY SNIDER	4-2/50.7
W	RICHARD D. EMERY, ET UX.	4-2/50.5
X	RICHARD D. EMERY, ET UX.	4-2/67
Y	ROGER C. JAMES, III ET UX.	4-2/63
Z	GREGORY K. WOOD, ET UX.	4-2/50
AA	GREGORY K. WOOD, ET UX.	4-2/52
BB	*RUTH M. CHRISLIP	4-2/62

	SURFACE OWNER	DIST-TM/PAR
1	THOMAS E. HICKS	4-8/37
2	VICKIE L. & SIDNEY P. POND	4-8/36.1
3	RONALD ELWOOD STERN ET UX	4-8/35
4	CONSOLIDATION COAL COMPANY/MURRAY ENERGY C/O LAND DEPT	4-8/39
5	ROBERT L., JR. & PATSY ANN CLARK	4-8/35.1
6	BRIAN A. & MELISSA A. GUNN	4-8/32
7	HENRY W. & LINDA M. ASTON - LIFE	4-8/17
8	CHARLES W., JR. & JUDY MERCER	4-8/16
9	MARY E. & JANET C. PERSINGER	4-5/54.1
10	MARSHALL CO AIRPORT AUTHORITY	4-4/2
11	MARSHALL CO AIRPORT AUTHORITY	4-4/2.1
12	LENEE J. CURITTI ET UX	4-5/54.5
13	JAMES L. & KATHY L. DRAKE	4-5/46.2
14	LINDA LEOLA MILLER	4-5/46
15	MICHAEL W. THOMAS ET UX	4-5/46.3
16	RUSSELL M. MCMAHON ET UX	4-5/36
17	WAYNE W. KAUFMAN ET UX	4-5/35
18	MATTHEW G. GRAY & HOLLY PORTER	4-5/34
19	PAUL WAYNE RINE ET UX	4-5/32.1
20	GREGORY SNIDER	4-2/50.7
21	RICHARD EMERY ET UX	4-2/50.5
22	GARY IRWIN NELSON ET UX	4-2/50.4
23	GEORGE D. & LAURIE E. BUMGARDNER	4-2/50.9
24	GEORGE D., II & LAURIE BUMGARDNER	4-2/52.18
25	GEORGE DONALD, II & LAURIE ELLEN BUMGARDNER	4-2/52.15
26	GEORGE DONALD BUMGARDNER, II ET UX	4-2/52.13
27	GEORGE DONALD BUMGARDNER, II ET UX	4-2/52.14
28	GARY I. NELSON ET UX	4-2/66
29	GARY I. NELSON ET UX	4-2/50.1
30	RICHARD DOUGLAS EMERY ET UX	4-2/67
31	ROGER JAMES ET UX	4-2/63
32	ROGER C. JAMES, III ET UX	4-2/50.6
33	DEREK T. REED	4-2/65
34	GREGORY K. WOOD	4-2/50
35	BRENDA L. & TIMOTHY E. ESTEL	4-2/50.8
36	GREGORY K. & BONNIE J. WOOD	4-2/52.19
37	GREGORY K. WOOD	4-2/52
38	*RUTH MAY CHRISLIP	4-2/62

PERMITTED SURFACE HOLE LOCATION (SHL)	PERMITTED APPROX. LANDING POINT	PERMITTED BOTTOM HOLE LOCATION (BHL)
UTM 17-NAD83(M) N:4413567.307 E:524091.973	UTM 17-NAD83(M) N:4413729.86 E:523647.29	UTM 17-NAD83(M) N:4416818.59 E:520963.67
NAD83, WV NORTH N:501975.846 E:1626571.616	NAD83, WV NORTH N:502533.640 E:1625121.292	NAD83, WV NORTH N:512816.549 E:1616484.404
LAT/LON-NAD83 LAT:39°52'18.509" LON:80°43'05.828"	LAT/LON-NAD83 LAT:39°52'23.83" LON:80°43'24.53"	LAT/LON-NAD83 LAT:39°54'04.27" LON:80°45'17.14"

AS DRILLED SURFACE HOLE LOCATION (SHL)	AS DRILLED APPROX. LANDING POINT	AS DRILLED BOTTOM HOLE LOCATION (BHL)
UTM 17-NAD83(M) N:4413567.29 E:524091.98	UTM 17-NAD83(M) N:4413742.90 E:523629.83	UTM 17-NAD83(M) N:4416824.75 E:520971.00
NAD83, WV NORTH N:501975.800 E:1626571.650	NAD83, WV NORTH N:502577.410 E:1625064.710	NAD83, WV NORTH N:512836.360 E:1616508.790
LAT/LON-NAD83 LAT:39°52'18.509" LON:80°43'05.828"	LAT/LON-NAD83 LAT:39°52'24.252" LON:80°43'25.260"	LAT/LON-NAD83 LAT:39°54'04.465" LON:80°45'16.831"



JANUARY 31, 2020

CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES  
600 WHITE OAKS BOULEVARD, BRIDGEPORT, WV 26330  
PHONE (304) 624-4108 • FAX (304) 624-7831

\* - DENOTES PARCEL WITHIN 30 FEET OF PLANNED WELL BORE