

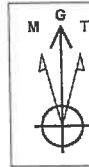
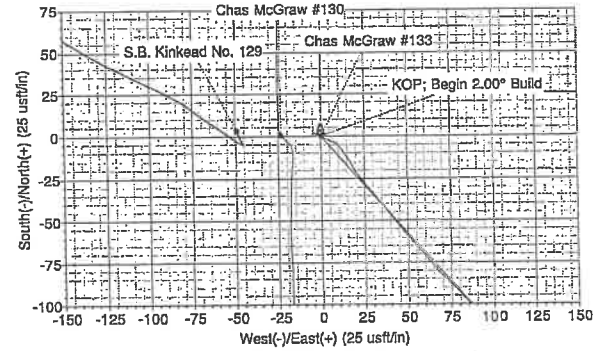
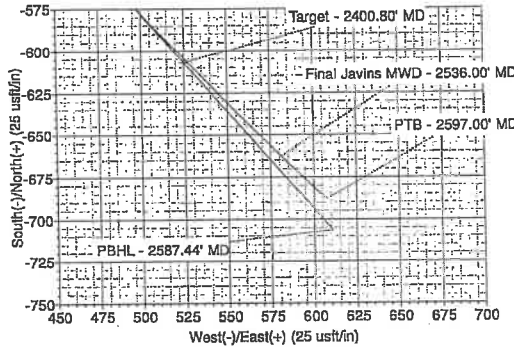
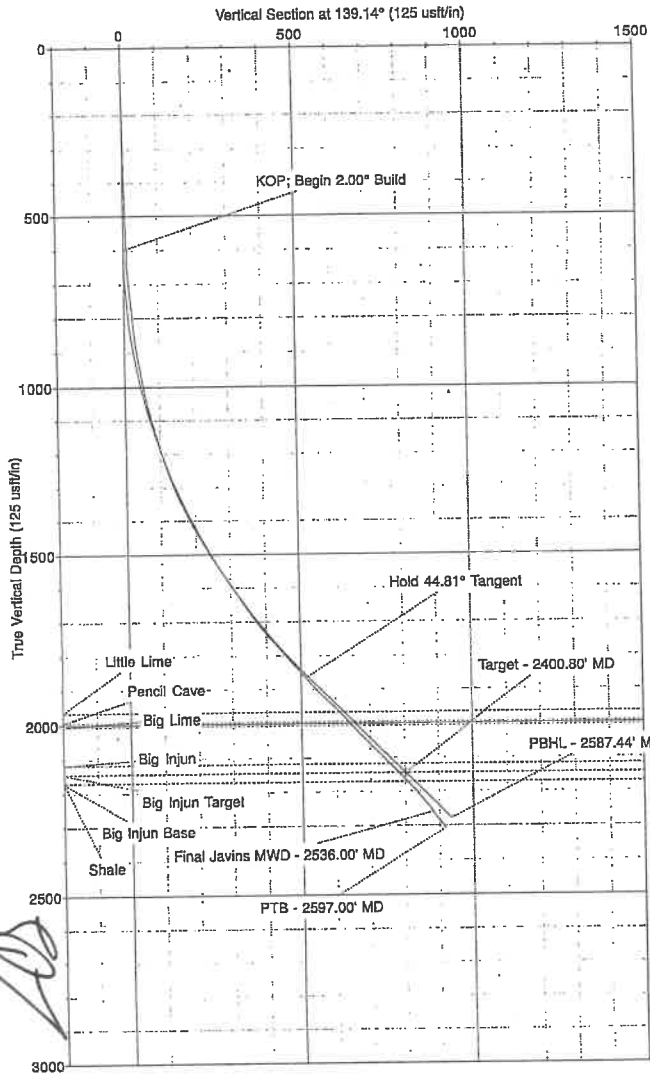
# HG Energy, LLC

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Project: Roane County, WV (UTM 17N - GRID)  
 Site: Chas McGraw/Kinkead  
 Well: Chas McGraw #133  
 Wellbore: Wellbore #1  
 Design: Design #1

## Chas McGraw #133



Azimuths to Grid North  
 True North: 0.18°  
 Magnetic North: -8.12°  
 Magnetic Field  
 Strength: 51098.1 nT  
 Dip Angle: 65.76°  
 Date: 7/11/2022  
 Model: IGRF2015

### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1968.0	2149.9	Little Lime
1996.0	2189.4	Pencil Cave
2006.0	2203.5	Big Lime
2120.0	2364.2	Big Injun
2146.0	2400.8	Big Injun Target
2172.0	2437.4	Big Injun Base
2172.0	2437.4	Shale

### CASING DETAILS

TVDP	MD	Name	Size
505.0	505.0	7"	7"

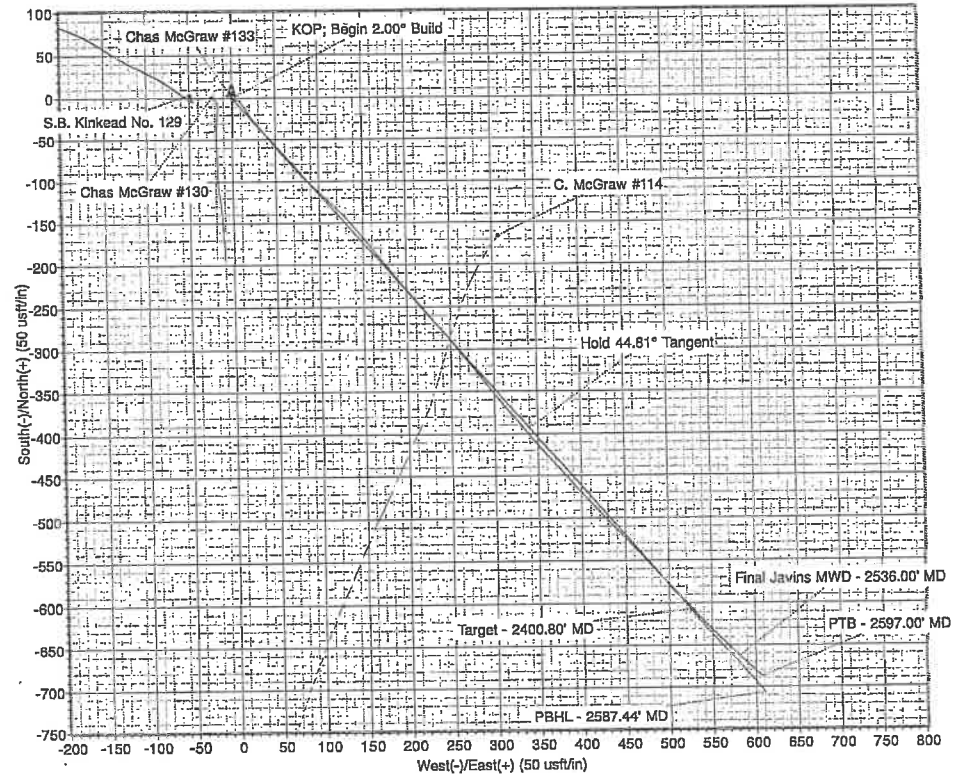


### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	500.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	KOP; Begin 2.00° Build
3	2000.2	44.81	139.14	1861.8	-393.4	340.3	3.20	139.14	520.2	Hold 44.81° Tangent
4	2400.8	44.81	139.14	2146.0	-607.0	524.9	0.00	0.00	802.5	Target - 2400.80' MD
5	2587.4	44.81	139.14	2278.4	-706.4	611.0	0.00	0.00	934.0	PBHL - 2587.44' MD

### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Tgt - Chas McGraw #133	2146.0	-607.0	524.9	4284992.00	475627.00	38° 42' 47.645 N	81° 16' 49.231 W	Point





## **HG Energy, LLC**

**Roane County, WV (UTM 17N - GRID)**

**Chas McGraw/Kinkead**

**Chas McGraw #133**

**Wellbore #1**

**Design: Surveys**

# **Survey Report - Geographic**

**29 August, 2022**

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10/14/2022



# Javins Corporation

## Survey Report - Geographic



**Company:** HG Energy, LLC  
**Project:** Roane County, WV (UTM 17N - GRID)  
**Site:** Chas McGraw/Kinkead  
**Well:** Chas McGraw #133  
**Wellbore:** Wellbore #1  
**Design:** Surveys

**Local Co-ordinate Reference:** Well Chas McGraw #133  
**TVD Reference:** WELL @ 1125.0usft (8' RKB)  
**MD Reference:** WELL @ 1125.0usft (8' RKB)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

**Project:** Roane County, WV (UTM 17N - GRID)  
**Map System:** Universal Transverse Mercator (US Survey Feet) **System Datum:** Mean Sea Level  
**Geo Datum:** NAD83 West Virginia - HARN  
**Map Zone:** Zone 17N (84 W to 78 W)

**Site:** Chas McGraw/Kinkead  
**Site Position:** Northing: 4,285,178.00 m Latitude: 38° 42' 53.662 N  
**From:** Map Easting: 475,452.00 m Longitude: 81° 16' 56.501 W  
**Position Uncertainty:** 0.0 usft Slot Radius: 13-3/16 " Grid Convergence: -0.18 °

**Well:** Chas McGraw #133  
**Well Position:** +N/-S 0.0 usft Northing: 4,285,177.00 m Latitude: 38° 42' 53.631 N  
 +E/-W 0.0 usft Easting: 475,467.00 m Longitude: 81° 16' 55.880 W  
**Position Uncertainty:** 0.0 usft Wellhead Elevation: usft Ground Level: 1,117.0 usft

**Wellbore:** Wellbore #1  
**Magnetics:** Model Name Sample Date Declination (°) Dip Angle (°) Field Strength (nT)  
 IGRF2015 7/11/2022 -8.29 65.76 51,098

**Design:** Surveys  
**Audit Notes:** 1.0  
**Version:** 1.0  
**Vertical Section:** Phase: ACTUAL Tie On Depth: 0.0  
 Depth From (TVD) (usft) +N/-S (usft) +E/-W (usft) Direction (°)  
 0.0 0.0 0.0 139.17

Survey Program	Date	From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
	7/29/2022	556.0	2,597.0	Javins MWD (Wellbore #1)	MWD	OWSG MWD - Standard

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 Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	4,285,177.00	475,467.00	38° 42' 53.631 N	81° 16' 55.880 W
556.0	1.58	115.70	555.9	-3.3	6.9	4,285,175.98	475,469.11	38° 42' 53.598 N	81° 16' 55.792 W
586.0	1.57	114.33	585.9	-3.7	7.7	4,285,175.88	475,469.33	38° 42' 53.594 N	81° 16' 55.783 W
616.0	1.55	109.53	615.9	-4.0	8.4	4,285,175.78	475,469.56	38° 42' 53.592 N	81° 16' 55.773 W
646.0	2.29	130.36	645.9	-4.5	9.3	4,285,175.62	475,469.82	38° 42' 53.586 N	81° 16' 55.763 W
676.0	4.42	143.39	675.8	-5.8	10.4	4,285,175.22	475,470.17	38° 42' 53.573 N	81° 16' 55.748 W
706.0	5.82	145.40	705.7	-8.0	11.9	4,285,174.56	475,470.64	38° 42' 53.552 N	81° 16' 55.728 W
736.0	6.13	144.77	735.6	-10.6	13.7	4,285,173.78	475,471.19	38° 42' 53.527 N	81° 16' 55.706 W
766.0	5.83	147.81	765.4	-13.2	15.5	4,285,172.99	475,471.72	38° 42' 53.501 N	81° 16' 55.684 W
796.0	5.87	148.59	795.2	-15.8	17.1	4,285,172.19	475,472.21	38° 42' 53.475 N	81° 16' 55.663 W
826.0	5.87	149.77	825.1	-18.4	18.7	4,285,171.39	475,472.69	38° 42' 53.449 N	81° 16' 55.643 W
856.0	6.77	147.84	854.9	-21.2	20.4	4,285,170.53	475,473.21	38° 42' 53.421 N	81° 16' 55.622 W

10/14/2022





**Javins Corporation**  
Survey Report - Geographic



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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

**Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
2,536.0	36.89	134.17	2,258.7	-662.5	581.1	4,284,975.06	475,644.13	38° 42' 47.097 N	81° 16' 48.519 W
2,597.0	36.89	134.17	2,307.5	-688.0	607.4	4,284,967.29	475,652.13	38° 42' 46.846 N	81° 16' 48.187 W

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,536.0	2,258.7	-662.5	581.1	Final Javins MWD - 2536.00' MD
2,597.0	2,307.5	-688.0	607.4	PTB - 2597.00' MD

Checked By: Chris Thompson Approved By: Chris Thompson Date: 8/30/2022

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# HG Energy, LLC

## HG Energy, LLC

Roane County, WV (UTM 17N - GRID)  
Chas McGraw/Kinhead  
Chas McGraw #133  
Wellbore #1

Design: Surveys

## Javins Survey Report

29 August, 2022

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**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

<b>Project</b>	Roane County, WV (UTM 17N - GRID)	<b>System Datum:</b>	Mean Sea Level
<b>Map System:</b>	Universal Transverse Mercator (US Survey Fee)		
<b>Geo Datum:</b>	NAD83 West Virginia - HARN		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	Chas McGraw/Kinkead				
<b>Site Position:</b>		<b>Northing:</b>	4,285,178.00 m	<b>Latitude:</b>	38° 42' 53.662 N
<b>From:</b>	Map	<b>Easting:</b>	475,452.00 m	<b>Longitude:</b>	81° 16' 56.501 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	-0.18 °

<b>Well</b>	Chas McGraw #133				
<b>Well Position</b>	+N/-S 0.0 usft	<b>Northing:</b>	4,285,177.00 m	<b>Latitude:</b>	38° 42' 53.631 N
	+E/-W 0.0 usft	<b>Easting:</b>	475,467.00 m	<b>Longitude:</b>	81° 16' 55.880 W
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	1,117.0 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	7/11/2022	-8.29	65.76	51,098

<b>Design</b>	Surveys				
<b>Audit Notes:</b>		<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Version:</b>	1.0				
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	139.17	

<b>Survey Program</b>	Date	7/29/2022			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
556.0	2,597.0	Javins MWD (Wellbore #1)	MWD	OWSG MWD - Standard	

*[Handwritten signature]*

# HG Energy, LLC

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## Javins Corporation Javins Survey Report



**Company:** HG Energy, LLC  
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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

### Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.00	0.00
556.0	1.58	115.70	555.9	-3.3	6.9	7.0	7.7	115.70	0.28
586.0	1.57	114.33	585.9	-3.7	7.7	7.8	8.5	115.63	0.13
616.0	1.55	109.53	615.9	-4.0	8.4	8.5	9.3	115.31	0.44
646.0	2.29	130.36	645.9	-4.5	9.3	9.5	10.3	115.95	3.35
676.0	4.42	143.39	675.8	-5.8	10.4	11.2	11.9	119.23	7.50
706.0	5.82	145.40	705.7	-8.0	11.9	13.9	14.4	123.79	4.70
736.0	6.13	144.77	735.6	-10.6	13.7	17.0	17.3	127.55	1.06
766.0	5.83	147.81	765.4	-13.2	15.5	20.1	20.3	130.37	1.45
796.0	5.87	148.59	795.2	-15.8	17.1	23.1	23.2	132.68	0.30
826.0	5.87	149.77	825.1	-18.4	18.7	26.1	26.2	134.59	0.40
856.0	6.77	147.84	854.9	-21.2	20.4	29.4	29.4	136.16	3.08
886.0	8.66	142.78	884.6	-24.5	22.7	33.4	33.4	137.22	6.69
916.0	9.88	142.39	914.2	-28.3	25.6	38.2	38.2	137.90	4.07
946.0	9.63	140.20	943.8	-32.3	28.8	43.3	43.3	138.30	1.49
976.0	9.60	142.15	973.4	-36.2	31.9	48.3	48.3	138.60	1.09
1,006.0	10.60	142.55	1,002.9	-40.4	35.1	53.5	53.5	138.97	3.34
1,036.0	12.77	142.07	1,032.3	-45.2	38.9	59.6	59.6	139.30	7.24
1,066.0	13.93	141.15	1,061.5	-50.6	43.2	66.5	66.5	139.54	3.93
1,096.0	13.96	141.89	1,090.6	-56.3	47.7	73.7	73.7	139.74	0.60
1,126.0	14.86	141.54	1,119.6	-62.1	52.3	81.2	81.2	139.92	3.01
1,156.0	15.21	141.33	1,148.6	-68.2	57.1	89.0	89.0	140.05	1.18
1,186.0	16.29	138.16	1,177.5	-74.4	62.4	97.1	97.1	140.02	4.60
1,216.0	16.45	137.30	1,206.3	-80.7	68.1	105.6	105.6	139.84	0.97
1,246.0	18.22	136.69	1,234.9	-87.2	74.2	114.5	114.5	139.61	5.93
1,276.0	20.01	136.44	1,263.3	-94.4	80.9	124.3	124.3	139.37	5.97
1,306.0	22.17	135.48	1,291.2	-102.1	88.5	135.1	135.1	139.10	7.29



# HG Energy, LLC

## Javins Corporation Javins Survey Report



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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

### Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100usft)
1,336.0	24.38	134.38	1,318.8	-110.5	96.8	146.9	146.9	138.76	7.51
1,366.0	25.52	132.89	1,346.0	-119.2	106.0	159.5	159.5	138.35	4.34
1,396.0	25.33	134.99	1,373.1	-128.1	115.3	172.3	172.4	138.02	3.07
1,426.0	26.55	136.93	1,400.1	-137.6	124.4	185.4	185.5	137.88	4.95
1,456.0	28.28	138.81	1,426.7	-147.8	133.7	199.2	199.3	137.88	6.45
1,486.0	29.92	140.60	1,452.9	-159.0	143.1	213.8	213.9	138.01	6.19
1,516.0	30.77	141.40	1,478.8	-170.7	152.6	229.0	229.0	138.20	3.14
1,546.0	31.00	142.36	1,504.6	-182.8	162.1	244.4	244.4	138.44	1.81
1,576.0	31.97	142.46	1,530.1	-195.3	171.7	260.0	260.0	138.68	3.24
1,606.0	32.88	141.18	1,555.5	-207.9	181.6	276.1	276.1	138.86	3.80
1,636.0	32.87	140.38	1,580.7	-220.5	191.9	292.3	292.3	138.97	1.45
1,666.0	33.24	140.16	1,605.8	-233.1	202.4	308.7	308.7	139.03	1.30
1,696.0	34.48	139.18	1,630.7	-245.8	213.2	325.4	325.4	139.07	4.52
1,726.0	34.47	139.81	1,655.4	-258.8	224.2	342.4	342.4	139.09	1.19
1,756.0	35.92	139.92	1,680.0	-272.0	235.4	359.7	359.7	139.13	4.84
1,786.0	36.10	140.23	1,704.2	-285.5	246.7	377.3	377.3	139.17	0.85
1,816.0	38.38	141.36	1,728.1	-299.6	258.2	395.5	395.5	139.24	7.93
1,846.0	40.62	142.06	1,751.3	-314.5	270.0	414.5	414.5	139.36	7.61
1,876.0	42.20	141.59	1,773.8	-330.1	282.3	434.4	434.4	139.47	5.37
1,906.0	41.59	141.60	1,796.1	-345.8	294.7	454.4	454.4	139.56	2.03
1,936.0	40.77	140.74	1,818.7	-361.2	307.1	474.1	474.1	139.63	3.32
1,966.0	40.65	140.94	1,841.4	-376.4	319.4	493.7	493.7	139.68	0.59
1,996.0	41.45	140.27	1,864.0	-391.6	331.9	513.4	513.4	139.71	3.04
2,026.0	41.69	139.79	1,886.5	-406.9	344.7	533.3	533.3	139.73	1.33
2,056.0	43.01	139.39	1,908.6	-422.3	357.8	553.5	553.5	139.72	4.49
2,086.0	43.23	139.40	1,930.5	-437.8	371.2	574.0	574.0	139.71	0.73
2,116.0	45.11	138.21	1,952.1	-453.6	385.0	594.9	594.9	139.68	6.85

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### Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100usft)
2,146.0	45.17	137.86	1,973.2	-469.4	399.2	616.1	616.2	139.62	0.85
2,176.0	44.02	136.86	1,994.6	-484.9	413.4	637.2	637.2	139.55	4.49
2,206.0	43.73	136.69	2,016.2	-500.0	427.7	658.0	658.0	139.46	1.04
2,236.0	43.94	137.27	2,037.9	-515.2	441.9	678.7	678.7	139.38	1.51
2,266.0	43.99	137.09	2,059.4	-530.5	456.0	699.5	699.5	139.32	0.45
2,296.0	44.33	136.88	2,081.0	-545.8	470.3	720.4	720.4	139.25	1.23
2,326.0	43.95	137.05	2,102.5	-561.0	484.5	741.3	741.3	139.19	1.33
2,356.0	43.77	137.24	2,124.1	-576.3	498.7	762.1	762.1	139.13	0.74
2,386.0	44.09	136.72	2,145.7	-591.5	512.9	782.9	782.9	139.07	1.61
2,416.0	43.30	137.17	2,167.4	-606.6	527.0	803.6	803.6	139.02	2.83
2,446.0	42.36	136.18	2,189.4	-621.5	541.0	824.0	824.0	138.96	3.85
2,476.0	40.66	136.36	2,211.9	-635.8	554.7	843.8	843.8	138.90	5.68
2,506.0	38.63	135.30	2,235.0	-649.6	568.1	862.9	862.9	138.83	7.13
2,536.0	36.89	134.17	2,258.7	-662.5	581.1	881.2	881.3	138.74	6.24
2,597.0	36.89	134.17	2,307.5	-688.0	607.4	917.7	917.8	138.56	0.00

### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,536.0	2,258.7	-662.5	581.1	Final Javins MWD - 2536.00' MD
2,597.0	2,307.5	-688.0	607.4	PTB - 2597.00' MD

Checked By: Chris Thompson      Approved By: Chris Thompson      Date: 8/30/2022

*Handwritten initials/signature*