Hydrology and Hydraulics Report

Codyville Twp Little Tomah Bridge #2472

WIN 025387.00

WIN:	25387.00	**Project Name:**	
Town:	Codyville Plt	**Stream Name:**	Tomah Stream
Route No.	ME6 (Vanceboro Rd)	**Bridge Name:**	Little Tomah
Asset ID:	2472	**Analysis by:**	csh
Lat:	45.45920 **Long:** -67.63480	**Date:**	3/8/2022

Peak Flow Calculations by USGS Regression Equations (Lombard/Hodgkins, 2021; Hodgkins, 1999 & Lombard/Hodgkins, 2015)

Enter data in blue cells only!

ver. 2021 Jan 01

	km²	mi²	ac	*Enter data in [mi²]*
A	42.86	16.55	10592.0	Watershed Area *DRNAREA*
W	3.83	1.5	945.9	Wetlands area (by NWI)
P_c	602172	5038022		watershed centroid (E, N; UTM 19N; meters)
County	Aroostook S			*choose county from drop-down menu*

Worksheet prepared by:
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Augusta, ME 04333-0016
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Watershed Characteristics from StreamStats

STORNWI	8.93	NWI Wetlands %
SANDGRAVF	0.00	sand & gravel aquifer as decimal fraction of watershed A
ELEV	488	mean basin elevation (ft)
BSLDEM10M	6.25	mean basin slope (%)
COASTDIST	80.00	distance from the coast (mi)
ELEVMAX	1085	maximum basin elevation (ft)
LC06WATER	1.57	percent of drainage basin land cover as open water
PRECIP	44.0	mean annual precipitation
STATSGOA	3.78	mean basin percentage of hydrological soil group A

Ret Pd T (yr)	I24	Q_T (ft³/s) *1999 / 2015*	Q_T (ft³/s) *2020*	Q_T (ft³/s) ***Design***
1.1			281	***280***
2	2.71	532	522	***520***
5	3.29	830	770	***770***
10	3.78	1053	945	***945***
25	4.44	1353	1173	***1175***
50	4.95	1589	1360	***1360***
100	5.47	1842	1539	***1540***
200	6.03	2104	1719	***1720***
500	6.81	2471	1987	***1985***

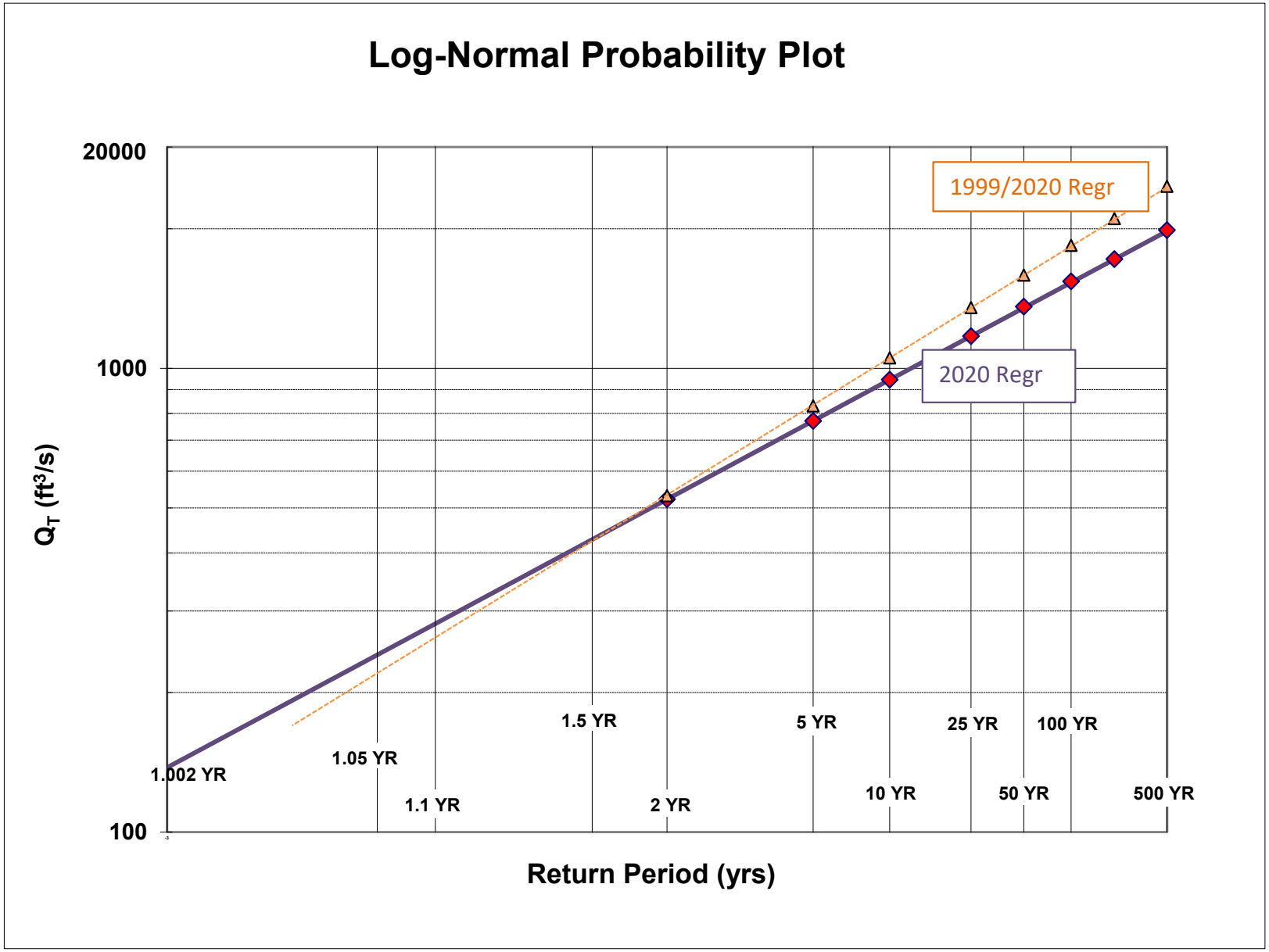
References:

Hodgkins, G.A., 1999.
Estimating the magnitude of peak flows for streams in Maine for Selected Recurrence Intervals
WRIR 99-4008, USGS Augusta, ME

Lombard, P.J. & G.A. Hodgkins, 2015.
Peak flow regression equations for small, ungaged streams: in Maine: Comparing Map-Based to Field-Based Variables
SIR 2015-4059, USGS, Augusta, ME

Lombard, P.J. & G.A. Hodgkins, 2021.
Estimating Flood Magnitude and Frequency on Gaged and Ungaged Streams in Maine
SIR 2021-xxxx, USGS, Augusta, ME.

Instructions:
Enter values in blue cells only, watershed data from StreamStats
Copy I24 values from Stream Stats
Use results under "Design"
Check against gage data and FEMA studies if available
Questions? Check with ENV / Hydrology Section


Log-Normal Probability Plot
20000
1000
100
Q_T (ft^3/s)
1999/2020 Regr
2020 Regr
1.002 YR
1.05 YR
1.1 YR
1.5 YR
2 YR
5 YR
10 YR
25 YR
50 YR
100 YR
500 YR
Return Period (yrs)

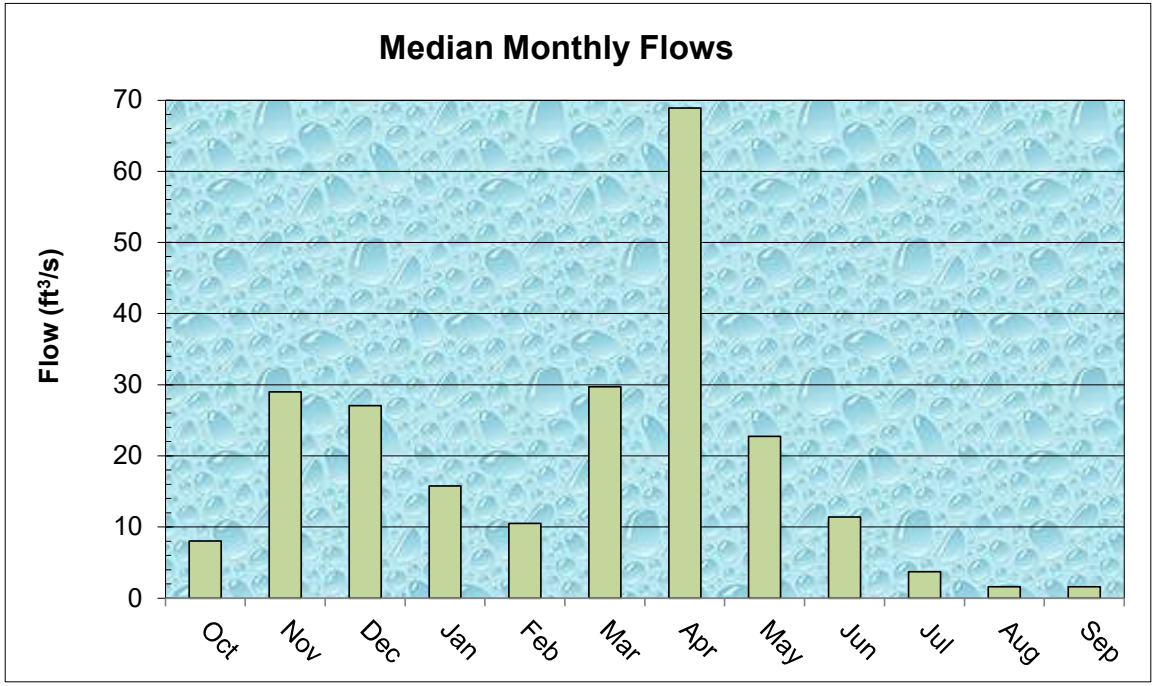
WIN:	25387.00	**Project Name:**	0
Town:	Codyville Plt	**Stream Name:**	Tomah Stream
Route No.	ME6 (Vanceboro Rd)	**Bridge Name:**	Little Tomah
Asset ID:	2472	**Analysis by:**	csh
Lat:	45.45920 **Long:** -67.63480	**Date:**	3/8/2022

DO NOT ENTER ANY DATA ON THIS PAGE; EVERYTHING IS CALCULATED

MAINE MONTHLY MEDIAN FLOWS and HYDRAULIC GEOMETRY BY USGS REGRESSION EQUATIONS (2004, 2013, 2015)

	Value	Variable	Explanation
	16.55	*A*	Area (mi^2)
602172	5038022	P_c	Watershed centroid (E,N; UTM; Zone 19; meters)
	79.88	*DIST*	Distance from Coastal reference line (mi)
	44.0	*pptA*	Mean Annual Precipitation (inches)
	0.00	*SG*	Sand & Gravel Aquifer (decimal fraction of watershed area)

Month	Q_{median} (ft3/s)	(m^3/s)
Jan	**15.77**	0.4470
Feb	**10.51**	0.2980
Mar	**29.72**	0.8422
Apr	**68.87**	1.9517
May	**22.73**	0.6442
Jun	**11.41**	0.3234
Jul	**3.72**	0.1055
Aug	**1.59**	0.0451
Sep	**1.59**	0.0451
Oct	**8.03**	0.2275
Nov	**29.01**	0.8222
Dec	**27.04**	0.7663



Q_{bf}	**98.8**	
ann avg	**35.1**	
ann med	**15.1**	
$Q_{1.002}$	**137.7**	
$Q_{1.01}$	**177.6**	
$Q_{1.05}$	**241.2**	
Q_{bf}	**218.2**	assume v = 4ft/s

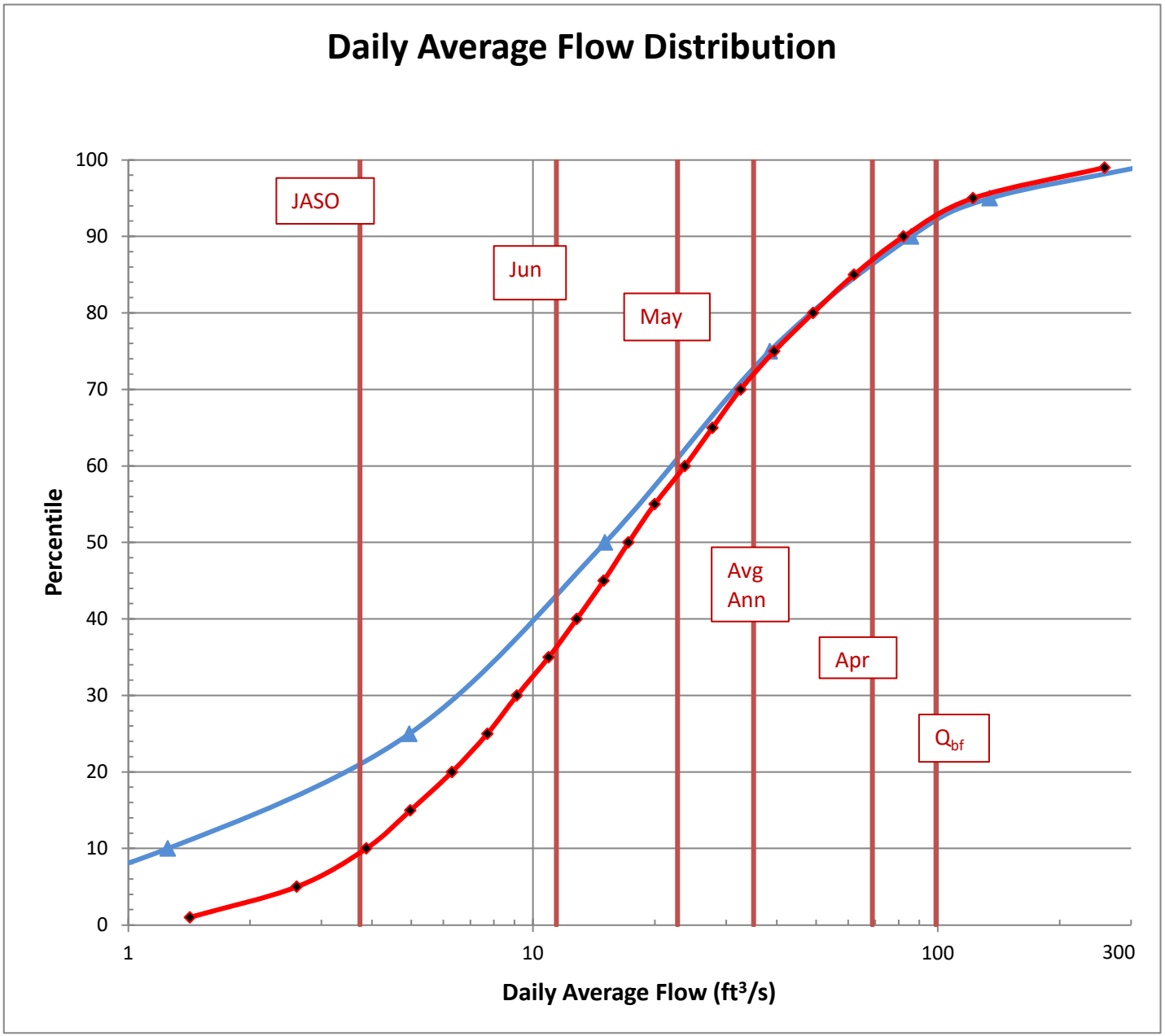
W_{bf}	**35.4**	estimated bankfull width (ft)
d_{bf}	**1.5**	estimated bankfull depth (ft)
A_{bf}	**50.8**	estimated bankfull flow area (ft^2)

References

Dudley, 2013. FY2013 Progress Report - Phase 1 …, USFWS QRP Project

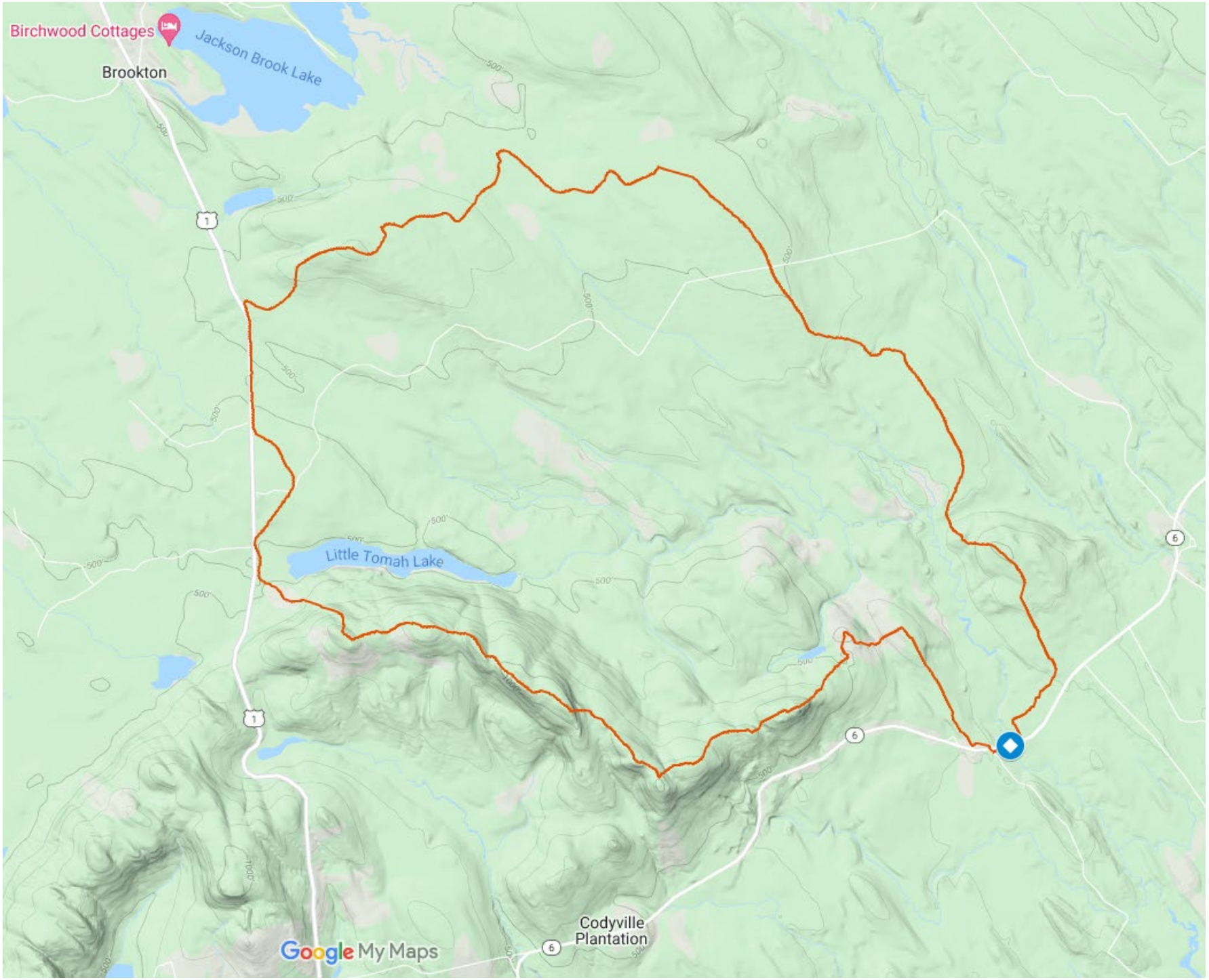
Dudley, 2004. Estimating Monthly Streamflows … , SIR 2004-5026

Dudley, 2015. Regression Equations for Monthly & Annual Mean..., USGS SIR 2015-5151



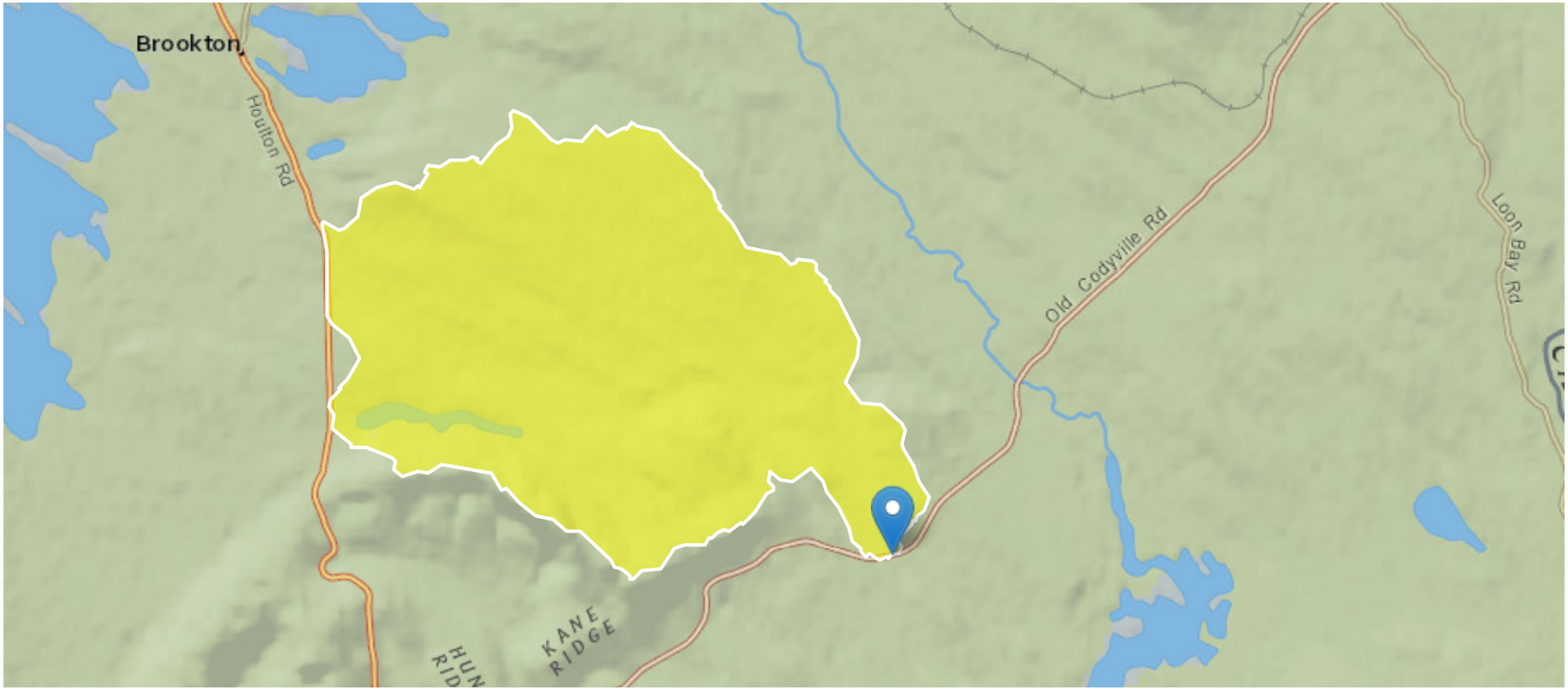
Daily Avg Flow Dist		
A_{ws} = (mi^2)		16.6
Q (ft^3/s)		
Pctl	**Median**	**84th pctl**
1	1.42	2.51
5	2.61	4.19
10	3.87	5.82
15	4.97	7.26
20	6.30	8.81
25	7.71	10.33
30	9.12	11.76
35	10.92	13.44
40	12.81	15.46
45	14.93	17.48
50	17.19	20.64
55	19.96	24.02
60	23.71	28.19
65	27.74	32.85
70	32.54	38.32
75	39.44	46.09
80	49.19	55.02
85	62.07	70.51
90	82.22	94.68
95	122.02	147.24
99	258.03	339.70

Q_{bf}	98.8
$Q_{1.002}$	137.7
$Q_{1.1}$	281.4
Q_2	522.0


Birchwood Cottages
Jackson Brook Lake
Brookton
Little Tomah Lake
Codyville Plantation
Google My Maps

Codyville 25387 Little Tomah Br ME6 (Vanceboro Rd)

Region ID: ME
Workspace ID: ME20220303230507334000
Clicked Point (Latitude, Longitude): 45.45920, -67.63480
Time: 2022-03-03 18:05:30 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	16.55	square miles
I24H2Y	Maximum 24-hour precipitation that occurs on average once in 2 years - Equivalent to precipitation intensity index	2.71	inches
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	8.93	percent
I24H5Y	Maximum 24-hour precipitation that occurs on average once in 5 years	3.29	inches
I24H10Y	Maximum 24-hour precipitation that occurs on average once in 10 years	3.78	inches
I24H25Y	Maximum 24-hour precipitation that occurs on average once in 25 years	4.44	inches
I24H50Y	Maximum 24-hour precipitation that occurs on average once in 50 years	4.95	inches
I24H100Y	Maximum 24-hour precipitation that occurs on average once in 100 years	5.47	inches
I24H200Y	Maximum 24-hour precipitation that occurs on average once in 200 years	6.03	inches
I24H500Y	Maximum 24-hour precipitation that occurs on average once in 500 years	6.81	inches
SANDGRAVAF	Fraction of land surface underlain by sand and gravel aquifers	0	dimensionless
ELEV	Mean Basin Elevation	488.1	feet
BSLDEM10M	Mean basin slope computed from 10 m DEM	6.25	percent
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	602171.84	meters
CENTROIDY	Basin centroid vertical (y) location in state plane units	5038021.94	meters
COASTDIST	Shortest distance from the coastline to the basin centroid	80	miles
ELEVMAX	Maximum basin elevation	1084.8	feet
LC06WATER	Percent of open water, class 11, from NLCD 2006	1.57	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	0.15	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.015	percent

Parameter Code	Parameter Description	Value	Unit
PRDECFEB90	Basin average mean precipitation for December to February from PRISM 1961-1990	10.4	inches
PRECIP	Mean Annual Precipitation	44	inches
SANDGRAVAP	Percentage of land surface underlain by sand and gravel aquifers	0	percent
STATSGOA	Percentage of area of Hydrologic Soil Type A from STATSGO	3.78	percent
STORNWI	Percentage of strorage (combined water bodies and wetlands) from the Nationa Wetlands Inventory	9.04	percent

Peak-Flow Statistics Parameters [Statewide multiparameter peakflows SIR 2020 5092]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.55	square miles	0.26	5680
I24H2Y	24 Hour 2 Year Precipitation	2.71	inches	1.92	4.17
STORAGE	Percent Storage	8.93	percent	0	29.4
I24H5Y	24 Hour 5 Year Precipitation	3.29	inches	2.48	5.38
I24H10Y	24 Hour 10 Year Precipitation	3.78	inches	2.84	6.38
I24H25Y	24 Hour 25 Year Precipitation	4.44	inches	3.3	7.75
I24H50Y	24 Hour 50 Year Precipitation	4.95	inches	3.65	8.79
I24H100Y	24 Hour 100 Year Precipitation	5.47	inches	3.99	9.88
I24H200Y	24 Hour 200 YearPrecipitation	6.03	inches	5.26	11.1
I24H500Y	24 Hour 500 Year Precipitation	6.81	inches	5.95	13.1

Peak-Flow Statistics Flow Report [Statewide multiparameter peakflows SIR 2020 5092]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIl	PIu	ASEp
50-percent AEP flood	522	ft^3/s	281	968	39.1
20-percent AEP flood	770	ft^3/s	421	1410	38.1
10-percent AEP flood	949	ft^3/s	513	1760	38.9
4-percent AEP flood	1180	ft^3/s	629	2210	39.9
2-percent AEP flood	1360	ft^3/s	714	2590	39.7
1-percent AEP flood	1540	ft^3/s	813	2920	40.7
0.5-percent AEP flood	1730	ft^3/s	883	3390	42.8
0.2-percent AEP flood	1990	ft^3/s	1000	3950	43.8

Peak-Flow Statistics Citations

Lombard, P.J., and Hodgkins, G.A.,2020, Estimating flood magnitude and frequency on gaged and ungaged streams in Maine: U.S. Geological Survey Scientific Investigations Report 2020–5092, 56 p. (https://doi.org/10.3133/sir20205092)

Flow-Duration Statistics Parameters [Statewide Annual SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.55	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0	dimensionless	0	0.212
ELEV	Mean Basin Elevation	488.1	feet	239	2120

Flow-Duration Statistics Flow Report [Statewide Annual SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
1 Percent Duration	0.112	ft^3/s	144
5 Percent Duration	0.528	ft^3/s	62
10 Percent Duration	1.25	ft^3/s	41
25 Percent Duration	4.95	ft^3/s	22
50 Percent Duration	15.1	ft^3/s	20
75 Percent Duration	38.4	ft^3/s	17
90 Percent Duration	85.8	ft^3/s	17
95 Percent Duration	134	ft^3/s	18
99 Percent Duration	311	ft^3/s	29

Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

Annual Flow Statistics Parameters [Statewide Annual SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.55	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0	dimensionless	0	0.212
ELEV	Mean Basin Elevation	488.1	feet	239	2120

Annual Flow Statistics Flow Report [Statewide Annual SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
Mean Annual Flow	35.1	ft^3/s	16

Annual Flow Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.55	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.55	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.55	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit

Statistic	Value	Unit
Bieger_D_channel_width	48.7	ft
Bieger_D_channel_depth	2.51	ft
Bieger_D_channel_cross_sectional_area	124	ft^2

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	55.4	ft
Bieger_P_channel_depth	2.55	ft
Bieger_P_channel_cross_sectional_area	145	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	33.3	ft
Bieger_USA_channel_depth	2.19	ft
Bieger_USA_channel_cross_sectional_area	77.8	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

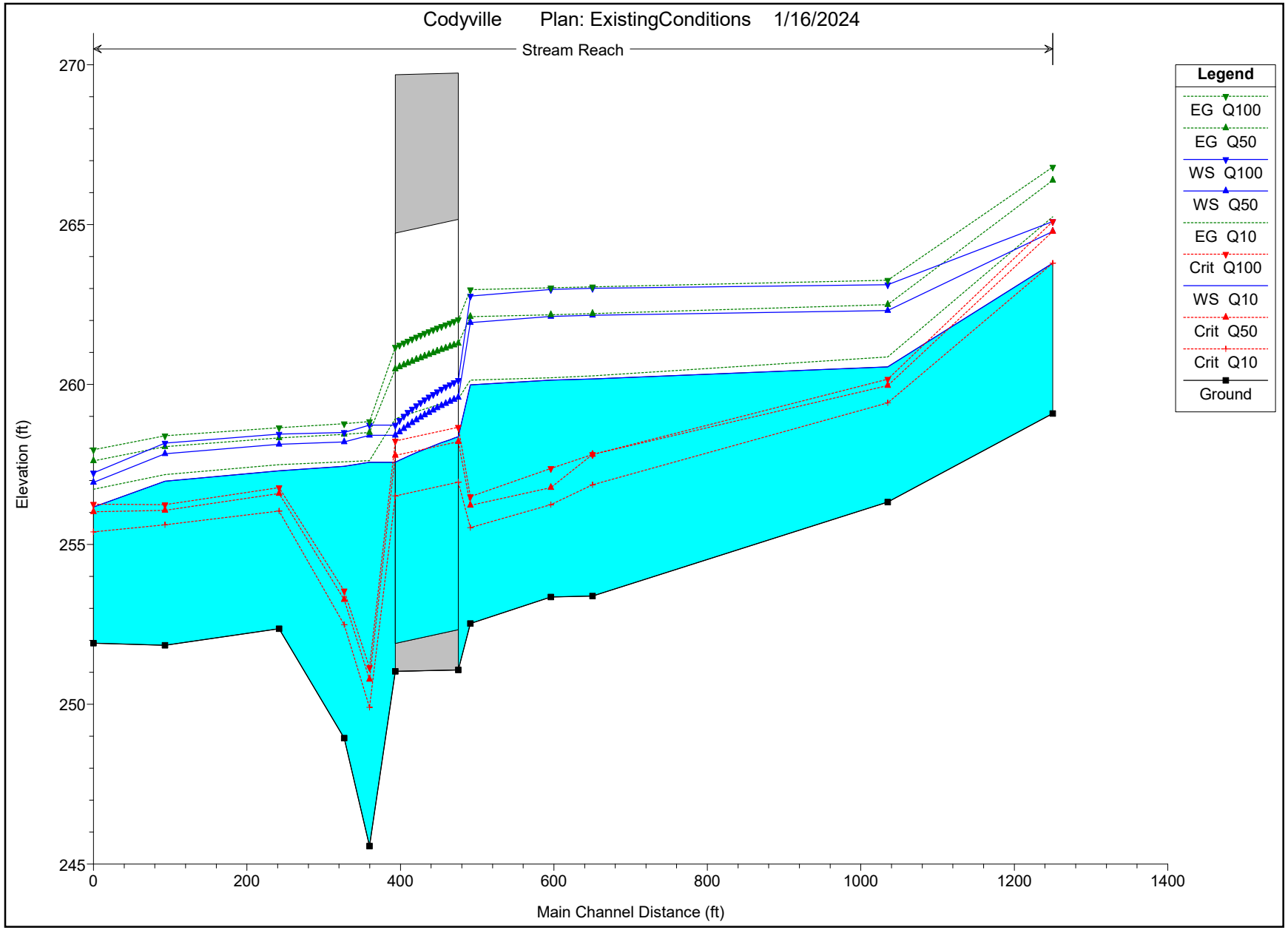
Statistic	Value	Unit
Bieger_D_channel_width	48.7	ft
Bieger_D_channel_depth	2.51	ft
Bieger_D_channel_cross_sectional_area	124	ft^2
Bieger_P_channel_width	55.4	ft

Statistic	Value	Unit
Bieger_P_channel_depth	2.55	ft
Bieger_P_channel_cross_sectional_area	145	ft^2
Bieger_USA_channel_width	33.3	ft
Bieger_USA_channel_depth	2.19	ft
Bieger_USA_channel_cross_sectional_area	77.8	ft^2

Bankfull Statistics Citations

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

Application Version: 4.7.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2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EG Q10
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WS Q10
Crit Q50
Crit Q10
Ground
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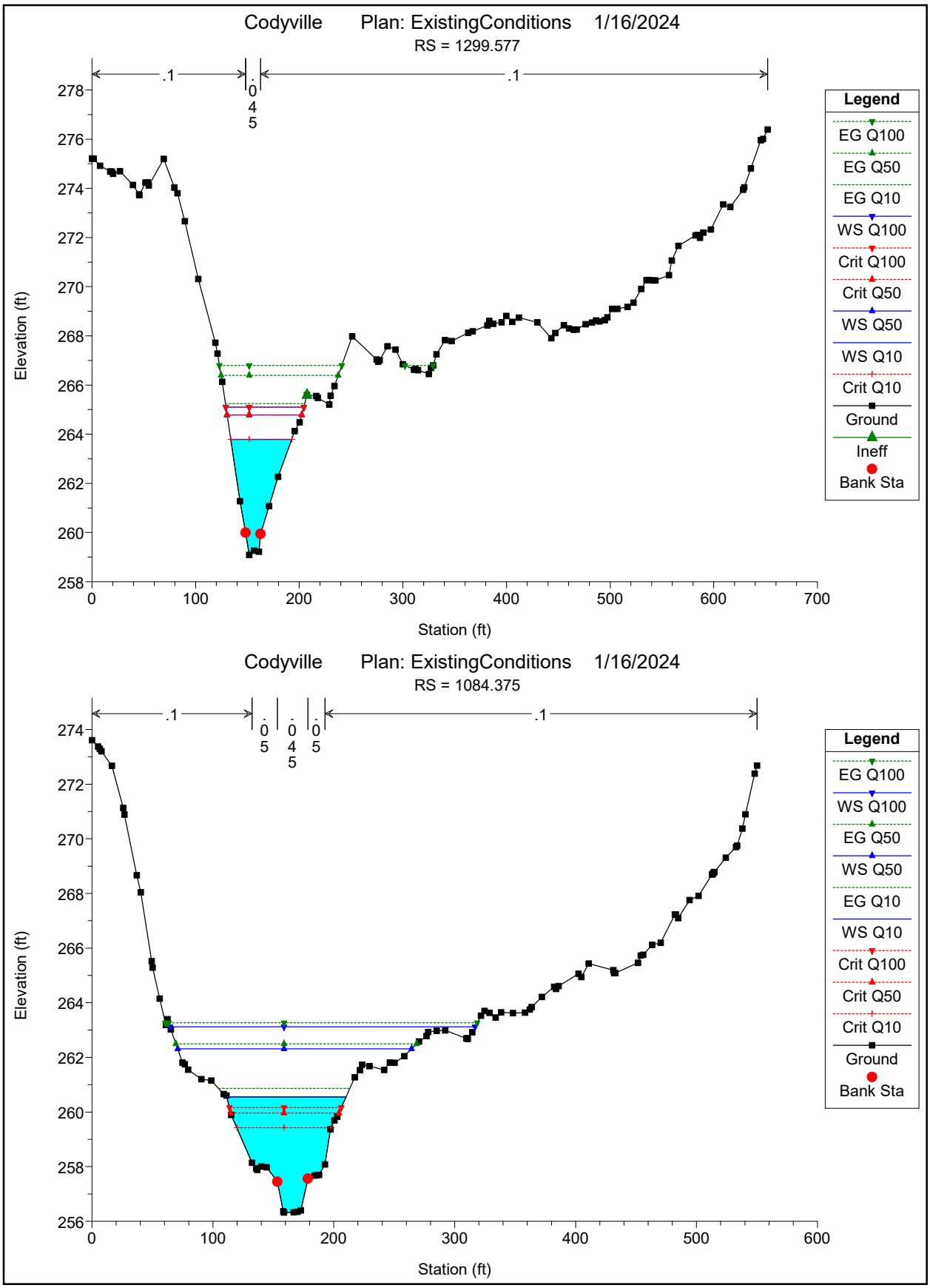
255
250
245
0
200
400
600
800
1000
1200
1400
Main Channel Distance (ft)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Station (ft)
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Crit Q50
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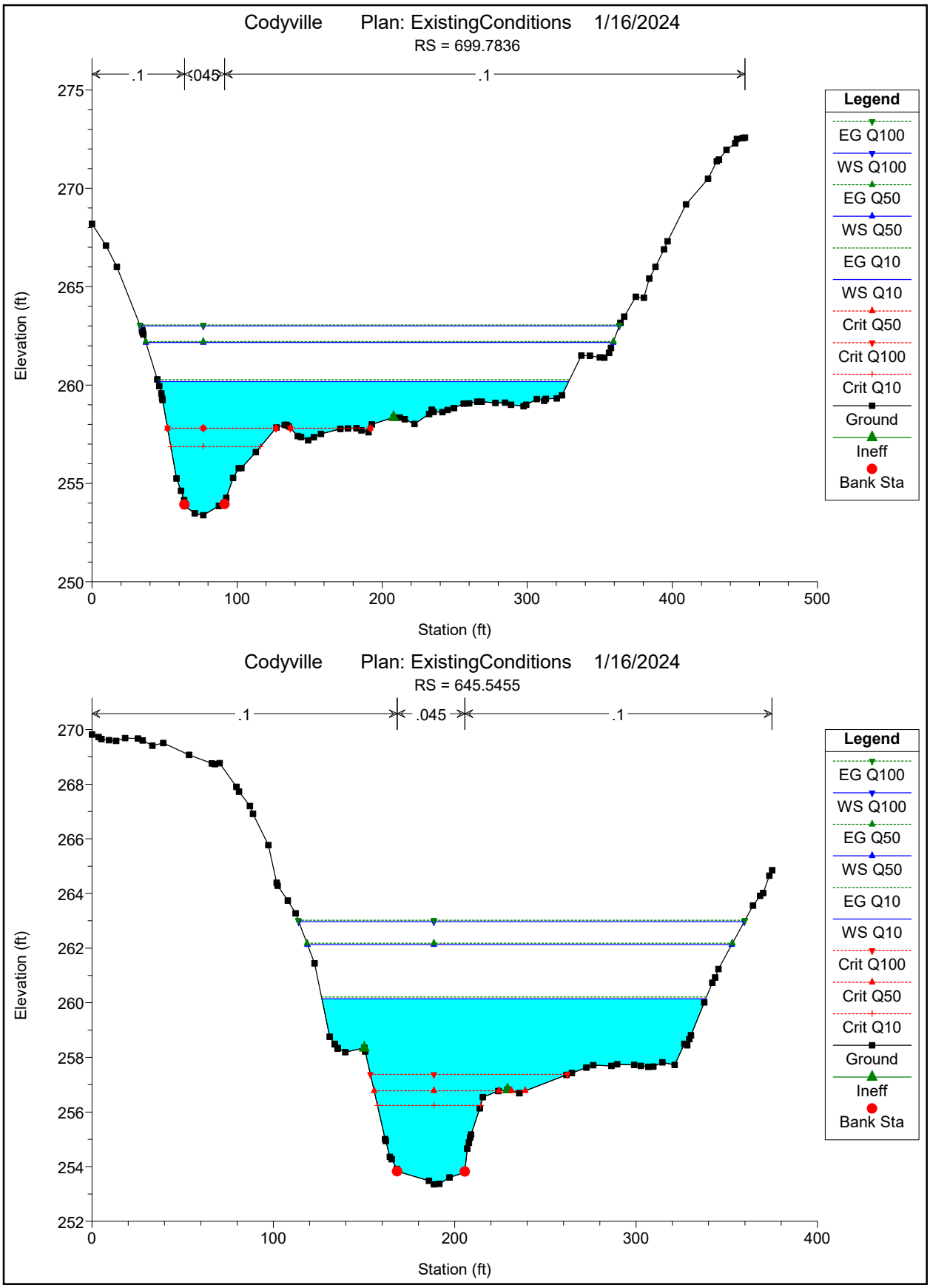
Ground
Bank Sta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Ground
Ineff
Bank Sta
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Station (ft)
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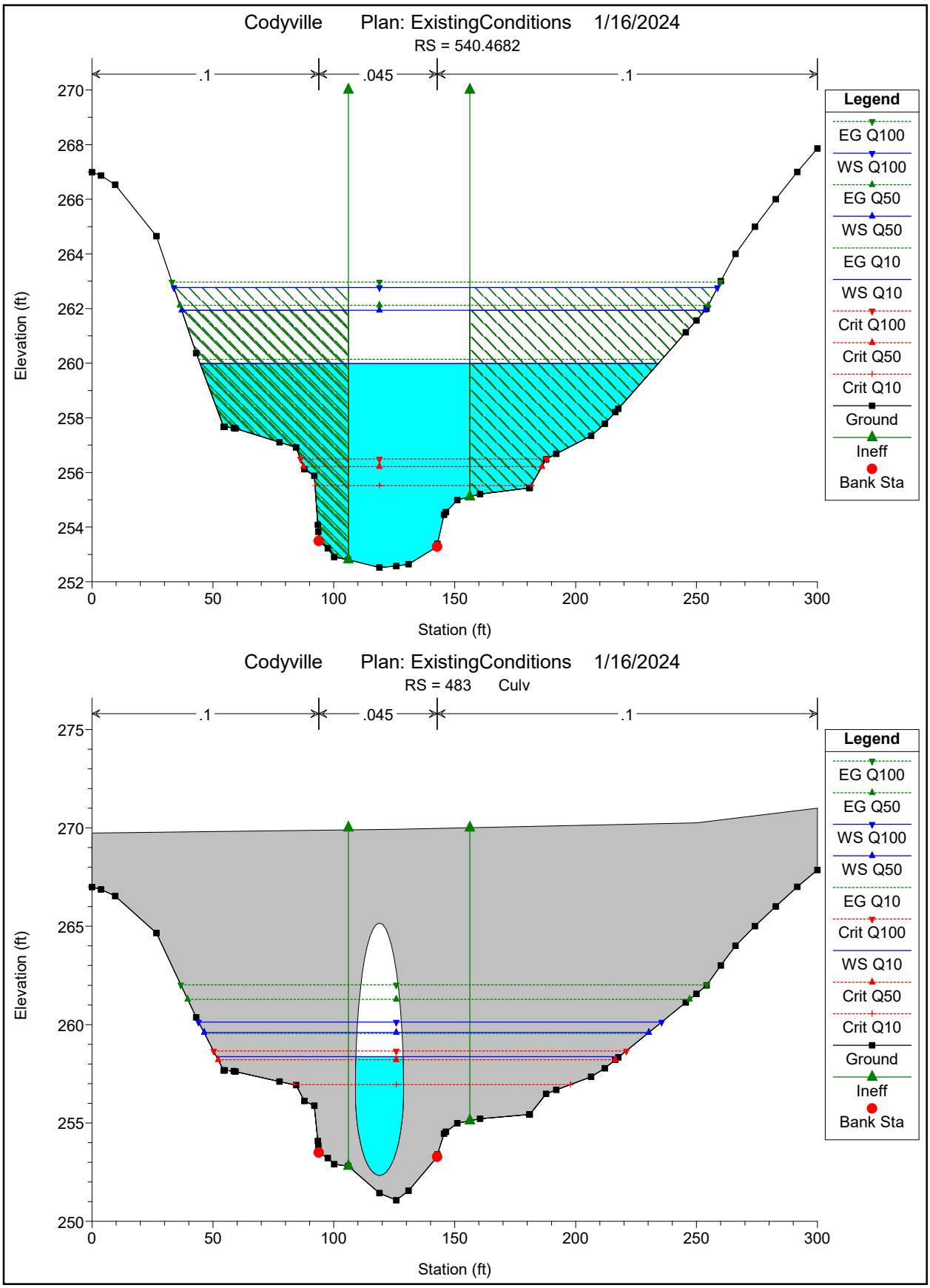
Ground
Ineff
Bank Sta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Ground
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Codyville Plan: ExistingConditions 1/16/2024
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Elevation (ft)
Station (ft)
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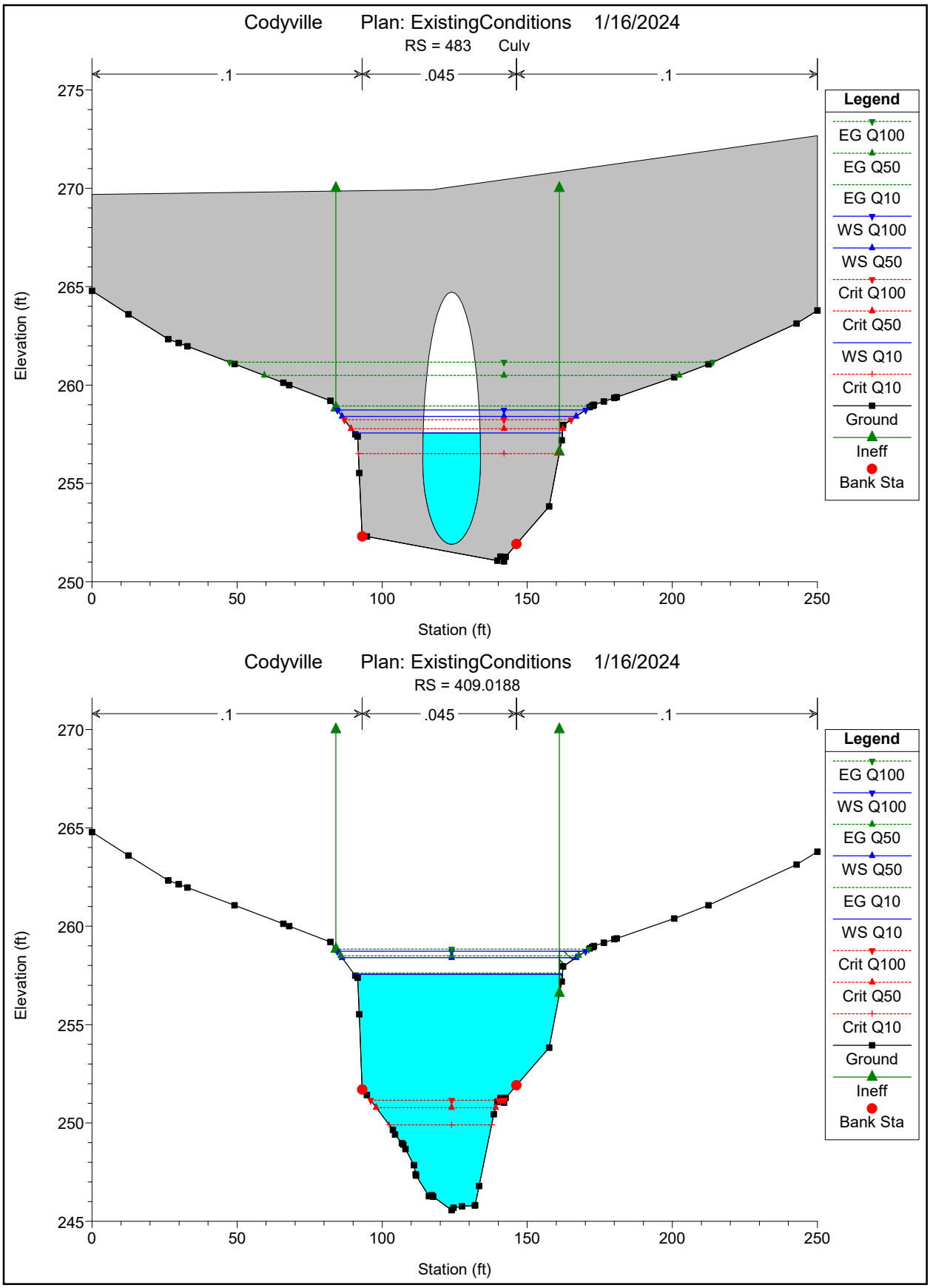
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Elevation (ft)
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Station (ft)
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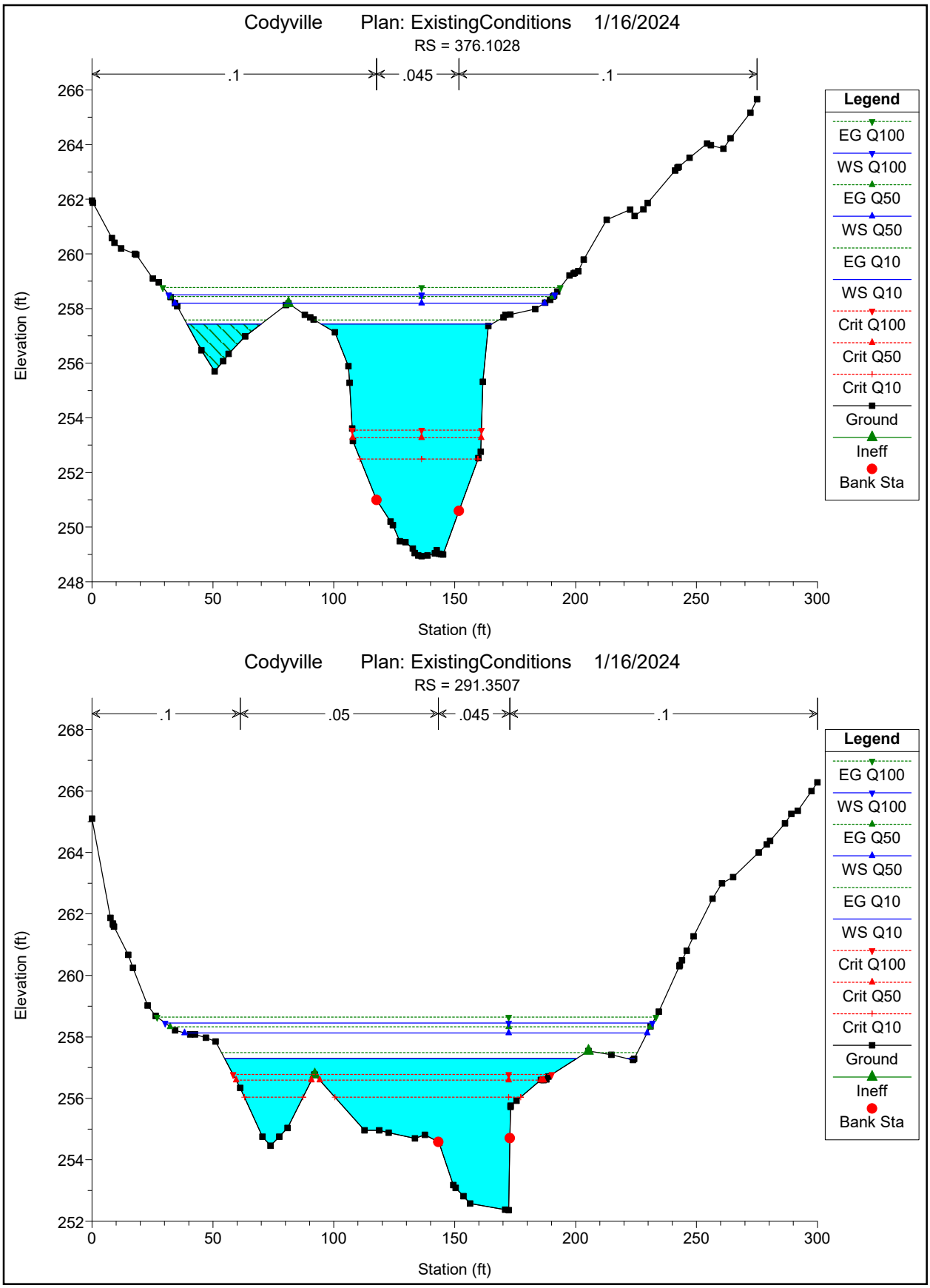
Ineff
Bank Sta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Crit Q50
Crit Q10
Ground
Ineff
Bank Sta
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Station (ft)
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Ground
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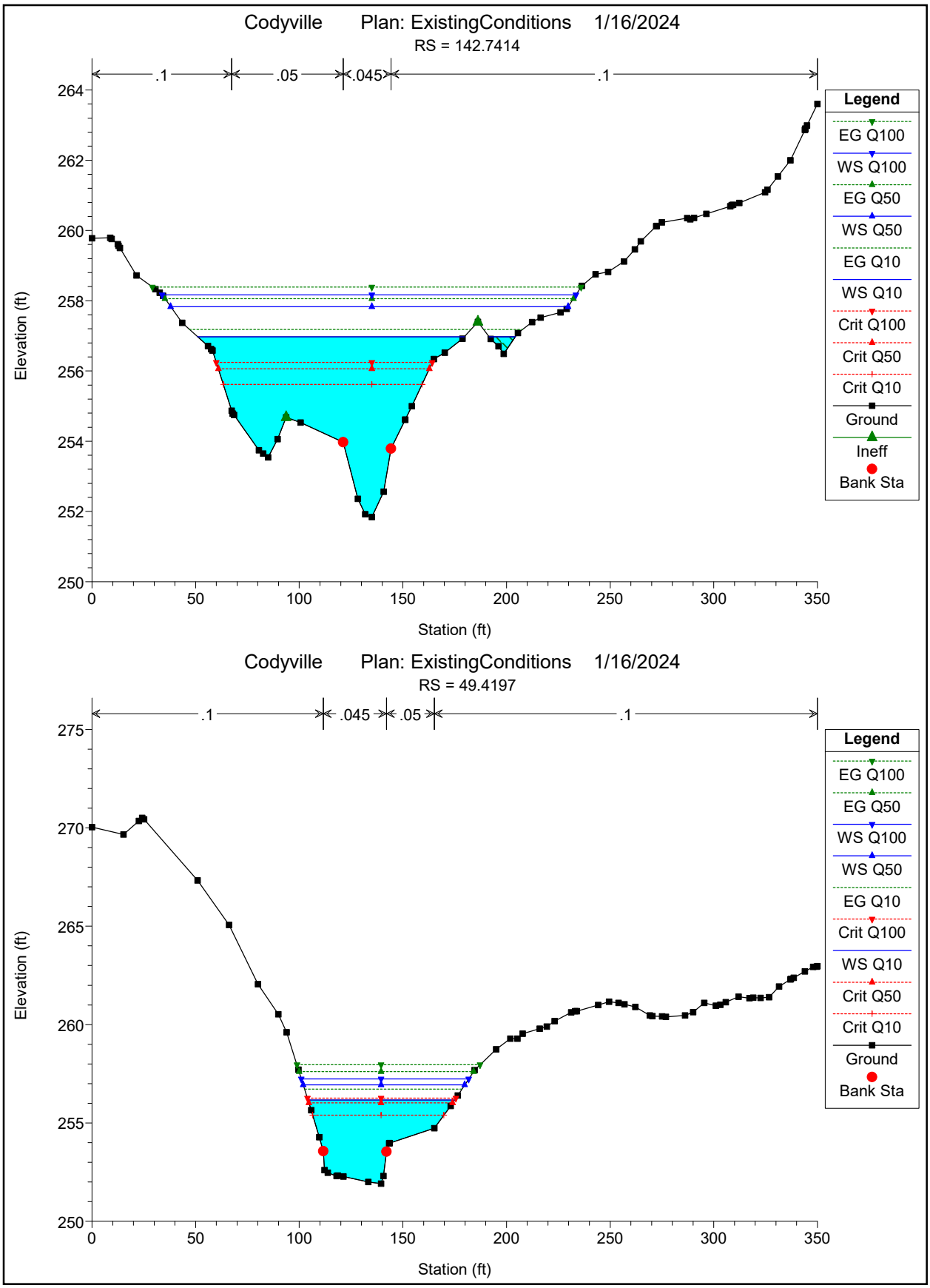
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Ground
Ineff
Bank Sta
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Elevation (ft)
Station (ft)
Legend
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WS Q100
WS Q50
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WS Q10
Crit Q50
Crit Q10
Ground
Bank Sta

HEC-RAS Plan: Exist River: Stream Reach: Reach

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach	1299.577	Q1.1	280.00	259.09	261.69	261.58	262.45	0.016496	7.41	50.96	34.06	0.85
Reach	1299.577	Q10	945.00	259.09	263.79	263.79	265.25	0.015670	11.06	148.26	58.92	0.92
Reach	1299.577	Q25	1175.00	259.09	264.25	264.25	265.92	0.016276	12.03	176.68	65.12	0.96
Reach	1299.577	Q50	1360.00	259.09	264.78	264.78	266.39	0.014208	12.04	213.42	72.07	0.91
Reach	1299.577	Q100	1540.00	259.09	265.10	265.10	266.80	0.014280	12.53	236.78	75.22	0.92
Reach	1299.577	Q500	1985.00	259.09	266.23	266.23	267.84	0.011366	12.60	347.10	111.10	0.85
Reach	1084.375	Q1.1	280.00	256.32	258.25	258.25	258.74	0.016409	5.89	57.25	61.95	0.81
Reach	1084.375	Q10	945.00	256.32	260.55	259.43	260.86	0.004271	5.36	239.39	98.67	0.48
Reach	1084.375	Q25	1175.00	256.32	261.48	259.74	261.73	0.002765	4.97	347.99	139.34	0.40
Reach	1084.375	Q50	1360.00	256.32	262.31	259.97	262.50	0.001867	4.53	491.46	193.49	0.33
Reach	1084.375	Q100	1540.00	256.32	263.12	260.16	263.26	0.001316	4.15	666.16	252.42	0.29
Reach	1084.375	Q500	1985.00	256.32	265.13	260.59	265.21	0.000577	3.29	1286.92	359.40	0.20
Reach	699.7836	Q1.1	280.00	253.38	256.48	255.10	256.63	0.002433	3.27	109.29	56.24	0.34
Reach	699.7836	Q10	945.00	253.38	260.17	256.86	260.27	0.000753	3.17	730.10	283.05	0.22
Reach	699.7836	Q25	1175.00	253.38	261.28	257.32	261.35	0.000481	2.81	1049.75	294.97	0.18
Reach	699.7836	Q50	1360.00	253.38	262.16	257.81	262.22	0.000367	2.64	1327.17	321.97	0.16
Reach	699.7836	Q100	1540.00	253.38	263.01	257.81	263.05	0.000283	2.47	1603.03	330.17	0.14
Reach	699.7836	Q500	1985.00	253.38	265.07	259.22	265.10	0.000174	2.21	2312.53	360.59	0.12
Reach	645.5455	Q1.1	280.00	253.35	256.42	254.79	256.51	0.001426	2.49	132.20	58.19	0.26
Reach	645.5455	Q10	945.00	253.35	260.14	256.24	260.21	0.000502	2.59	724.87	211.63	0.18
Reach	645.5455	Q25	1175.00	253.35	261.24	256.54	261.30	0.000378	2.49	964.27	222.13	0.16
Reach	645.5455	Q50	1360.00	253.35	262.13	256.77	262.18	0.000311	2.43	1165.84	233.91	0.15
Reach	645.5455	Q100	1540.00	253.35	262.97	257.37	263.02	0.000264	2.38	1368.60	245.68	0.14
Reach	645.5455	Q500	1985.00	253.35	265.03	257.74	265.08	0.000185	2.28	1909.78	275.27	0.12
Reach	540.4682	Q1.1	280.00	252.52	256.34	253.95	256.40	0.000677	2.02	155.09	99.97	0.19
Reach	540.4682	Q10	945.00	252.52	259.99	255.52	260.14	0.000680	3.23	338.79	189.50	0.21
Reach	540.4682	Q25	1175.00	252.52	261.07	255.91	261.24	0.000654	3.47	393.00	204.53	0.21
Reach	540.4682	Q50	1360.00	252.52	261.94	256.22	262.12	0.000624	3.62	436.70	216.47	0.21
Reach	540.4682	Q100	1540.00	252.52	262.77	256.49	262.97	0.000595	3.75	478.56	224.81	0.21
Reach	540.4682	Q500	1985.00	252.52	264.80	257.12	265.03	0.000527	3.99	580.87	247.35	0.20
Reach	483		Culvert									
Reach	409.0188	Q1.1	280.00	245.56	255.69	247.82	255.70	0.000035	0.71	424.09	67.88	0.05
Reach	409.0188	Q10	945.00	245.56	257.56	249.90	257.62	0.000179	1.88	553.25	71.76	0.11
Reach	409.0188	Q25	1175.00	245.56	258.05	250.41	258.12	0.000232	2.21	588.32	75.38	0.13
Reach	409.0188	Q50	1360.00	245.56	258.41	250.78	258.50	0.000273	2.46	614.79	80.76	0.14
Reach	409.0188	Q100	1540.00	245.56	258.73	251.15	258.84	0.000314	2.69	639.17	85.59	0.15
Reach	409.0188	Q500	1985.00	245.56	259.46	251.91	259.61	0.000411	3.22	695.13	104.66	0.17
Reach	376.1028	Q1.1	280.00	248.94	255.68	250.85	255.70	0.000125	1.22	282.65	55.88	0.09
Reach	376.1028	Q10	945.00	248.94	257.44	252.49	257.58	0.000603	3.18	389.24	101.56	0.20
Reach	376.1028	Q25	1175.00	248.94	257.87	252.94	258.07	0.000798	3.79	423.40	130.83	0.23
Reach	376.1028	Q50	1360.00	248.94	258.20	253.27	258.44	0.000903	4.14	511.65	152.93	0.25
Reach	376.1028	Q100	1540.00	248.94	258.50	253.55	258.77	0.000994	4.45	558.75	159.63	0.26
Reach	376.1028	Q500	1985.00	248.94	259.19	254.20	259.53	0.001178	5.09	673.51	172.87	0.29
Reach	291.3507	Q1.1	280.00	252.36	255.50	254.26	255.65	0.002985	3.27	100.05	84.12	0.36
Reach	291.3507	Q10	945.00	252.36	257.30	256.04	257.49	0.002466	4.22	317.43	148.68	0.35
Reach	291.3507	Q25	1175.00	252.36	257.78	256.38	257.97	0.002250	4.31	397.45	175.72	0.34
Reach	291.3507	Q50	1360.00	252.36	258.13	256.59	258.33	0.002113	4.38	461.26	191.32	0.34
Reach	291.3507	Q100	1540.00	252.36	258.45	256.78	258.65	0.002002	4.43	524.40	201.51	0.33
Reach	291.3507	Q500	1985.00	252.36	259.18	257.13	259.38	0.001779	4.54	678.14	214.34	0.32
Reach	142.7414	Q1.1	280.00	251.84	255.00	254.34	255.17	0.004108	3.76	103.43	87.63	0.43
Reach	142.7414	Q10	945.00	251.84	256.98	255.61	257.19	0.002642	4.49	306.96	141.39	0.38
Reach	142.7414	Q25	1175.00	251.84	257.47	255.87	257.69	0.002520	4.71	387.26	172.45	0.38
Reach	142.7414	Q50	1360.00	251.84	257.83	256.06	258.06	0.002402	4.82	453.98	191.82	0.37
Reach	142.7414	Q100	1540.00	251.84	258.16	256.24	258.39	0.002280	4.89	519.23	199.70	0.37
Reach	142.7414	Q500	1985.00	251.84	258.92	256.65	259.15	0.002074	5.08	681.67	232.26	0.36
Reach	49.4197	Q1.1	280.00	251.91	254.36	253.60	254.64	0.006404	4.27	68.60	45.05	0.52
Reach	49.4197	Q10	945.00	251.91	256.17	255.39	256.72	0.006403	6.44	179.32	70.74	0.57
Reach	49.4197	Q25	1175.00	251.91	256.61	255.77	257.23	0.006400	6.91	211.64	74.91	0.58
Reach	49.4197	Q50	1360.00	251.91	256.94	256.02	257.61	0.006404	7.25	236.52	77.94	0.59
Reach	49.4197	Q100	1540.00	251.91	257.23	256.26	257.96	0.006402	7.55	260.09	80.71	0.60
Reach	49.4197	Q500	1985.00	251.91	257.90	256.82	258.73	0.006401	8.21	316.29	87.72	0.61

Plan: Exist Stream Reach RS: 483 Culv Group: Culvert #1 Profile: Q1.1

Q Culv Group (cfs)	280.00	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	4.65
Q Barrel (cfs)	280.00	Culv Vel DS (ft/s)	4.32
E.G. US. (ft)	256.40	Culv Inv El Up (ft)	252.33
W.S. US. (ft)	256.34	Culv Inv El Dn (ft)	251.90
E.G. DS (ft)	255.70	Culv Frctn Ls (ft)	0.25
W.S. DS (ft)	255.69	Culv Exit Loss (ft)	0.28
Delta EG (ft)	0.70	Culv Entr Loss (ft)	0.17
Delta WS (ft)	0.64	Q Weir (cfs)	
E.G. IC (ft)	255.68	Weir Sta Lft (ft)	
E.G. OC (ft)	256.40	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	255.90	Weir Max Depth (ft)	
Culv WS Outlet (ft)	255.69	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	3.16	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	2.34	Min El Weir Flow (ft)	269.91

Plan: Exist Stream Reach RS: 483 Culv Group: Culvert #1 Profile: Q10

Q Culv Group (cfs)	945.00	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	8.73
Q Barrel (cfs)	945.00	Culv Vel DS (ft/s)	9.38
E.G. US. (ft)	260.14	Culv Inv El Up (ft)	252.33
W.S. US. (ft)	259.99	Culv Inv El Dn (ft)	251.90
E.G. DS (ft)	257.62	Culv Frctn Ls (ft)	0.62
W.S. DS (ft)	257.56	Culv Exit Loss (ft)	1.31
Delta EG (ft)	2.52	Culv Entr Loss (ft)	0.59
Delta WS (ft)	2.43	Q Weir (cfs)	
E.G. IC (ft)	259.21	Weir Sta Lft (ft)	
E.G. OC (ft)	260.14	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	258.36	Weir Max Depth (ft)	
Culv WS Outlet (ft)	257.56	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	6.63	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	4.62	Min El Weir Flow (ft)	269.91

Plan: Exist Stream Reach RS: 483 Culv Group: Culvert #1 Profile: Q25

Q Culv Group (cfs)	1175.00	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	9.69
Q Barrel (cfs)	1175.00	Culv Vel DS (ft/s)	10.62
E.G. US. (ft)	261.24	Culv Inv El Up (ft)	252.33
W.S. US. (ft)	261.07	Culv Inv El Dn (ft)	251.90
E.G. DS (ft)	258.12	Culv Frctn Ls (ft)	0.71
W.S. DS (ft)	258.05	Culv Exit Loss (ft)	1.68
Delta EG (ft)	3.12	Culv Entr Loss (ft)	0.73
Delta WS (ft)	3.02	Q Weir (cfs)	
E.G. IC (ft)	260.24	Weir Sta Lft (ft)	
E.G. OC (ft)	261.24	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	259.05	Weir Max Depth (ft)	
Culv WS Outlet (ft)	258.05	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	7.86	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	5.40	Min El Weir Flow (ft)	269.91

Plan: Exist Stream Reach RS: 483 Culv Group: Culvert #1 Profile: Q50

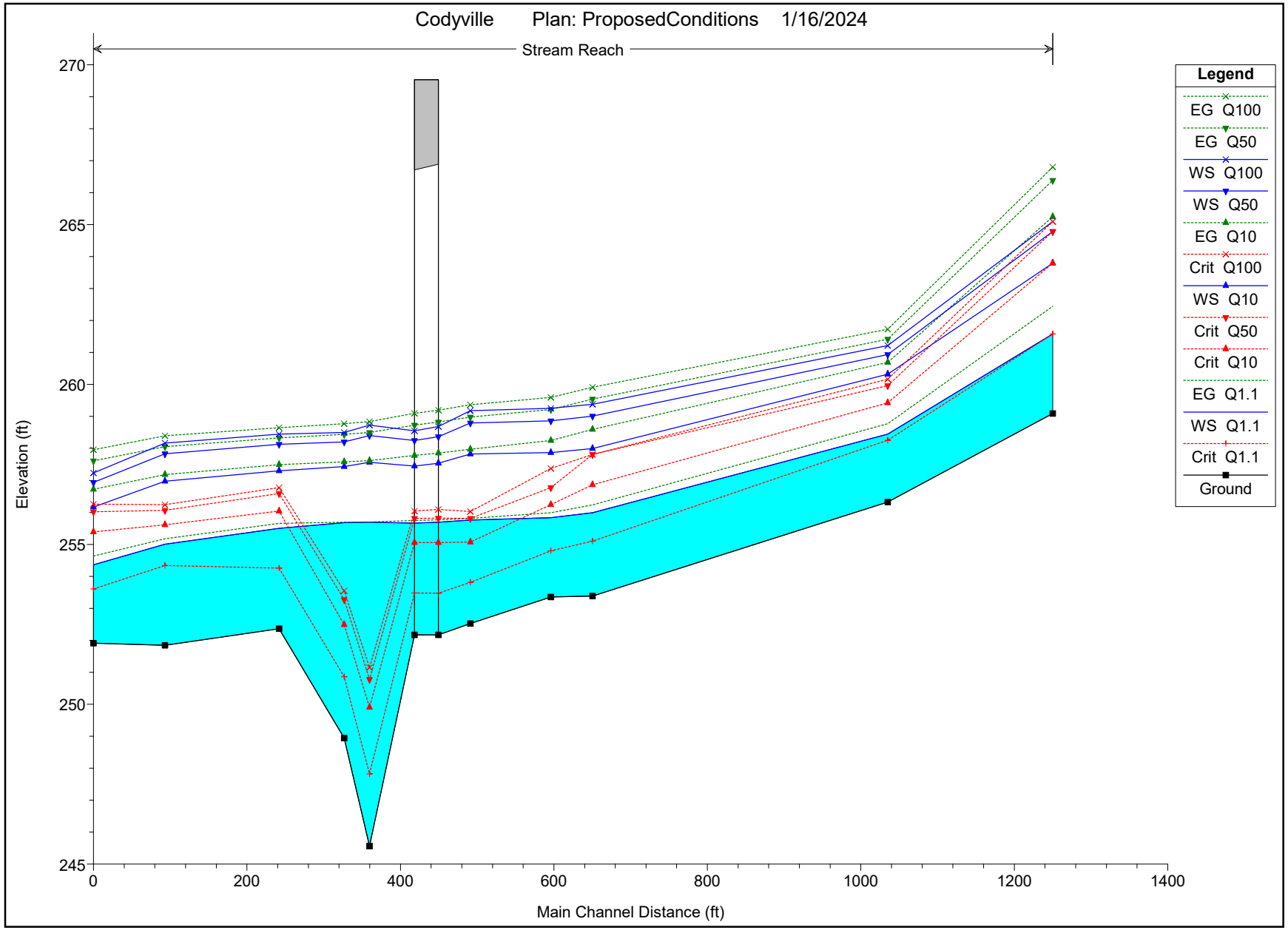
Q Culv Group (cfs)	1360.00	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	10.42
Q Barrel (cfs)	1360.00	Culv Vel DS (ft/s)	11.57
E.G. US. (ft)	262.12	Culv Inv El Up (ft)	252.33
W.S. US. (ft)	261.94	Culv Inv El Dn (ft)	251.90
E.G. DS (ft)	258.50	Culv Frctn Ls (ft)	0.79
W.S. DS (ft)	258.41	Culv Exit Loss (ft)	1.99
Delta EG (ft)	3.63	Culv Entr Loss (ft)	0.84
Delta WS (ft)	3.53	Q Weir (cfs)	
E.G. IC (ft)	261.00	Weir Sta Lft (ft)	
E.G. OC (ft)	262.12	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	259.59	Weir Max Depth (ft)	
Culv WS Outlet (ft)	258.41	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	8.94	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	5.88	Min El Weir Flow (ft)	269.91

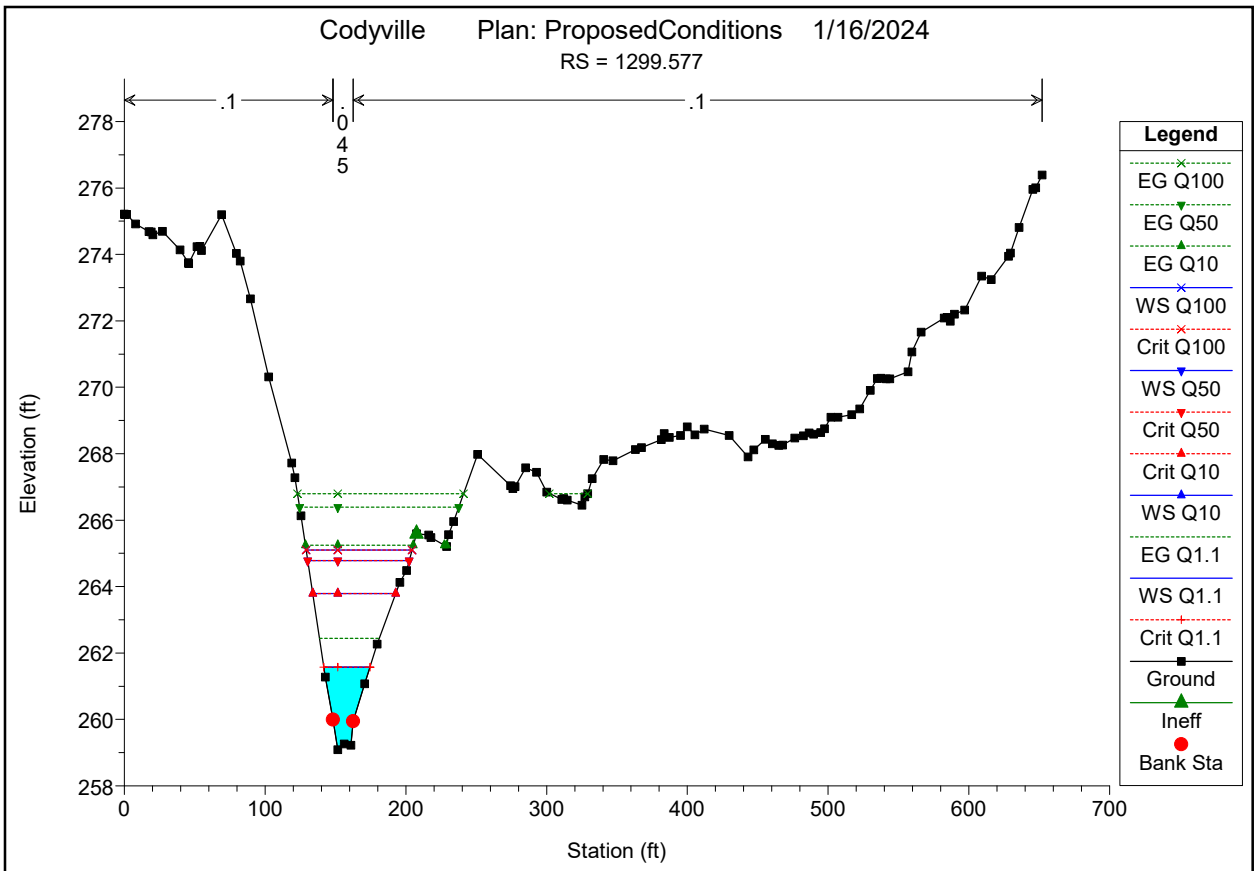
Plan: Exist Stream Reach RS: 483 Culv Group: Culvert #1 Profile: Q100

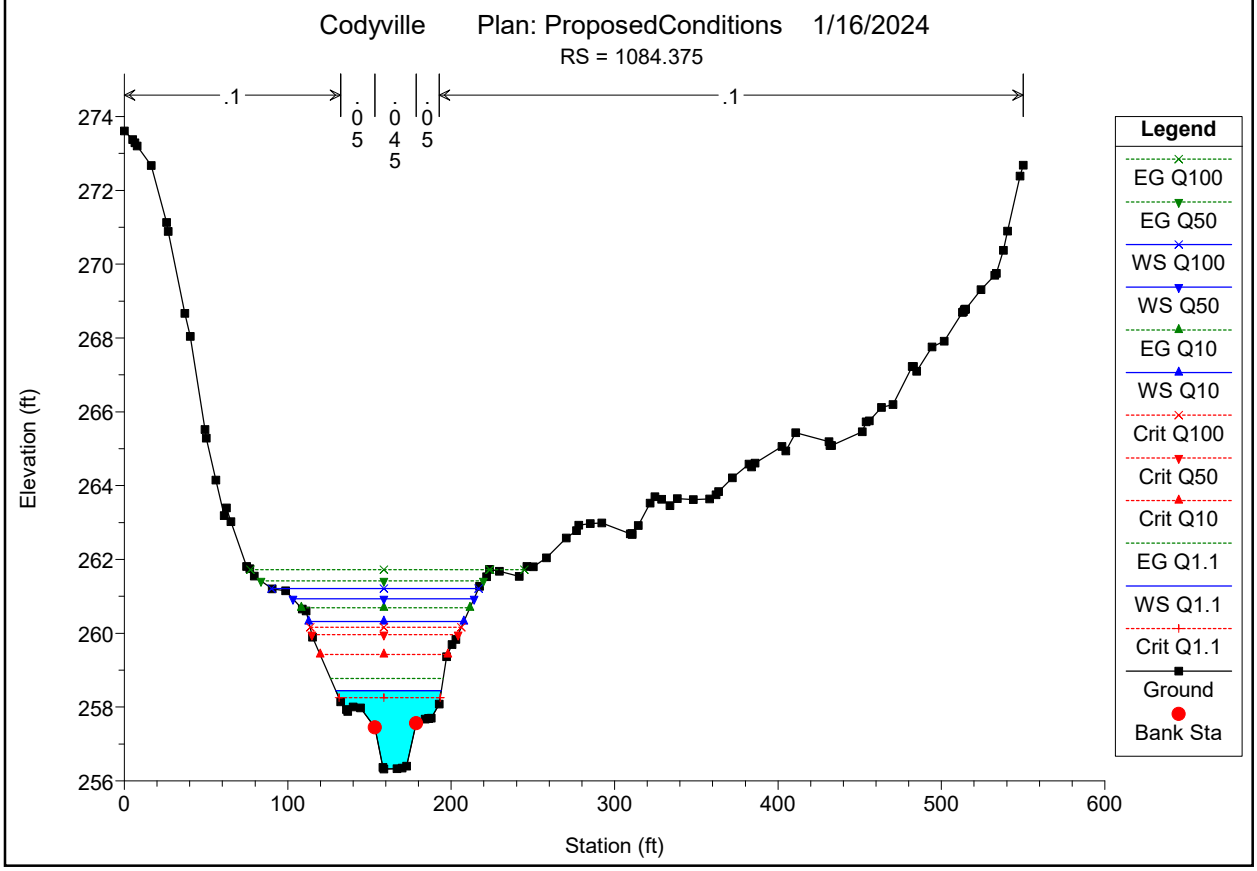
Q Culv Group (cfs)	1540.00	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	11.03
Q Barrel (cfs)	1540.00	Culv Vel DS (ft/s)	12.51
E.G. US. (ft)	262.97	Culv Inv El Up (ft)	252.33
W.S. US. (ft)	262.77	Culv Inv El Dn (ft)	251.90
E.G. DS (ft)	258.84	Culv Frctn Ls (ft)	0.86
W.S. DS (ft)	258.73	Culv Exit Loss (ft)	2.32
Delta EG (ft)	4.13	Culv Entr Loss (ft)	0.95
Delta WS (ft)	4.04	Q Weir (cfs)	
E.G. IC (ft)	261.71	Weir Sta Lft (ft)	
E.G. OC (ft)	262.97	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	260.13	Weir Max Depth (ft)	
Culv WS Outlet (ft)	258.73	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	10.20	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	6.33	Min El Weir Flow (ft)	269.91

Plan: Exist Stream Reach RS: 483 Culv Group: Culvert #1 Profile: Q500

Q Culv Group (cfs)	1985.00	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	12.45
Q Barrel (cfs)	1985.00	Culv Vel DS (ft/s)	14.64
E.G. US. (ft)	265.03	Culv Inv El Up (ft)	252.33
W.S. US. (ft)	264.80	Culv Inv El Dn (ft)	251.90
E.G. DS (ft)	259.61	Culv Frctn Ls (ft)	1.03
W.S. DS (ft)	259.46	Culv Exit Loss (ft)	3.18
Delta EG (ft)	5.42	Culv Entr Loss (ft)	1.20
Delta WS (ft)	5.35	Q Weir (cfs)	
E.G. IC (ft)	263.53	Weir Sta Lft (ft)	
E.G. OC (ft)	265.03	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	261.41	Weir Max Depth (ft)	
Culv WS Outlet (ft)	259.46	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	12.83	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	7.12	Min El Weir Flow (ft)	269.91


Codyville Plan: ProposedConditions 1/16/2024
Stream Reach
Elevation (ft)
Main Channel Distance (ft)
270
265
260
255
250
245
0
200
400
600
800
1000
1200
1400
Legend
EG Q100
EG Q50
WS Q100
WS Q50
EG Q10
Crit Q100
WS Q10
Crit Q50
Crit Q10
EG Q1.1
WS Q1.1
Crit Q1.1
Ground


Codyville Plan: ProposedConditions 1/16/2024
RS = 1299.577
.1
.045
.1
Elevation (ft)
Station (ft)
Legend
EG Q100
EG Q50
EG Q10
WS Q100
Crit Q100
WS Q50
Crit Q50
Crit Q10
WS Q10
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Ineff
Bank Sta


Codyville Plan: ProposedConditions 1/16/2024
RS = 1084.375
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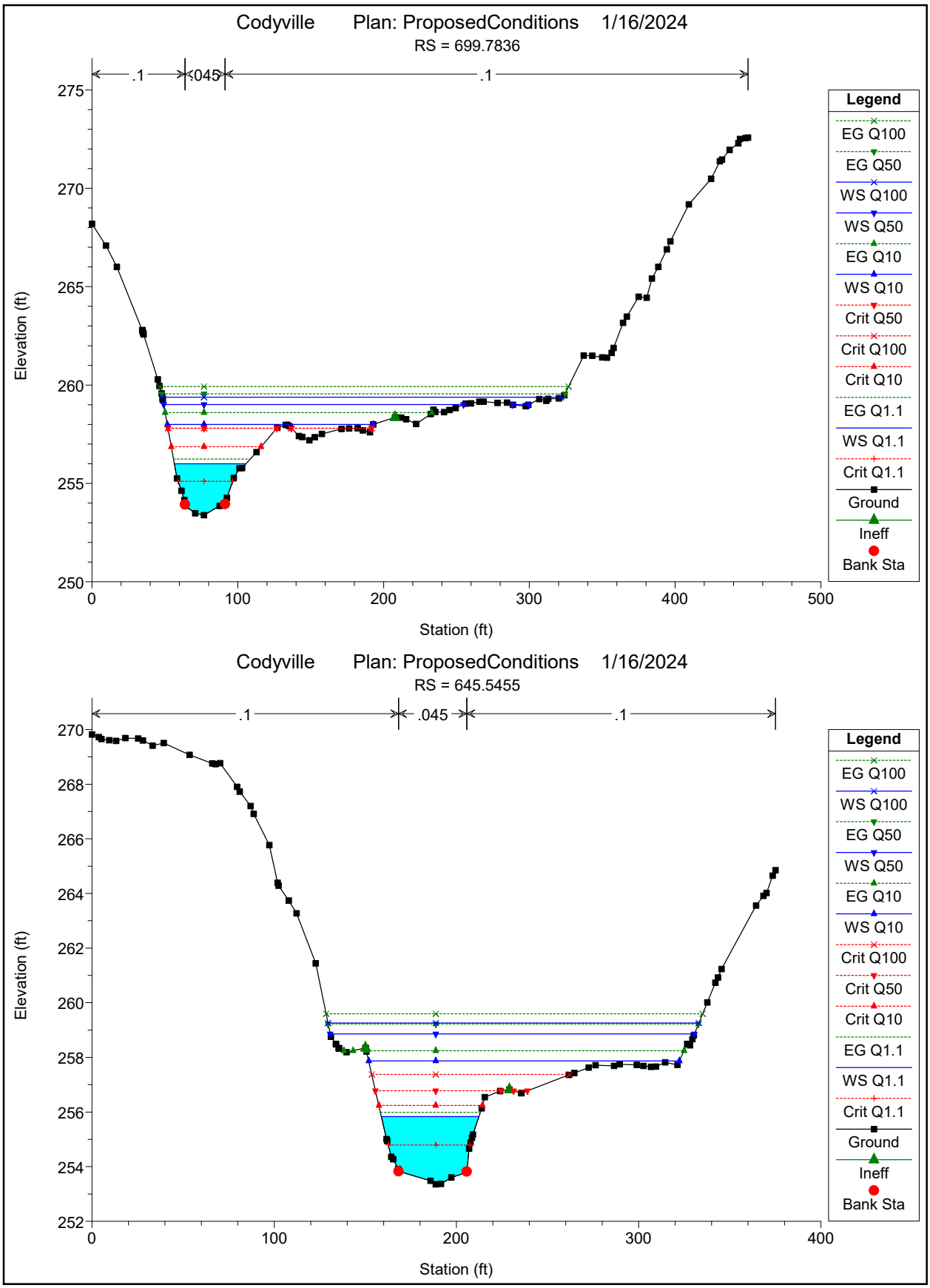
.05
.045
.05
.1
Elevation (ft)
Station (ft)
Legend
EG Q100
EG Q50
WS Q100
WS Q50
EG Q10
WS Q10
Crit Q100
Crit Q50
Crit Q10
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Bank Sta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RS = 699.7836
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.045
.1
Elevation (ft)
Station (ft)
Legend
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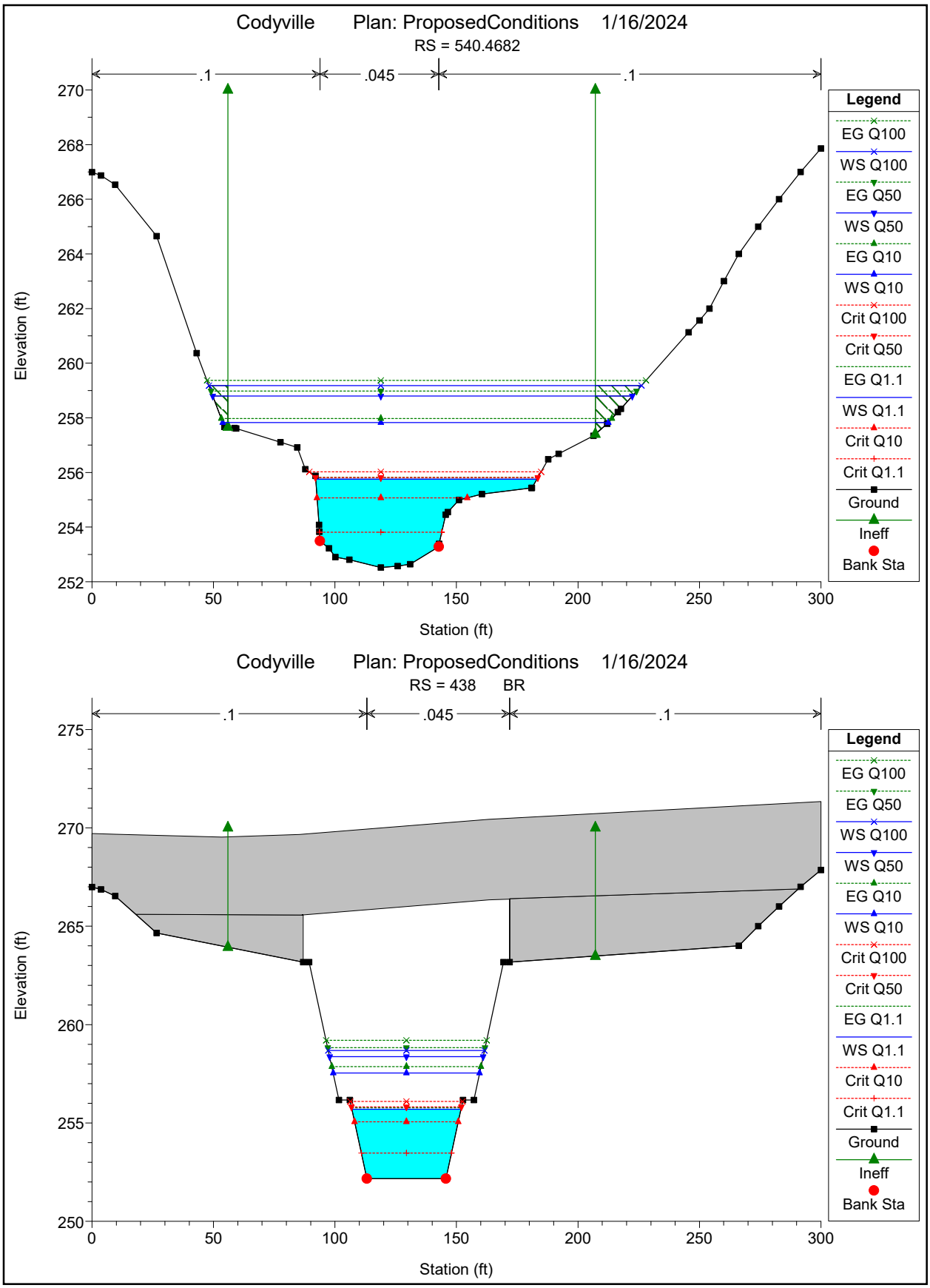
EG Q50
WS Q100
WS Q50
EG Q10
WS Q10
Crit Q50
Crit Q100
Crit Q10
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Ineff
Bank Sta
Codyville Plan: ProposedConditions 1/16/2024
RS = 645.5455
.1
.045
.1
Elevation (ft)
Station (ft)
Legend
EG Q100
WS Q100
EG Q50
WS Q50
EG Q10
WS Q10
Crit Q100
Crit Q50
Crit Q10
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Ineff
Bank Sta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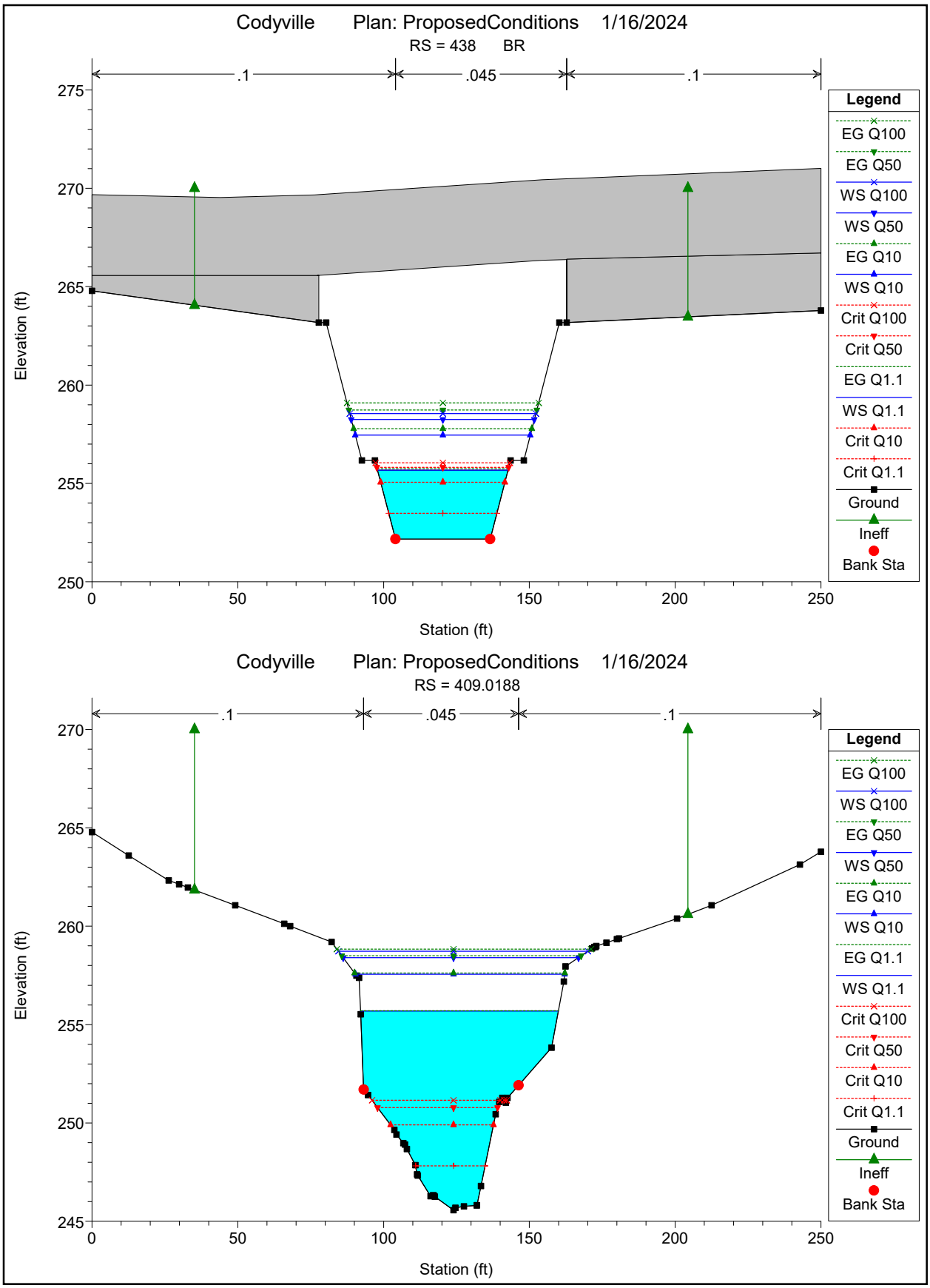
.045
.1
Elevation (ft)
Station (ft)
Legend
EG Q100
WS Q100
EG Q50
WS Q50
EG Q10
WS Q10
Crit Q100
Crit Q50
EG Q1.1
WS Q1.1
Crit Q10
Crit Q1.1
Ground
Ineff
Bank Sta
Codyville Plan: ProposedConditions 1/16/2024
RS = 438 BR
.1
.045
.1
Elevation (ft)
Station (ft)
Legend
EG Q100
EG Q50
WS Q100
WS Q50
EG Q10
WS Q10
Crit Q100
Crit Q50
EG Q1.1
WS Q1.1
Crit Q10
Crit Q1.1
Ground
Ineff
Bank Sta


Codyville Plan: ProposedConditions 1/16/2024
RS = 438 BR
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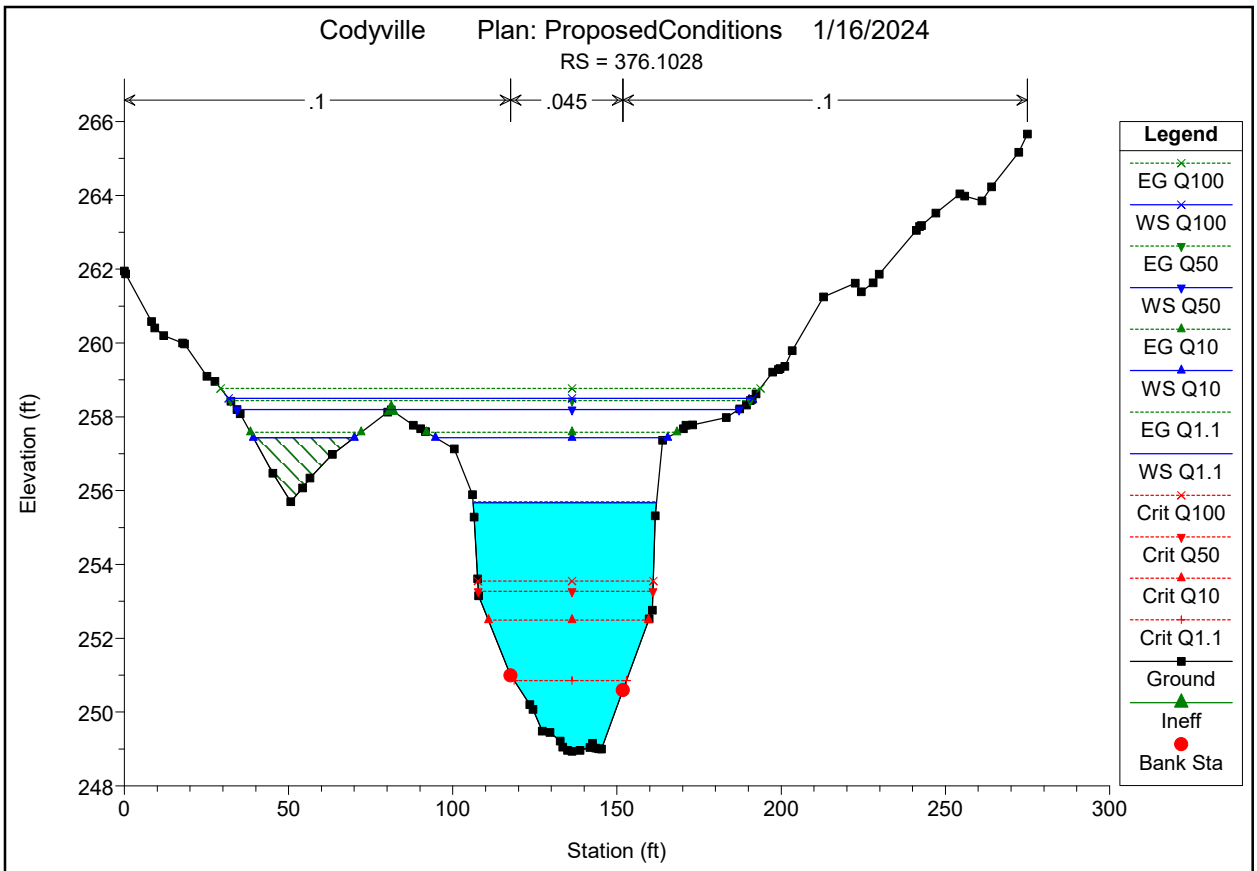
.045
.1
Elevation (ft)
Station (ft)
Legend
EG Q100
EG Q50
WS Q100
WS Q50
EG Q10
WS Q10
Crit Q100
Crit Q50
EG Q1.1
WS Q1.1
Crit Q10
Crit Q1.1
Ground
Ineff
Bank Sta
Codyville Plan: ProposedConditions 1/16/2024
RS = 409.0188
.1
.045
.1
Elevation (ft)
Station (ft)
Legend
EG Q100
WS Q100
EG Q50
WS Q50
EG Q10
WS Q10
EG Q1.1
WS Q1.1
Crit Q100
Crit Q50
Crit Q10
Crit Q1.1
Ground
Ineff
Bank Sta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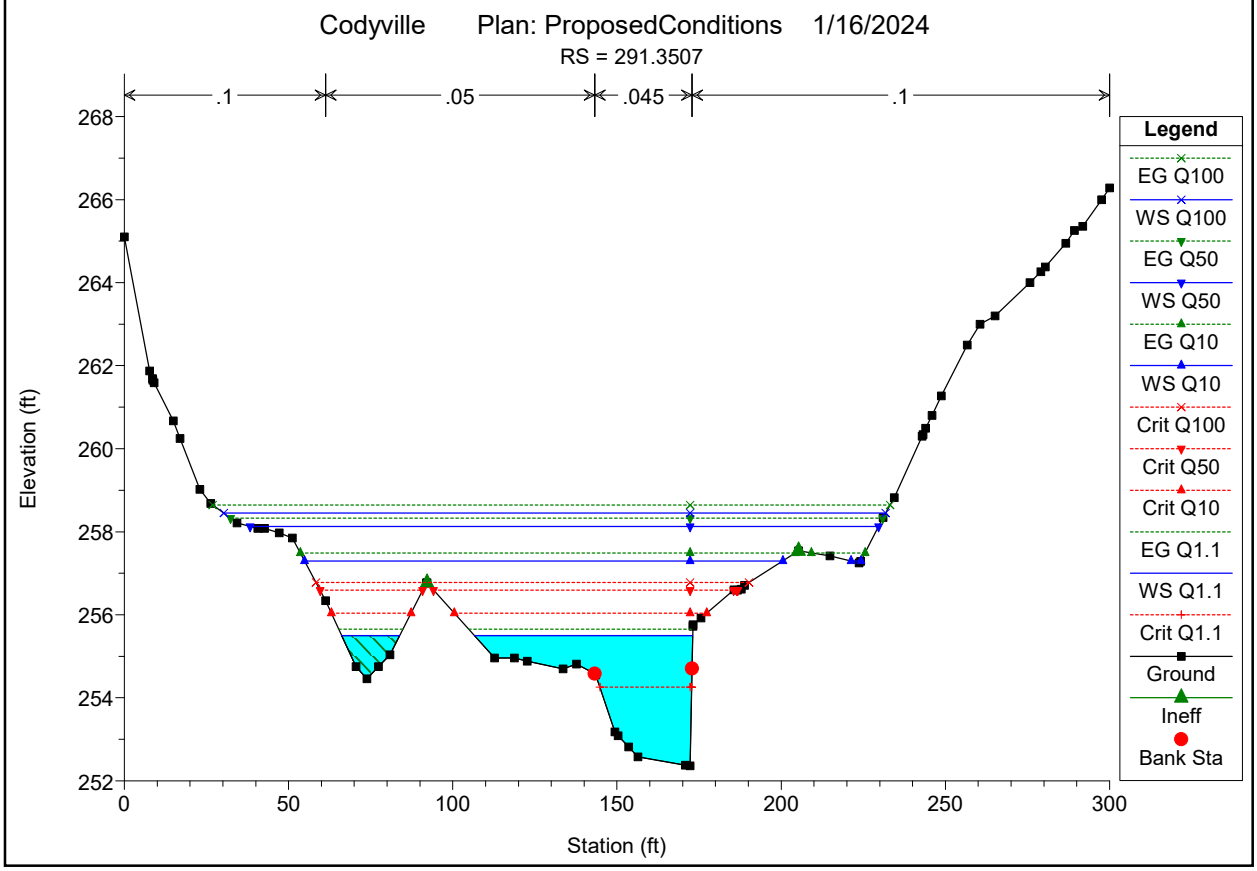
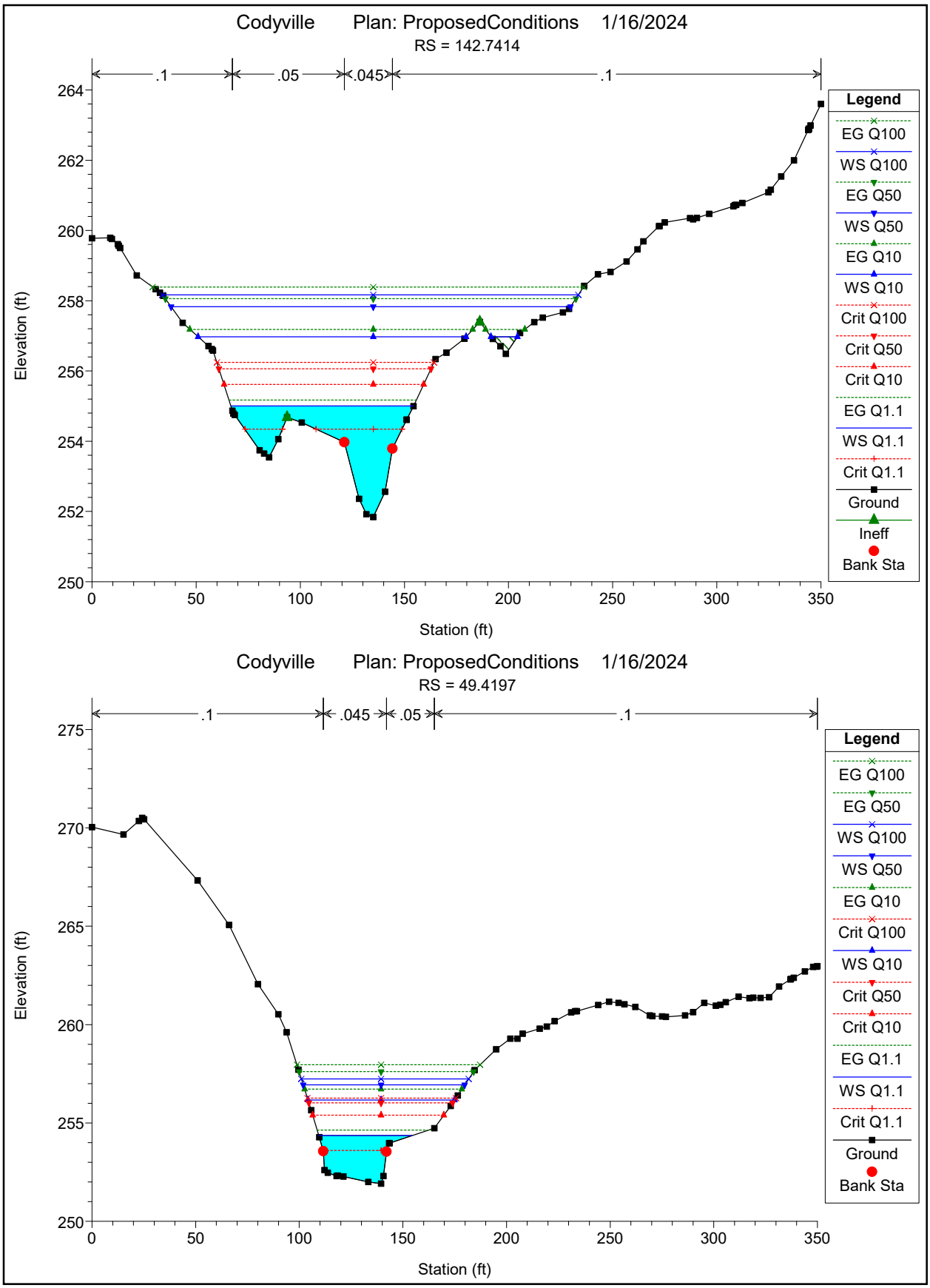
RS = 376.1028
.1
.045
.1
Elevation (ft)
Station (ft)
Legend
EG Q100
WS Q100
EG Q50
WS Q50
EG Q10
WS Q10
EG Q1.1
WS Q1.1
Crit Q100
Crit Q50
Crit Q10
Crit Q1.1
Ground
Ineff
Bank Sta


Codyville Plan: ProposedConditions 1/16/2024
RS = 291.3507
.1
.05
.045
.1
Elevation (ft)
Station (ft)
Legend
EG Q100
WS Q100
EG Q50
WS Q50
EG Q10
WS Q10
Crit Q100
Crit Q50
Crit Q10
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Ineff
Bank Sta


Codyville Plan: ProposedConditions 1/16/2024
RS = 142.7414
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.05
.045
.1
Elevation (ft)
Station (ft)
Legend
EG Q100
WS Q100
EG Q50
WS Q50
EG Q10
WS Q10
Crit Q100
Crit Q50
Crit Q10
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Ineff
Bank Sta
Codyville Plan: ProposedConditions 1/16/2024
RS = 49.4197
.1
.045
.05
.1
Elevation (ft)
Station (ft)
Legend
EG Q100
EG Q50
WS Q100
WS Q50
EG Q10
Crit Q100
WS Q10
Crit Q50
Crit Q10
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Bank Sta

HEC-RAS Plan: Prop River: Stream Reach: Reach

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach	1299.577	Q1.1	280.00	259.09	261.58	261.58	262.45	0.019652	7.84	47.35	32.89	0.92
Reach	1299.577	Q10	945.00	259.09	263.79	263.79	265.25	0.015670	11.06	148.26	58.92	0.92
Reach	1299.577	Q25	1175.00	259.09	264.25	264.25	265.92	0.016276	12.03	176.68	65.12	0.96
Reach	1299.577	Q50	1360.00	259.09	264.78	264.78	266.39	0.014208	12.04	213.42	72.07	0.91
Reach	1299.577	Q100	1540.00	259.09	265.10	265.10	266.80	0.014280	12.53	236.78	75.22	0.92
Reach	1299.577	Q500	1985.00	259.09	266.23	266.23	267.84	0.011366	12.60	347.10	111.10	0.85
Reach	1084.375	Q1.1	280.00	256.32	258.45	258.25	258.77	0.010036	4.95	69.45	64.55	0.64
Reach	1084.375	Q10	945.00	256.32	260.32	259.43	260.69	0.005514	5.85	216.87	95.02	0.53
Reach	1084.375	Q25	1175.00	256.32	260.69	259.74	261.12	0.005739	6.36	253.33	103.18	0.55
Reach	1084.375	Q50	1360.00	256.32	260.93	259.97	261.42	0.006059	6.79	279.35	110.75	0.58
Reach	1084.375	Q100	1540.00	256.32	261.21	260.16	261.73	0.006034	7.07	312.05	126.76	0.58
Reach	1084.375	Q500	1985.00	256.32	261.64	260.59	262.27	0.006865	8.00	371.27	155.29	0.63
Reach	699.7836	Q1.1	280.00	253.38	255.99	255.10	256.23	0.004771	4.04	83.65	49.10	0.46
Reach	699.7836	Q10	945.00	253.38	257.99	256.86	258.60	0.005833	6.73	233.33	141.27	0.57
Reach	699.7836	Q25	1175.00	253.38	258.58	257.32	259.15	0.005052	6.81	330.61	182.65	0.54
Reach	699.7836	Q50	1360.00	253.38	259.01	257.81	259.54	0.004482	6.78	415.96	217.02	0.52
Reach	699.7836	Q100	1540.00	253.38	259.38	257.81	259.92	0.004285	6.93	508.44	273.40	0.51
Reach	699.7836	Q500	1985.00	253.38	260.32	259.22	260.70	0.002918	6.33	772.13	284.61	0.43
Reach	645.5455	Q1.1	280.00	253.35	255.84	254.79	255.99	0.003181	3.19	99.71	53.50	0.38
Reach	645.5455	Q10	945.00	253.35	257.87	256.24	258.25	0.003591	5.21	278.14	170.53	0.44
Reach	645.5455	Q25	1175.00	253.35	258.43	256.54	258.81	0.003289	5.41	377.59	191.78	0.43
Reach	645.5455	Q50	1360.00	253.35	258.86	256.77	259.22	0.002934	5.41	462.32	199.86	0.42
Reach	645.5455	Q100	1540.00	253.35	259.25	257.37	259.60	0.002658	5.40	541.46	203.48	0.40
Reach	645.5455	Q500	1985.00	253.35	260.14	257.74	260.45	0.002214	5.43	724.89	211.64	0.37
Reach	540.4682	Q1.1	280.00	252.52	255.76	253.81	255.81	0.000767	1.88	172.71	91.09	0.19
Reach	540.4682	Q10	945.00	252.52	257.82	255.07	257.97	0.001187	3.33	412.95	158.66	0.26
Reach	540.4682	Q25	1175.00	252.52	258.38	255.56	258.55	0.001185	3.57	497.56	166.72	0.27
Reach	540.4682	Q50	1360.00	252.52	258.80	255.81	258.98	0.001179	3.74	560.45	172.62	0.27
Reach	540.4682	Q100	1540.00	252.52	259.18	256.02	259.37	0.001176	3.89	617.65	177.98	0.27
Reach	540.4682	Q500	1985.00	252.52	260.04	256.51	260.25	0.001166	4.21	748.05	190.21	0.28
Reach	438		Bridge									
Reach	409.0188	Q1.1	280.00	245.56	255.69	247.82	255.70	0.000035	0.71	424.09	67.88	0.05
Reach	409.0188	Q10	945.00	245.56	257.56	249.90	257.62	0.000180	1.88	553.78	71.76	0.11
Reach	409.0188	Q25	1175.00	245.56	258.05	250.41	258.12	0.000233	2.21	589.43	75.37	0.13
Reach	409.0188	Q50	1360.00	245.56	258.41	250.78	258.50	0.000277	2.47	617.23	80.73	0.14
Reach	409.0188	Q100	1540.00	245.56	258.73	251.15	258.84	0.000319	2.71	643.88	85.55	0.15
Reach	409.0188	Q500	1985.00	245.56	259.45	251.91	259.61	0.000422	3.26	711.19	104.42	0.17
Reach	376.1028	Q1.1	280.00	248.94	255.68	250.85	255.70	0.000125	1.22	282.65	55.88	0.09
Reach	376.1028	Q10	945.00	248.94	257.44	252.49	257.58	0.000603	3.18	389.23	101.56	0.20
Reach	376.1028	Q25	1175.00	248.94	257.87	252.94	258.07	0.000798	3.79	423.40	130.83	0.23
Reach	376.1028	Q50	1360.00	248.94	258.20	253.27	258.44	0.000903	4.14	511.65	152.93	0.25
Reach	376.1028	Q100	1540.00	248.94	258.50	253.55	258.77	0.000994	4.45	558.75	159.63	0.26
Reach	376.1028	Q500	1985.00	248.94	259.19	254.20	259.53	0.001178	5.09	673.51	172.87	0.29
Reach	291.3507	Q1.1	280.00	252.36	255.50	254.26	255.65	0.002985	3.27	100.05	84.12	0.36
Reach	291.3507	Q10	945.00	252.36	257.30	256.04	257.49	0.002466	4.22	317.41	148.67	0.35
Reach	291.3507	Q25	1175.00	252.36	257.78	256.38	257.97	0.002250	4.31	397.45	175.72	0.34
Reach	291.3507	Q50	1360.00	252.36	258.13	256.59	258.33	0.002113	4.38	461.26	191.32	0.34
Reach	291.3507	Q100	1540.00	252.36	258.45	256.78	258.65	0.002002	4.43	524.40	201.51	0.33
Reach	291.3507	Q500	1985.00	252.36	259.18	257.13	259.38	0.001779	4.54	678.14	214.34	0.32
Reach	142.7414	Q1.1	280.00	251.84	255.00	254.34	255.17	0.004108	3.76	103.43	87.63	0.43
Reach	142.7414	Q10	945.00	251.84	256.98	255.61	257.19	0.002643	4.49	306.94	141.38	0.38
Reach	142.7414	Q25	1175.00	251.84	257.47	255.87	257.69	0.002520	4.71	387.26	172.45	0.38
Reach	142.7414	Q50	1360.00	251.84	257.83	256.06	258.06	0.002402	4.82	453.98	191.82	0.37
Reach	142.7414	Q100	1540.00	251.84	258.16	256.24	258.39	0.002280	4.89	519.23	199.70	0.37
Reach	142.7414	Q500	1985.00	251.84	258.92	256.65	259.15	0.002074	5.08	681.67	232.26	0.36
Reach	49.4197	Q1.1	280.00	251.91	254.36	253.60	254.64	0.006404	4.27	68.60	45.05	0.52
Reach	49.4197	Q10	945.00	251.91	256.17	255.39	256.72	0.006403	6.44	179.32	70.74	0.57
Reach	49.4197	Q25	1175.00	251.91	256.61	255.77	257.23	0.006400	6.91	211.64	74.91	0.58
Reach	49.4197	Q50	1360.00	251.91	256.94	256.02	257.61	0.006404	7.25	236.52	77.94	0.59
Reach	49.4197	Q100	1540.00	251.91	257.23	256.26	257.96	0.006402	7.55	260.09	80.71	0.60
Reach	49.4197	Q500	1985.00	251.91	257.90	256.82	258.73	0.006401	8.21	316.29	87.72	0.61

Plan: Prop Stream Reach RS: 438 Profile: Q1.1

E.G. US. (ft)	255.81	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	255.76	E.G. Elev (ft)	255.77	255.74
Q Total (cfs)	280.00	W.S. Elev (ft)	255.70	255.67
Q Bridge (cfs)	280.00	Crit W.S. (ft)	253.47	253.48
Q Weir (cfs)		Max Chl Dpth (ft)	3.53	3.50
Weir Sta Lft (ft)		Vel Total (ft/s)	2.05	2.07
Weir Sta Rgt (ft)		Flow Area (sq ft)	136.33	135.01
Weir Submerg		Froude # Chl	0.21	0.22
Weir Max Depth (ft)		Specif Force (cu ft)	246.48	242.68
Min El Weir Flow (ft)	269.55	Hydr Depth (ft)	3.04	3.02
Min El Prs (ft)	266.38	W.P. Total (ft)	46.71	46.59
Delta EG (ft)	0.11	Conv. Total (cfs)	9455.1	9319.0
Delta WS (ft)	0.06	Top Width (ft)	44.84	44.74
BR Open Area (sq ft)	872.61	Frctn Loss (ft)	0.03	0.01
BR Open Vel (ft/s)	2.07	C & E Loss (ft)	0.00	0.03
BR Sluice Coef		Shear Total (lb/sq ft)	0.16	0.16
BR Sel Method	Energy only	Power Total (lb/ft s)	0.33	0.34

Plan: Prop Stream Reach RS: 438 Profile: Q10

E.G. US. (ft)	257.97	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	257.82	E.G. Elev (ft)	257.86	257.78
Q Total (cfs)	945.00	W.S. Elev (ft)	257.54	257.45
Q Bridge (cfs)	945.00	Crit W.S. (ft)	255.06	255.06
Q Weir (cfs)		Max Chl Dpth (ft)	5.37	5.28
Weir Sta Lft (ft)		Vel Total (ft/s)	3.98	4.07
Weir Sta Rgt (ft)		Flow Area (sq ft)	237.32	231.90
Weir Submerg		Froude # Chl	0.36	0.37
Weir Max Depth (ft)		Specif Force (cu ft)	697.71	679.51
Min El Weir Flow (ft)	269.55	Hydr Depth (ft)	3.94	3.87
Min El Prs (ft)	266.38	W.P. Total (ft)	63.15	62.78
Delta EG (ft)	0.36	Conv. Total (cfs)	20097.3	19466.2
Delta WS (ft)	0.26	Top Width (ft)	60.29	59.98
BR Open Area (sq ft)	872.61	Frctn Loss (ft)	0.07	0.03
BR Open Vel (ft/s)	4.07	C & E Loss (ft)	0.00	0.14
BR Sluice Coef		Shear Total (lb/sq ft)	0.52	0.54
BR Sel Method	Energy only	Power Total (lb/ft s)	2.07	2.21

Plan: Prop Stream Reach RS: 438 Profile: Q25

E.G. US. (ft)	258.55	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	258.38	E.G. Elev (ft)	258.41	258.33
Q Total (cfs)	1175.00	W.S. Elev (ft)	258.02	257.91
Q Bridge (cfs)	1175.00	Crit W.S. (ft)	255.49	255.49
Q Weir (cfs)		Max Chl Dpth (ft)	5.85	5.74
Weir Sta Lft (ft)		Vel Total (ft/s)	4.41	4.52
Weir Sta Rgt (ft)		Flow Area (sq ft)	266.54	260.06
Weir Submerg		Froude # Chl	0.39	0.40
Weir Max Depth (ft)		Specif Force (cu ft)	867.98	844.67
Min El Weir Flow (ft)	269.55	Hydr Depth (ft)	4.30	4.22
Min El Prs (ft)	266.38	W.P. Total (ft)	65.07	64.65
Delta EG (ft)	0.43	Conv. Total (cfs)	23605.8	22812.9
Delta WS (ft)	0.33	Top Width (ft)	61.97	61.60
BR Open Area (sq ft)	872.61	Frctn Loss (ft)	0.08	0.03
BR Open Vel (ft/s)	4.52	C & E Loss (ft)	0.01	0.17

Plan: Prop Stream Reach RS: 438 Profile: Q25 (Continued)

BR Sluice Coef		Shear Total (lb/sq ft)	0.63	0.67
BR Sel Method	Energy only	Power Total (lb/ft s)	2.79	3.01

Plan: Prop Stream Reach RS: 438 Profile: Q50

E.G. US. (ft)	258.98	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	258.80	E.G. Elev (ft)	258.82	258.73
Q Total (cfs)	1360.00	W.S. Elev (ft)	258.37	258.25
Q Bridge (cfs)	1360.00	Crit W.S. (ft)	255.82	255.81
Q Weir (cfs)		Max Chl Dpth (ft)	6.20	6.08
Weir Sta Lft (ft)		Vel Total (ft/s)	4.72	4.84
Weir Sta Rgt (ft)		Flow Area (sq ft)	288.42	281.10
Weir Submerg		Froude # Chl	0.41	0.42
Weir Max Depth (ft)		Specif Force (cu ft)	1008.51	981.02
Min El Weir Flow (ft)	269.55	Hydr Depth (ft)	4.56	4.48
Min El Prs (ft)	266.38	W.P. Total (ft)	66.48	66.01
Delta EG (ft)	0.48	Conv. Total (cfs)	26338.5	25414.1
Delta WS (ft)	0.39	Top Width (ft)	63.19	62.78
BR Open Area (sq ft)	872.61	Frctn Loss (ft)	0.09	0.04
BR Open Vel (ft/s)	4.84	C & E Loss (ft)	0.01	0.19
BR Sluice Coef		Shear Total (lb/sq ft)	0.72	0.76
BR Sel Method	Energy only	Power Total (lb/ft s)	3.41	3.68

Plan: Prop Stream Reach RS: 438 Profile: Q100

E.G. US. (ft)	259.37	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	259.18	E.G. Elev (ft)	259.20	259.10
Q Total (cfs)	1540.00	W.S. Elev (ft)	258.68	258.55
Q Bridge (cfs)	1540.00	Crit W.S. (ft)	256.09	256.04
Q Weir (cfs)		Max Chl Dpth (ft)	6.51	6.38
Weir Sta Lft (ft)		Vel Total (ft/s)	4.99	5.13
Weir Sta Rgt (ft)		Flow Area (sq ft)	308.46	300.31
Weir Submerg		Froude # Chl	0.42	0.44
Weir Max Depth (ft)		Specif Force (cu ft)	1147.52	1115.82
Min El Weir Flow (ft)	269.55	Hydr Depth (ft)	4.80	4.70
Min El Prs (ft)	266.38	W.P. Total (ft)	67.75	67.24
Delta EG (ft)	0.53	Conv. Total (cfs)	28916.6	27859.9
Delta WS (ft)	0.45	Top Width (ft)	64.29	63.85
BR Open Area (sq ft)	872.61	Frctn Loss (ft)	0.09	0.04
BR Open Vel (ft/s)	5.13	C & E Loss (ft)	0.01	0.22
BR Sluice Coef		Shear Total (lb/sq ft)	0.81	0.85
BR Sel Method	Energy only	Power Total (lb/ft s)	4.03	4.37

Plan: Prop Stream Reach RS: 438 Profile: Q500

E.G. US. (ft)	260.25	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	260.04	E.G. Elev (ft)	260.05	259.93
Q Total (cfs)	1985.00	W.S. Elev (ft)	259.39	259.24
Q Bridge (cfs)	1985.00	Crit W.S. (ft)	256.99	256.98
Q Weir (cfs)		Max Chl Dpth (ft)	7.22	7.07
Weir Sta Lft (ft)		Vel Total (ft/s)	5.59	5.76
Weir Sta Rgt (ft)		Flow Area (sq ft)	354.91	344.79
Weir Submerg		Froude # Chl	0.46	0.47
Weir Max Depth (ft)		Specif Force (cu ft)	1503.94	1461.70
Min El Weir Flow (ft)	269.55	Hydr Depth (ft)	5.32	5.21
Min El Prs (ft)	266.38	W.P. Total (ft)	70.60	69.99

Plan: Prop Stream Reach RS: 438 Profile: Q500 (Continued)

Delta EG (ft)	0.64	Conv. Total (cfs)	35142.2	33756.6
Delta WS (ft)	0.59	Top Width (ft)	66.77	66.24
BR Open Area (sq ft)	872.61	Frctn Loss (ft)	0.10	0.05
BR Open Vel (ft/s)	5.76	C & E Loss (ft)	0.01	0.27
BR Sluice Coef		Shear Total (lb/sq ft)	1.00	1.06
BR Sel Method	Energy only	Power Total (lb/ft s)	5.60	6.12