Lower Blanco River Restoration Project
Representative Reach
Floodplain Study

Prepared for

The Lower Blanco Property Owners Association

Pagosa Springs, CO

Riverbend Engineering, LLC

PROJECT BACKROUND

The lower Blanco River is located in southwestern Colorado near Pagosa Springs. It has a drainage area of approximately 170 square miles extending into the San Juan Mountians to the continental divide. The river is a tributary to the San Juan River and Lake Navajo (see Figure 1). As a product of the Colorado River Water Compact, a trans-basin diversion tunnel was created to meet water obligations to the state of New Mexico. Approximately 70% of the annual water yield is diverted from the Rio Blanco Basin to the Rio Grande Basin. The San Juan-Chama Diversion project came on-line in 1971 and since that time the Lower Blanco River below the diverision has been reduced to small flows in an over-wide streambed.

PROJECT PURPOSE

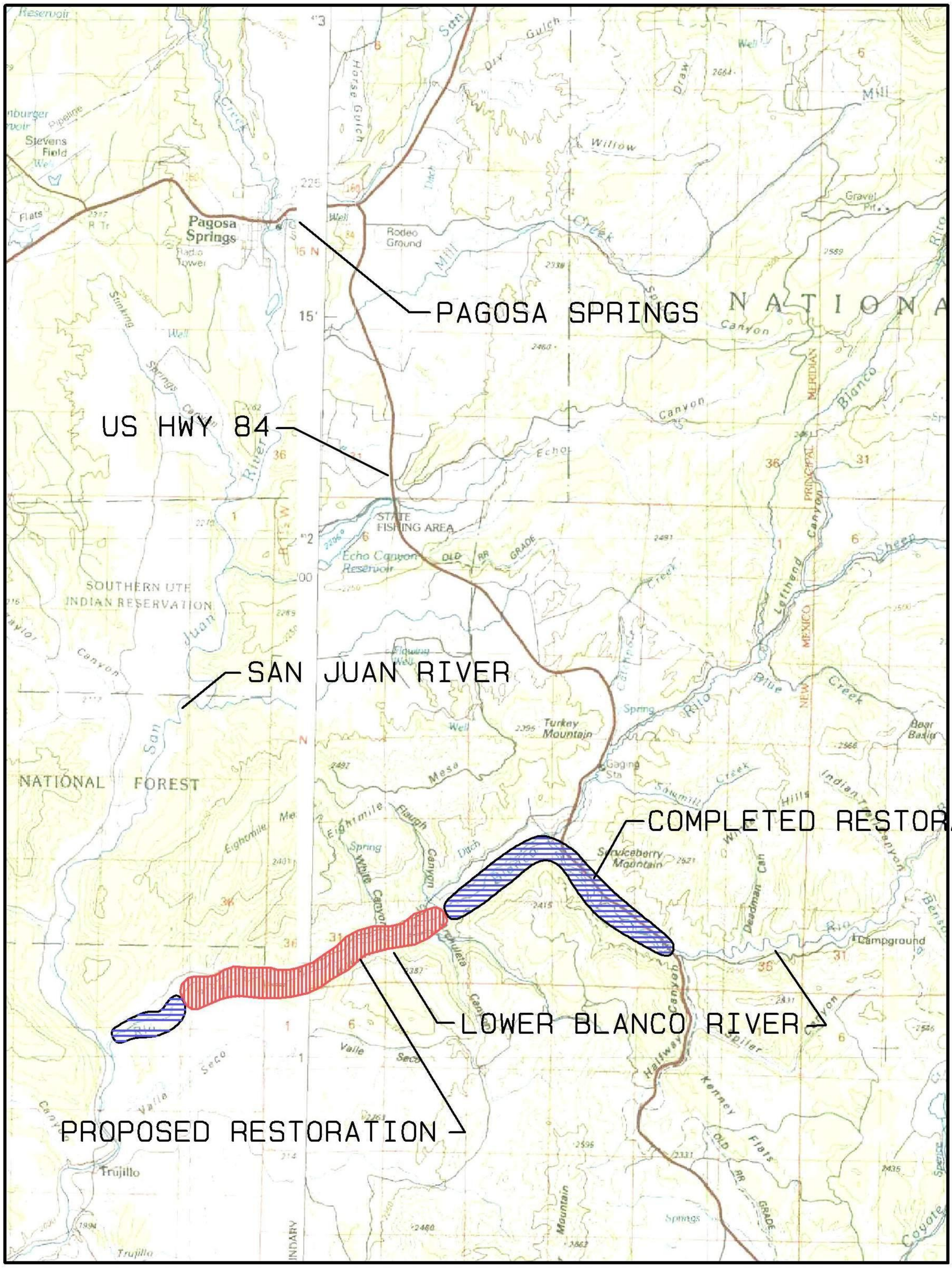
The Lower Blanco River Restoration Project seeks to restore some of the aquatic life functions that were damaged due to the diversion. The river no longer has the seasonal flows to shape the channel bed, create scour pools and maintain spawning gravel beds. Wetland features at the margins of the channel are infrequent. Water temperatures are elevated in the summer months because of shallow & wide flow conditions. Sediment transport through the system has been decreased and there is only limited habitat available for salmonids and other aquatic species.

RESTORATION METHODS

The typical restoration techniques for the Lower Blanco River Restoration project are: large rock habitat and stabilization structures, including J-Hooks, Cross Vanes, Short Vanes, Rock Deflectors and Habitat Rock Clusters, channel shaping, including pool creation, point bar construction, and spawing channels, woody debris jambs and some new riparian vegetation transplants. Within the river's cross section, channel shaping will not increase or decrease the effective cross sectional area, it will just re-arrange the distribution of alluvial material. The addition of large boulders for in-stream habitat structures is offset by the removal of a similar volume of gravel where the boulders are placed. This extra gravel is moved to upland areas away from the river. Historical floodplain locations will not be disturbed.

100 YEAR FLOODPLAIN ANALYSIS

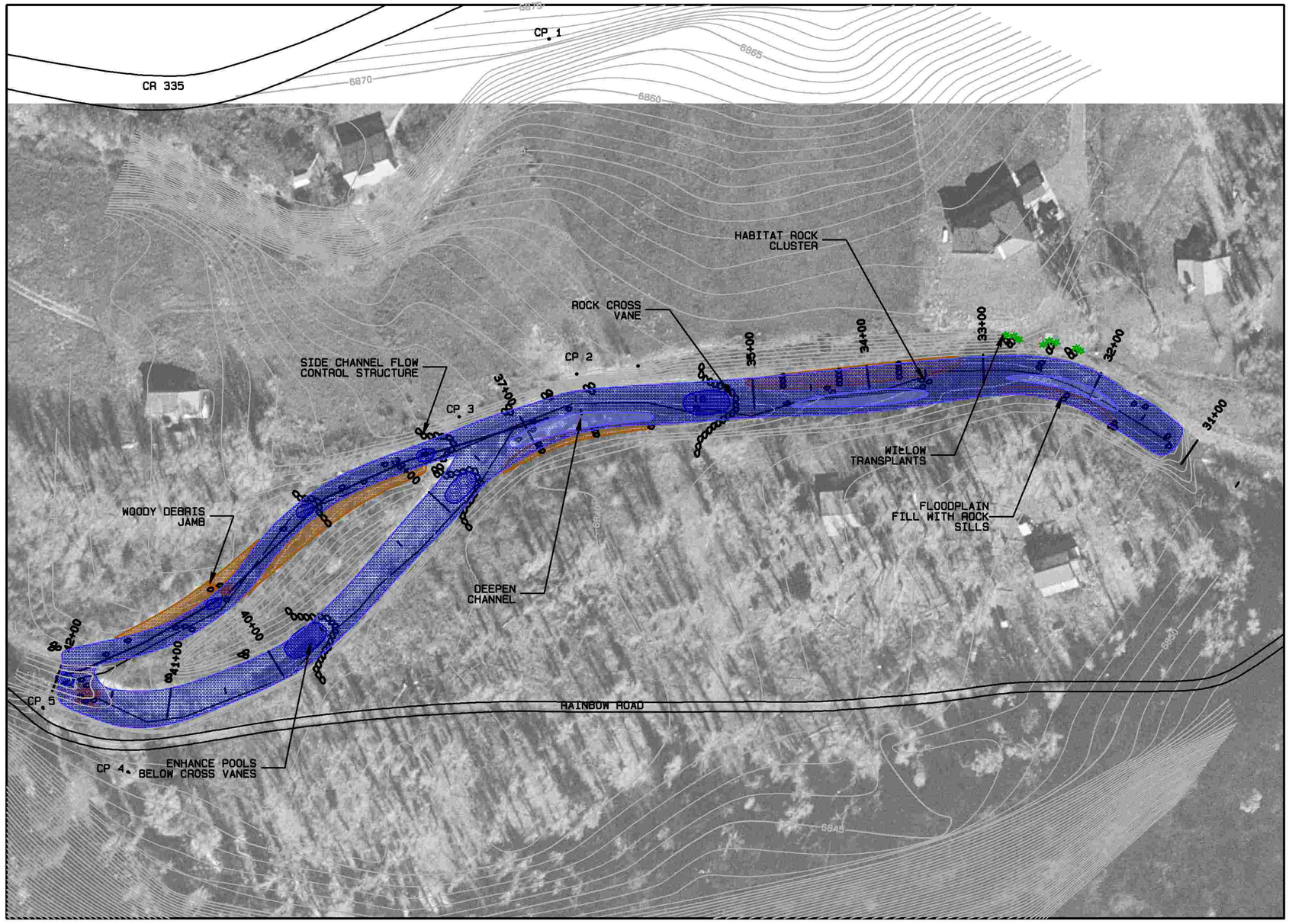
The reach of the Lower Blanco River where restoration work is planned has been studied by FEMA , and base flood flow elevations for the 1% return frequency flood event have been established (Appendix A). In order to ensure that the proposed restoration techniques do not adversely effect the 100 year flood elevations and horizontal locations, a detailed hydraulic water surface profile computer model (Hec-Ras 4.0) was developed for 1100 linear feet representative section of the Blanco River. This representative section of the Blanco River contains many of the typical characteristics seen throughout the project reach. The upper end of the reach contains a high terrace river right with a large, well vegetated floodplain river left. The lower end of the reach has a well established island with mature vegetation where the river splits for approximately 350 feet, and as the river meanders to the north, the floodplain transitions to the river right side. The vegetation along the river banks and on the floodplains is mature and well established. The restoration plan for this reach includes construction of large rock structures in the channel bed, creation of side channel bars by narrowing the low flow channel through excavation of the existing thalweg, and the enhancement of a side spawning channel around the island (see Figure 2). At flood stage this side channel will allow the conveyance of flood waters. Establishment of a single primary channel will ensure continuity of sediment transport down the river, and will prevent aggradation which over time could adversely effect water surface flood elevations.



LOWER BLANCO RIVER RESTORATION

Project Location Map

Not to Scale FIGURE 1	6-15-2009	Riverbend Engineering P.O. Box 2979 Pagosa Springs, CO 81147 970-264-1195



Riverbend Engineering, LLC

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Lower Blanco River Restoration

PAGOSA SPRINGS, CO

100 YEAR FLOODSTUDY PROPOSED RESTORATION PLAN FIGURE 2

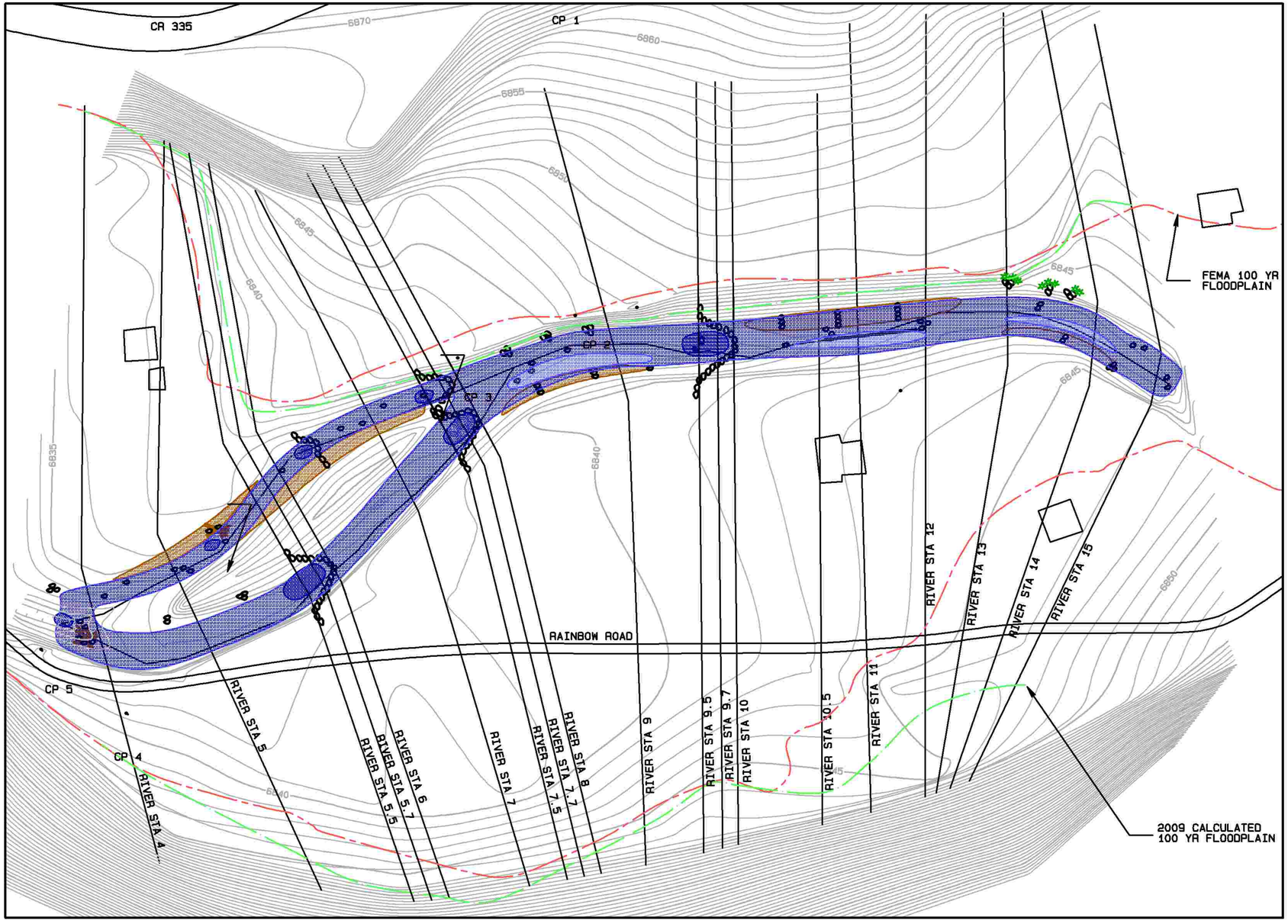
Scale: 1" = 100 ft

6-15-2009

Photo of Representative Reach looking upstream from CP-2. Note high terrace river right well vegetation floodplain river left.

A detailed topographic survey was completed of the representative reach with an optical total station survey instrument. The survey data elevations were then tied into an existing FEMA benchmark (RM-30), several miles upstream of the study reach using GPS survey equipment. An existing conditions water surface profile model was created based on the current topography and the FEMA flood insurance study 100 year flood flow volumes. The existing FEMA flood study was not used for the existing conditions model, however, the existing FEMA map was digitized and best fit to the surveyed area for general floodplain location comparisons (see Figure 3). A proposed conditions model was then created based on the proposed river restoration plans for this reach, and was compared to the existing conditions model. The proposed conditions model has modified geometric data to reflect the changes in the channel geometry due to the proposed restoration techniques. A comparison of the cross sections for each model can be found in Appendix 1.

The resulting change in base flood elevation due to the change in geometry of the proposed conditions model is presented in the water surface output table. It is shown that the largest change in water surface elevation from the change in channel geometry is approximately .06 ft. The largest increase in top width is 3.33 ft.



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Lower Blanco River Restoration

PAGOSA SPRINGS, CO

FLOODPLAIN WORKMAP
FIGURE 3

Scale: 1" = 100 ft

6-15-2009

Cross Section Comparision Exisiting vs. Proposed Conditions						
Cross Section	Existing W.S. Elev	Proposed W.S. Elev	Change in WS	Existing Top Width	Proposed Top Width	Change in Top Width
15	6847.62	6847.62	0	483.41	483.41	0
14	6847.12	6847.08	-0.04	479.65	478.96	-0.69
13	6846.46	6846.47	0.01	376.19	375.61	-0.58
12	6845.85	6845.84	-0.01	365.77	365.66	-0.11
11	6844.94	6844.92	-0.02	436.95	436.81	-0.14
10.5	6844.22	6844.28	0.06	423.84	424.29	0.45
10	6842.84	6842.86	0.02	415.38	415.65	0.27
9.7	6842.62	6842.5	-0.12	420.04	418.06	-1.98
9.5	6842.45	6842.48	0.03	408.28	408.93	0.65
9	6842.04	6841.97	-0.07	411.94	411.57	-0.37
8	6840.93	6840.96	0.03	424.96	425.9	0.94
7.7	6841.11	6841.15	0.04	434.45	435.53	1.08
7.5	6841.06	6840.99	-0.07	454.21	451.19	-3.02
7	6840.32	6840.34	0.02	381.24	381.4	0.16
6	6839.65	6839.66	0.01	614.31	614.55	0.24
5.7	6839.54	6839.53	-0.01	601.6	604.93	3.33
5.5	6839.54	6839.52	-0.02	613.06	612.36	-0.7
5	6838.88	6838.89	0.01	655.94	656.18	0.24
4	6837.35	6837.35	0	418.29	418.29	0

Table 1.

A graphical plot of the water surface profiles for the existing and proposed conditions is shown below.

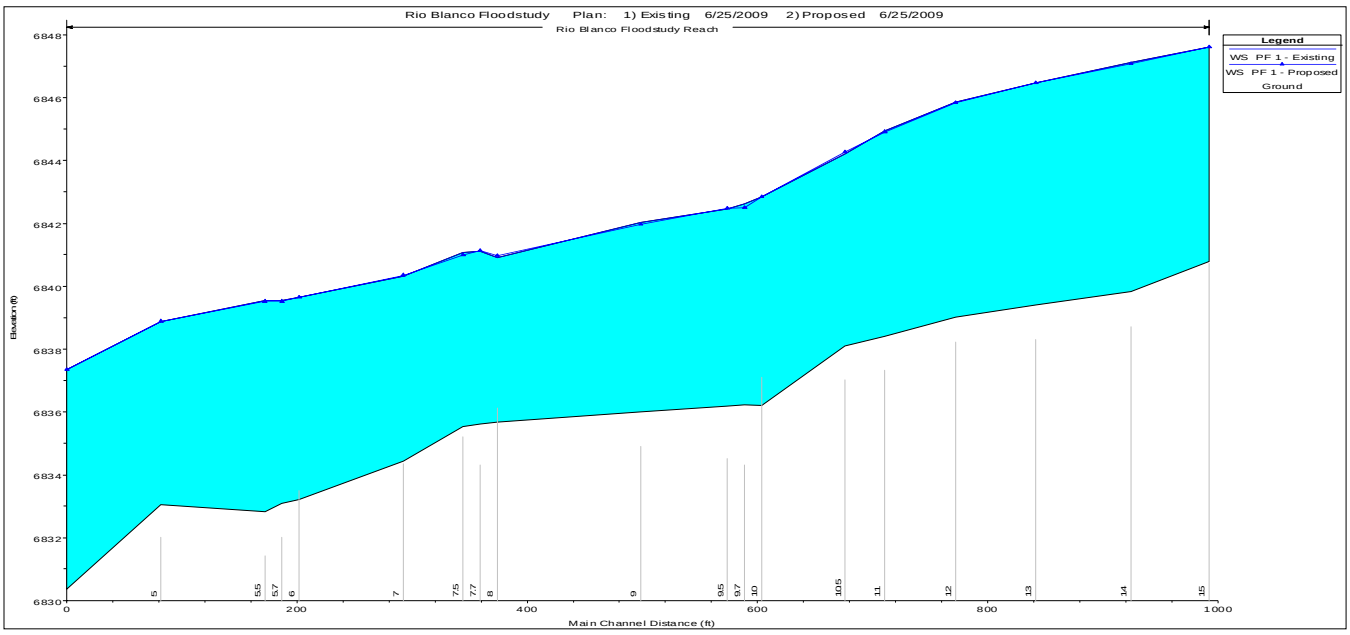
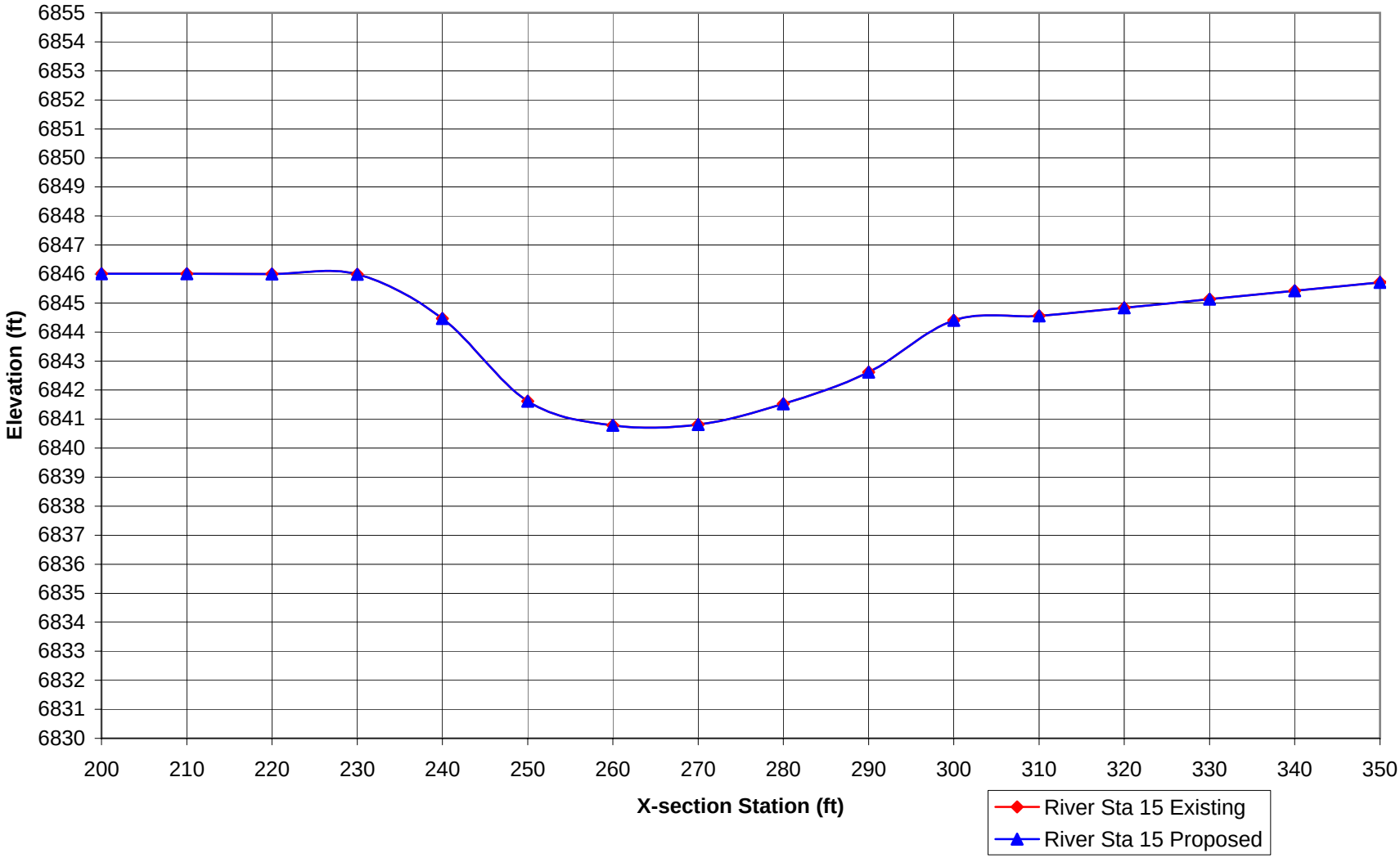


Figure 4

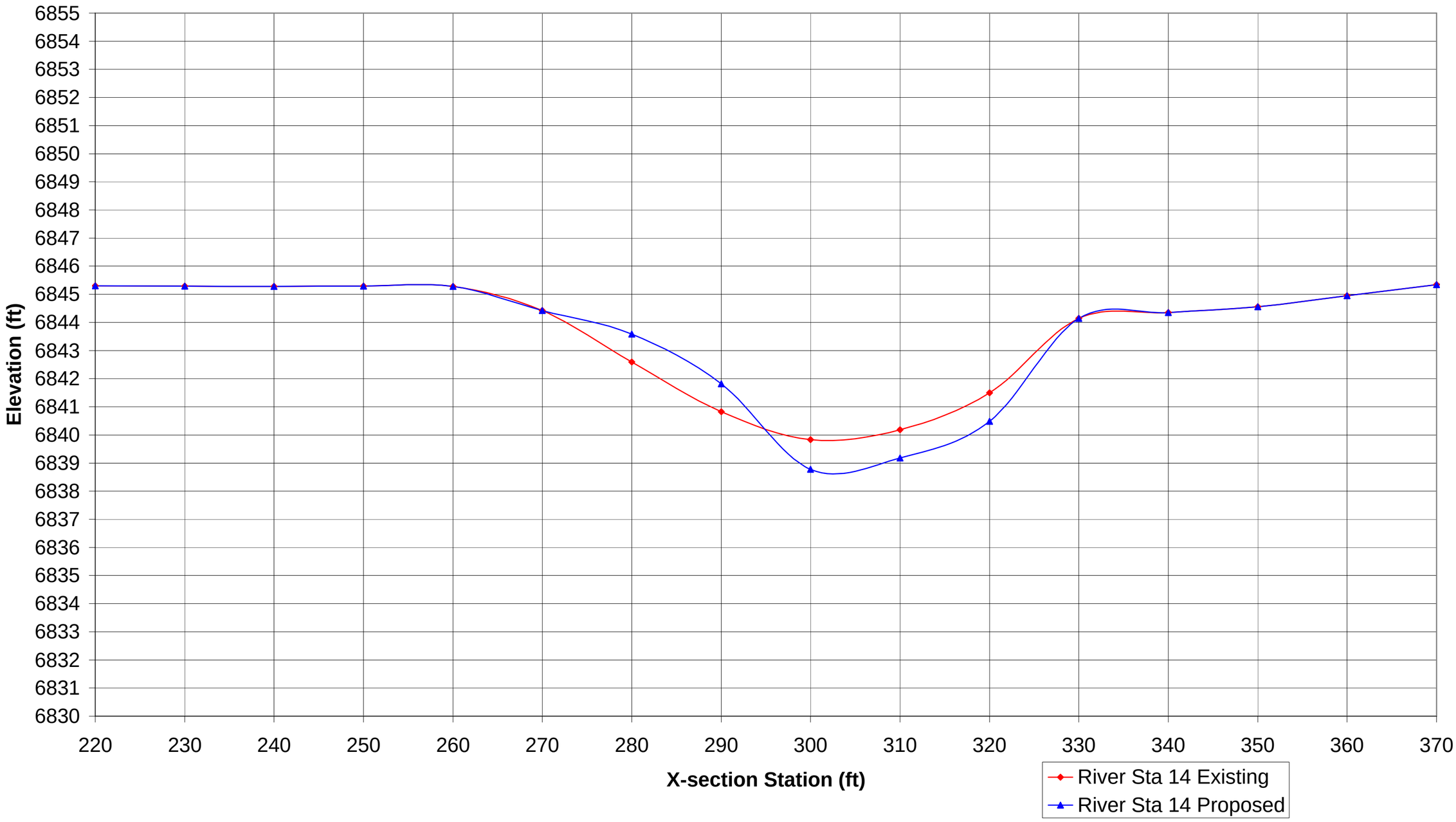
CONCLUSION

The changes in channel geometry proposed by the river restoration project will rearrange the channel cross-section, but will maintain similar cross sectional areas used for conveyance of floodwaters. The representative river section and proposed restoration techniques used in this floodstudy are very similar to the other sections of river and restoration techniques proposed as part of the Lower Blanco River Restoration project. The proposed restoration techniques used for the Lower Blanco River Restoration project will not significantly increase the base flood elevations in this reach of the river and will not significantly increase the horizontal extent of flooding.

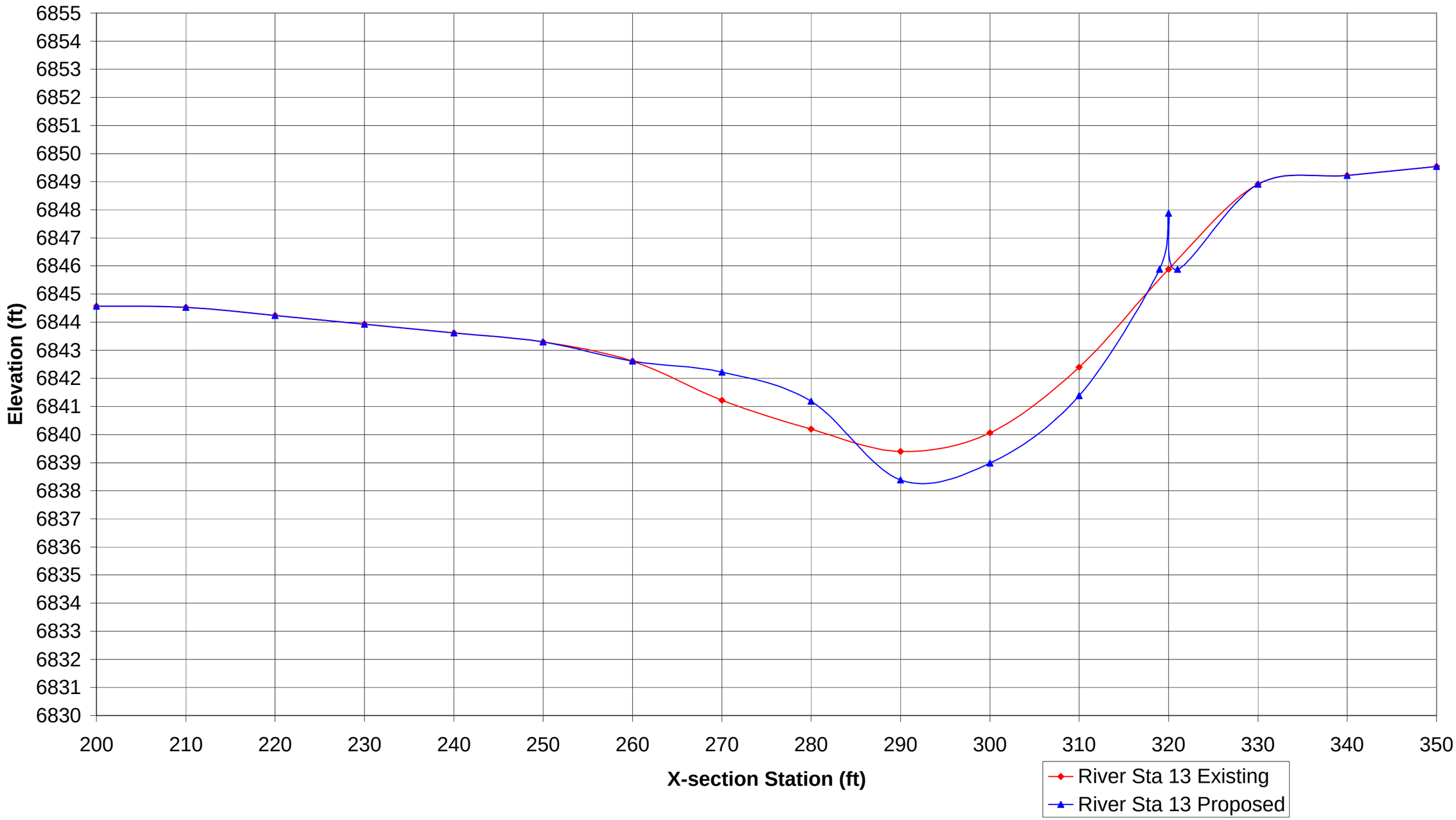
Cross Section Comparison
River Station 15



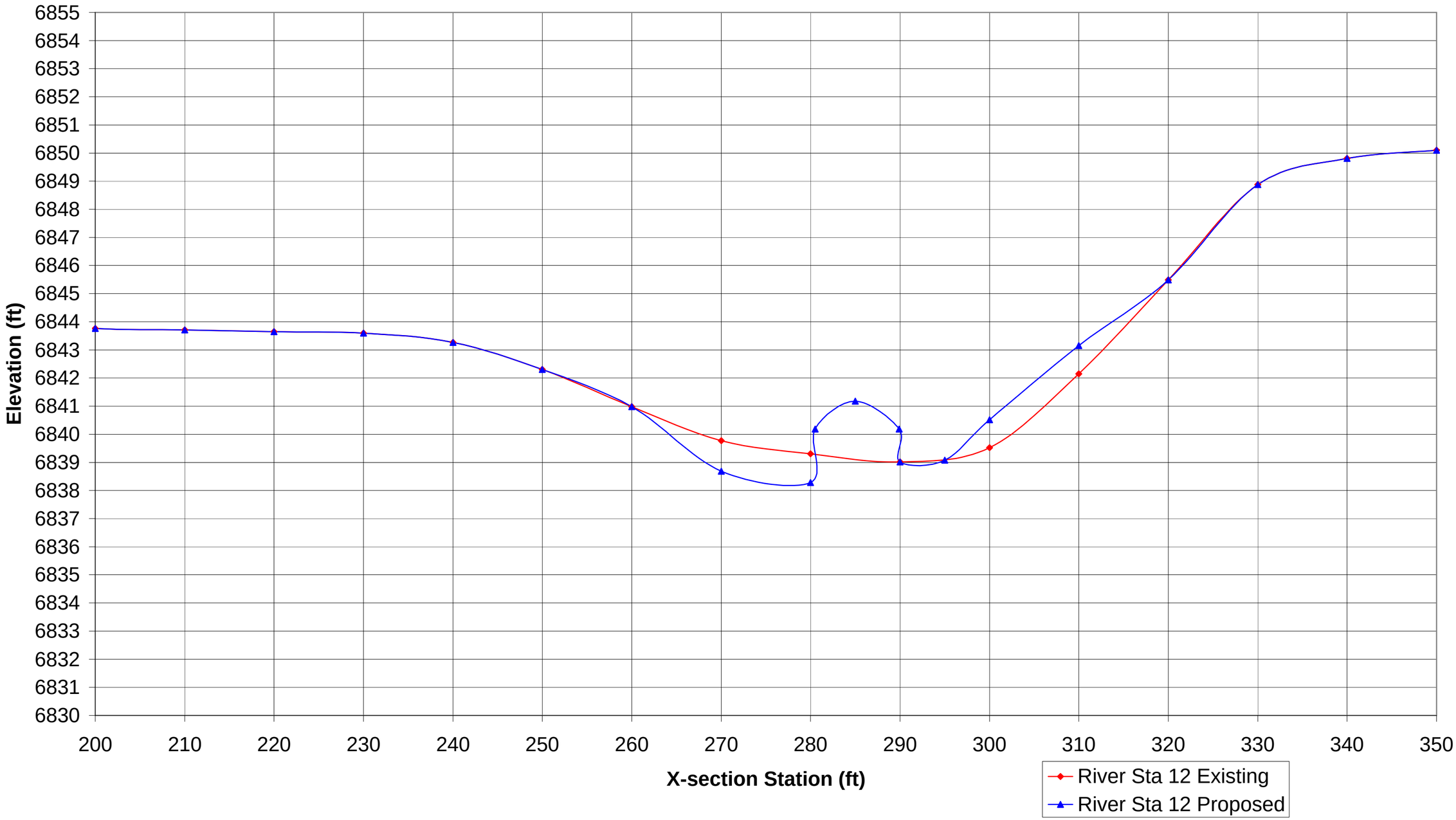
Cross Section Comparison
River Station 14



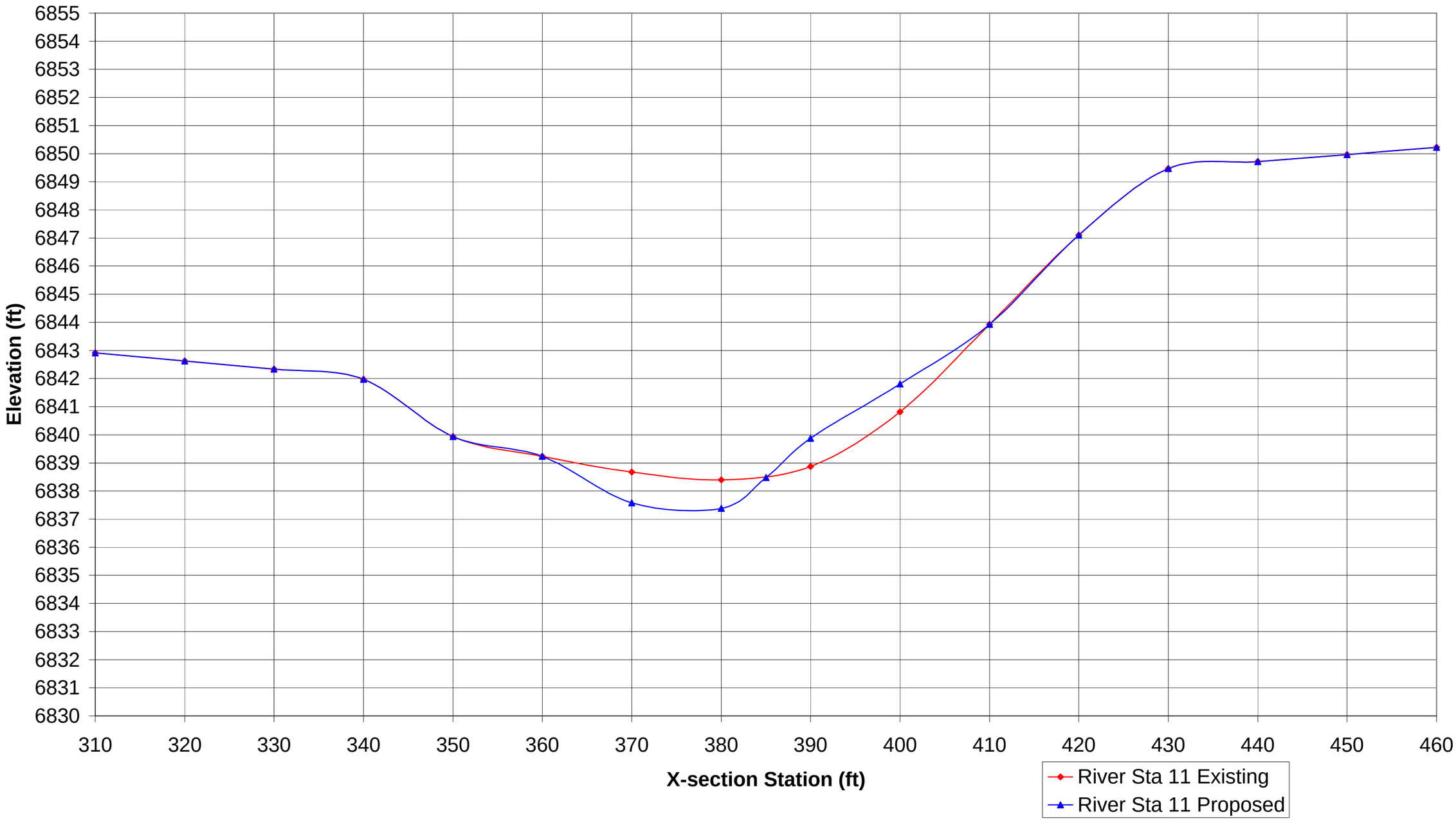
Cross Section Comparison
River Station 13



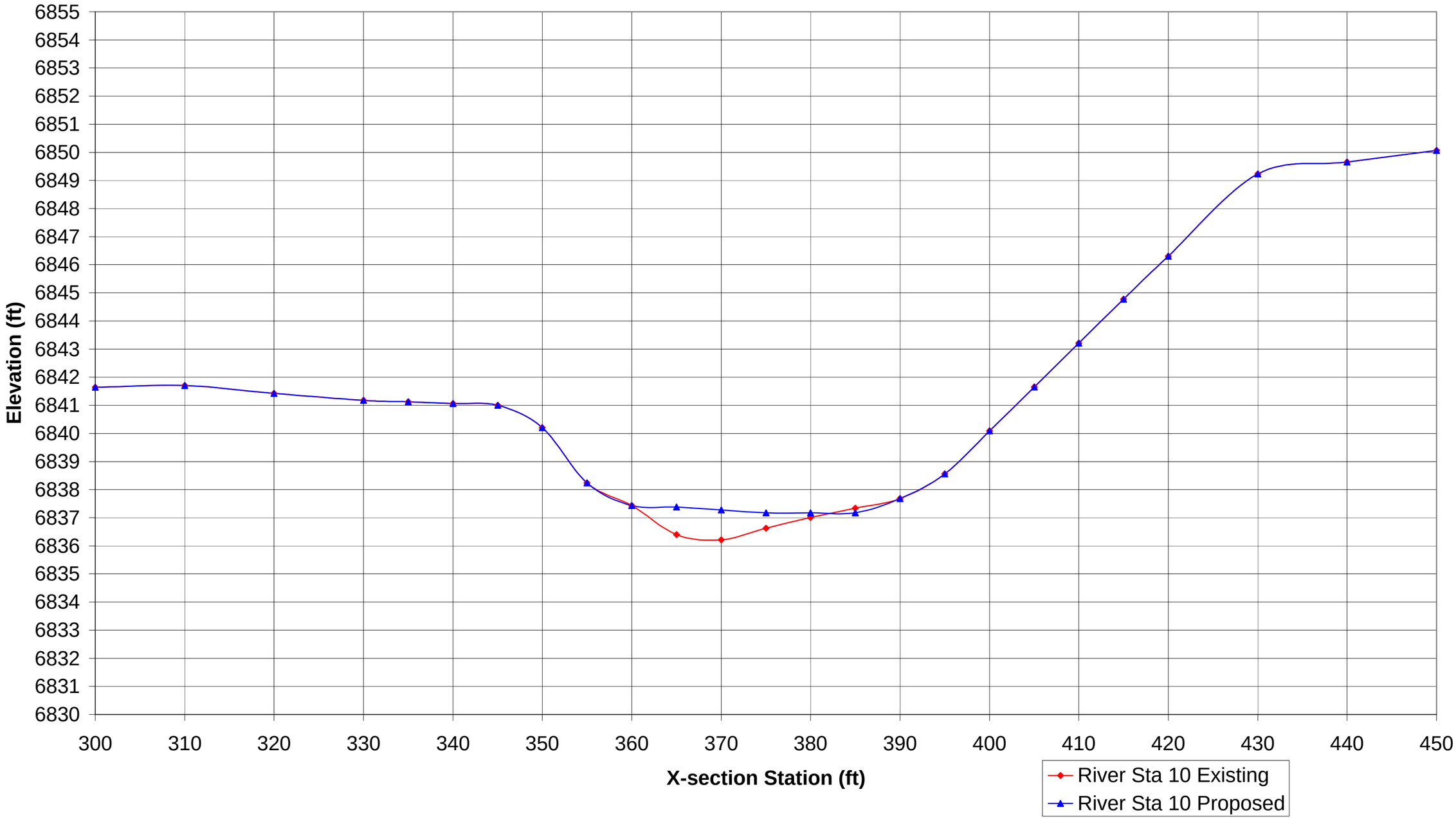
Cross Section Comparison
River Station 12



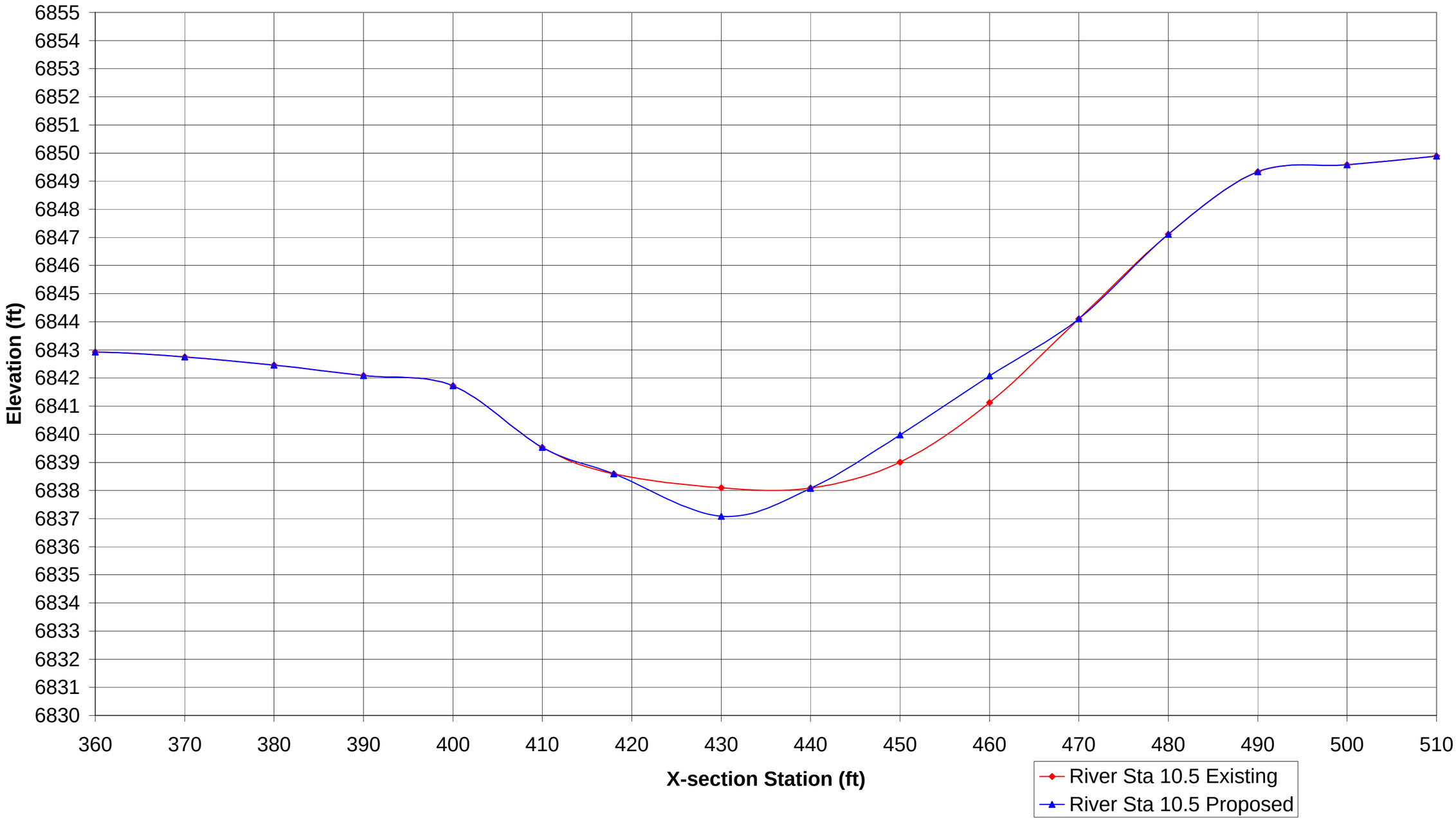
Cross Section Comparison
River Station 11



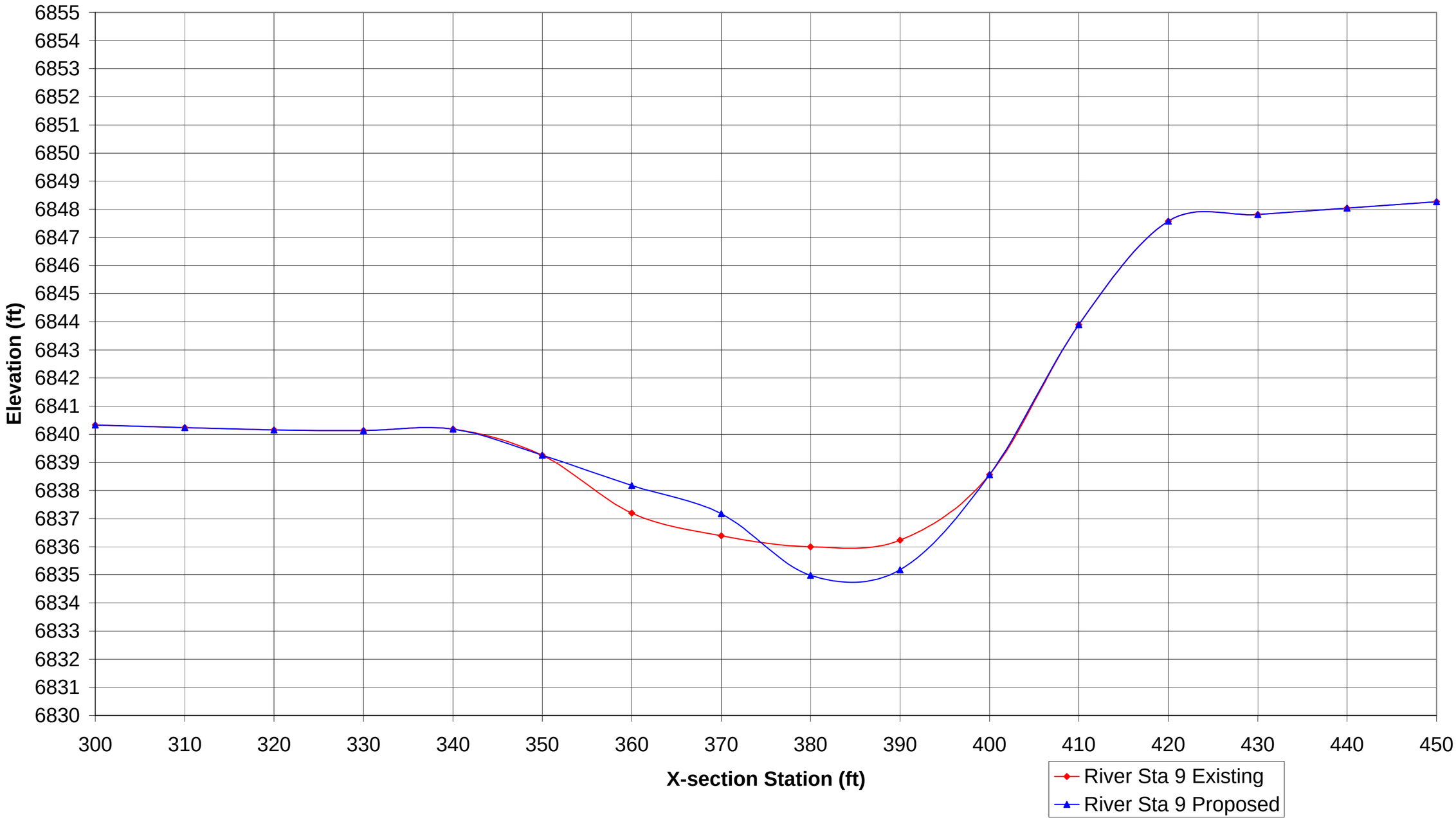
Cross Section Comparison
River Station 10



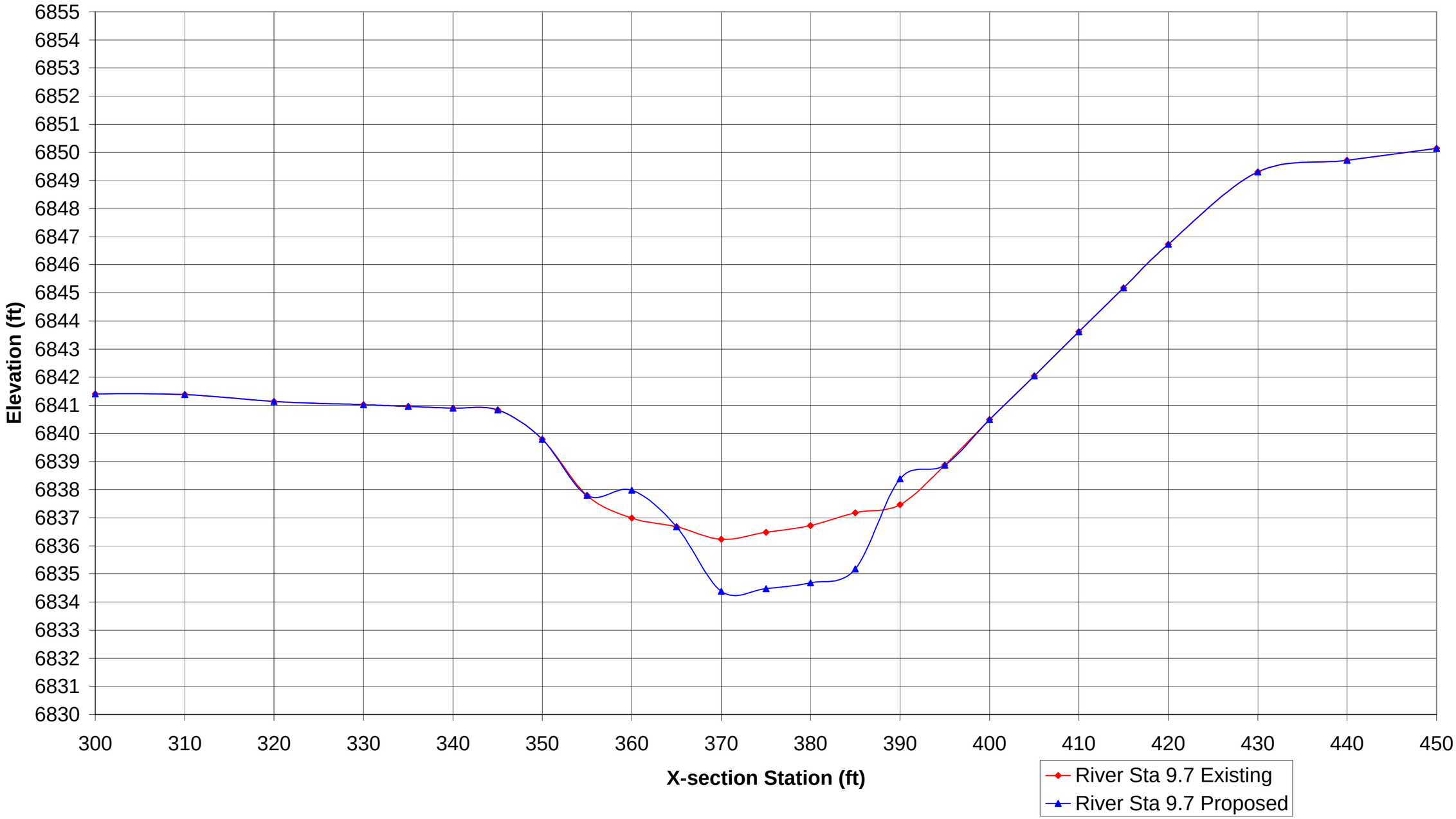
Cross Section Comparison
River Station 10.5



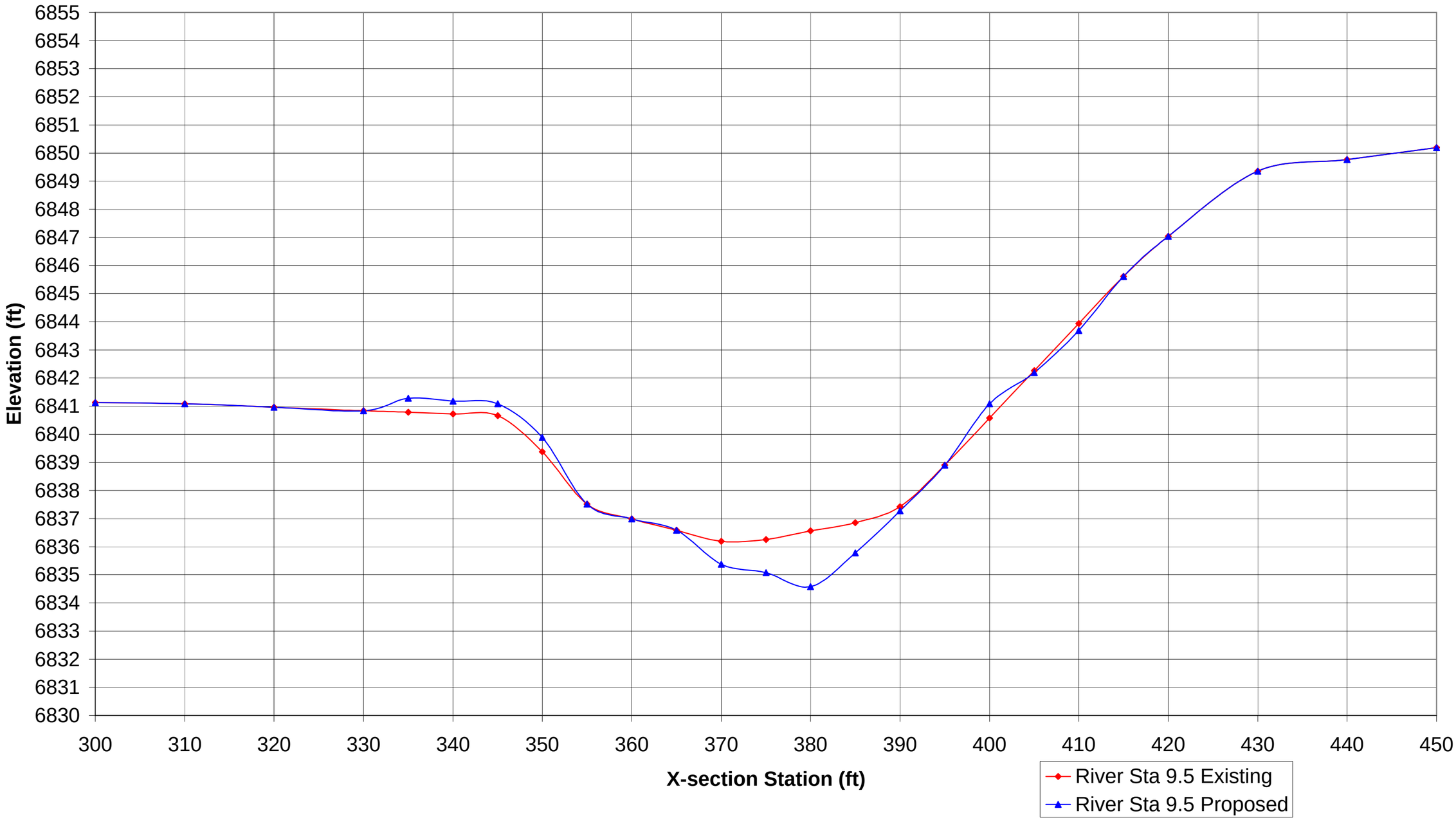
Cross Section Comparison
River Station 9



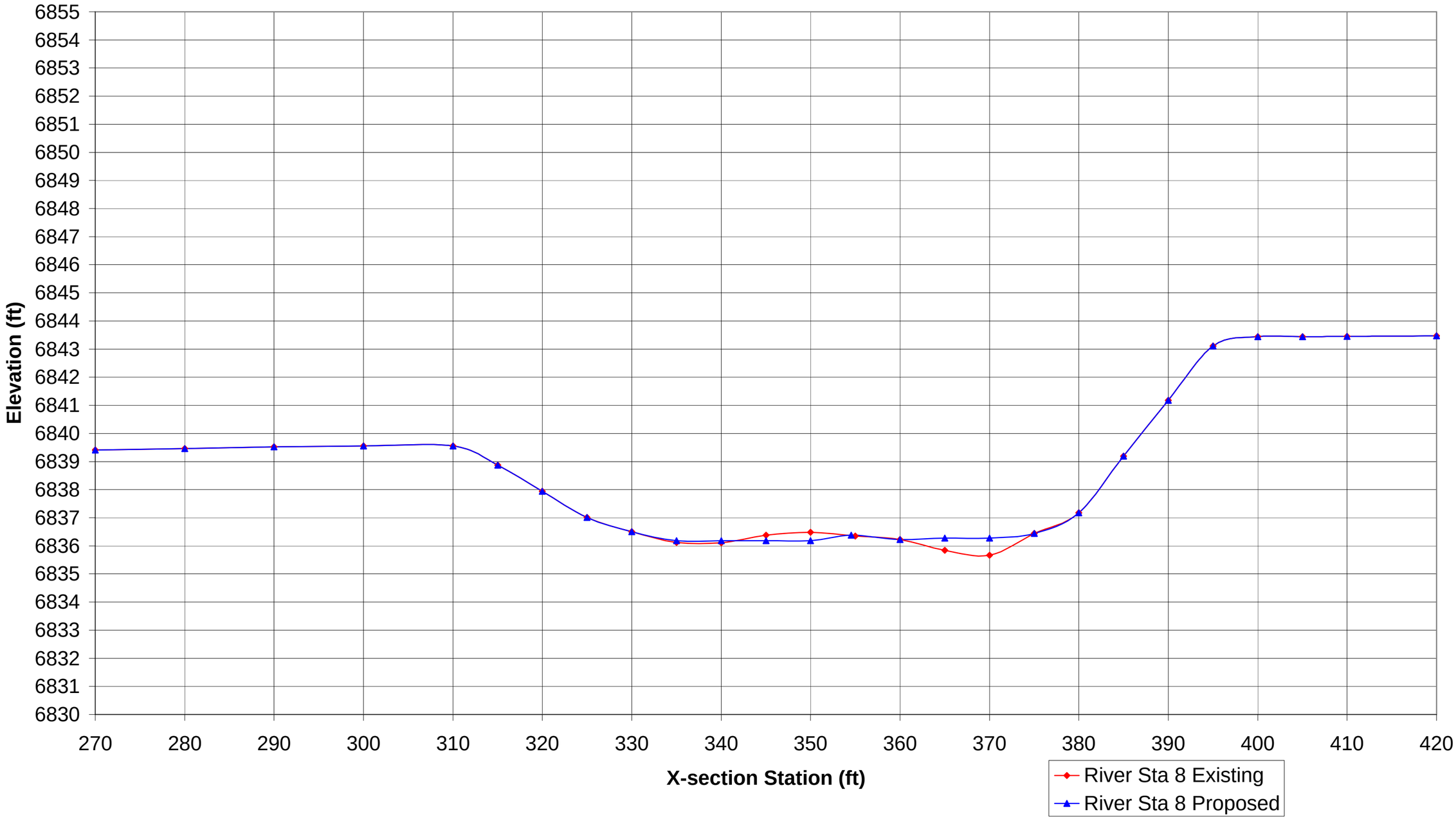
Cross Section Comparison
River Station 9.7



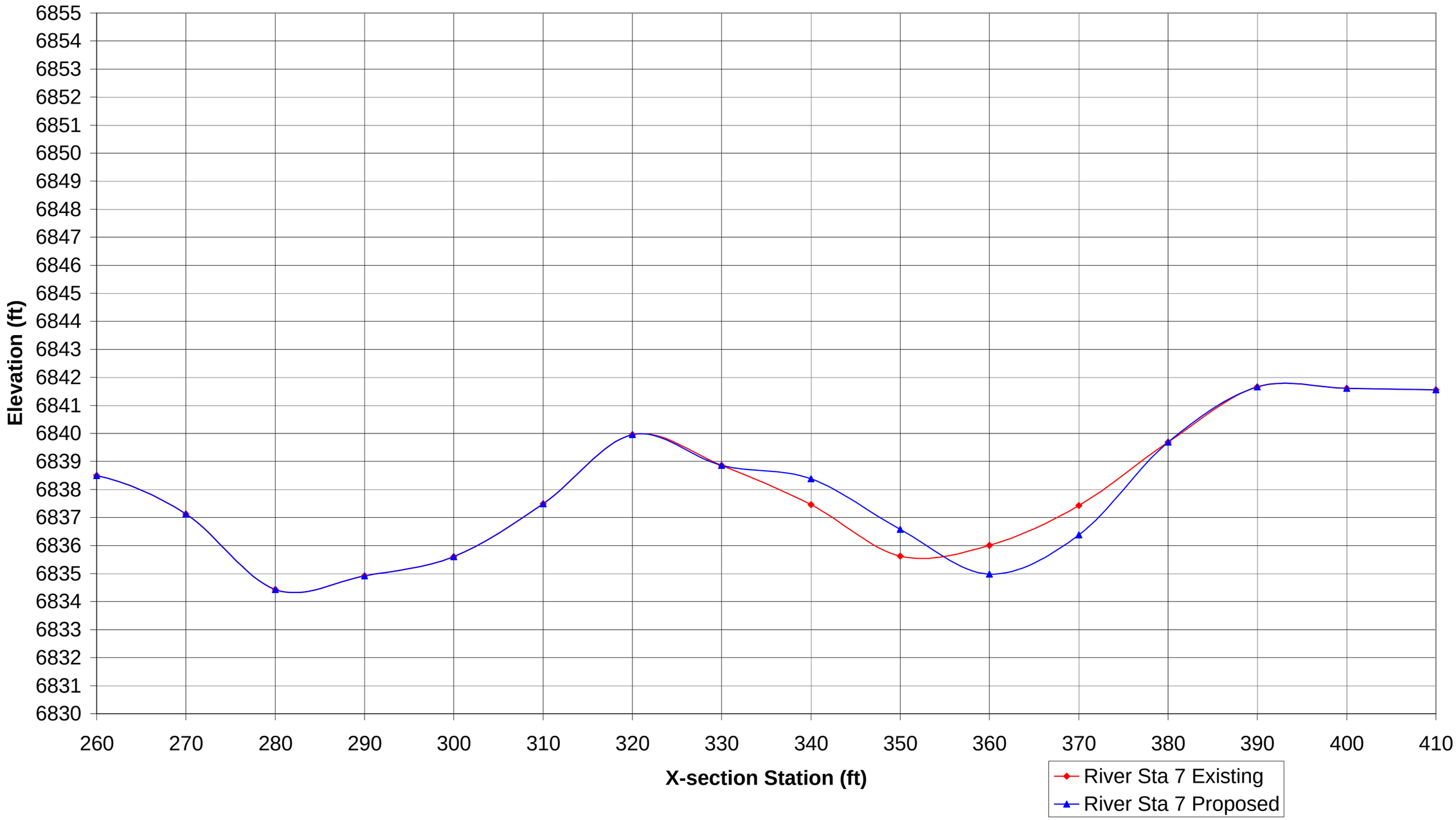
Cross Section Comparison
River Station 9.5



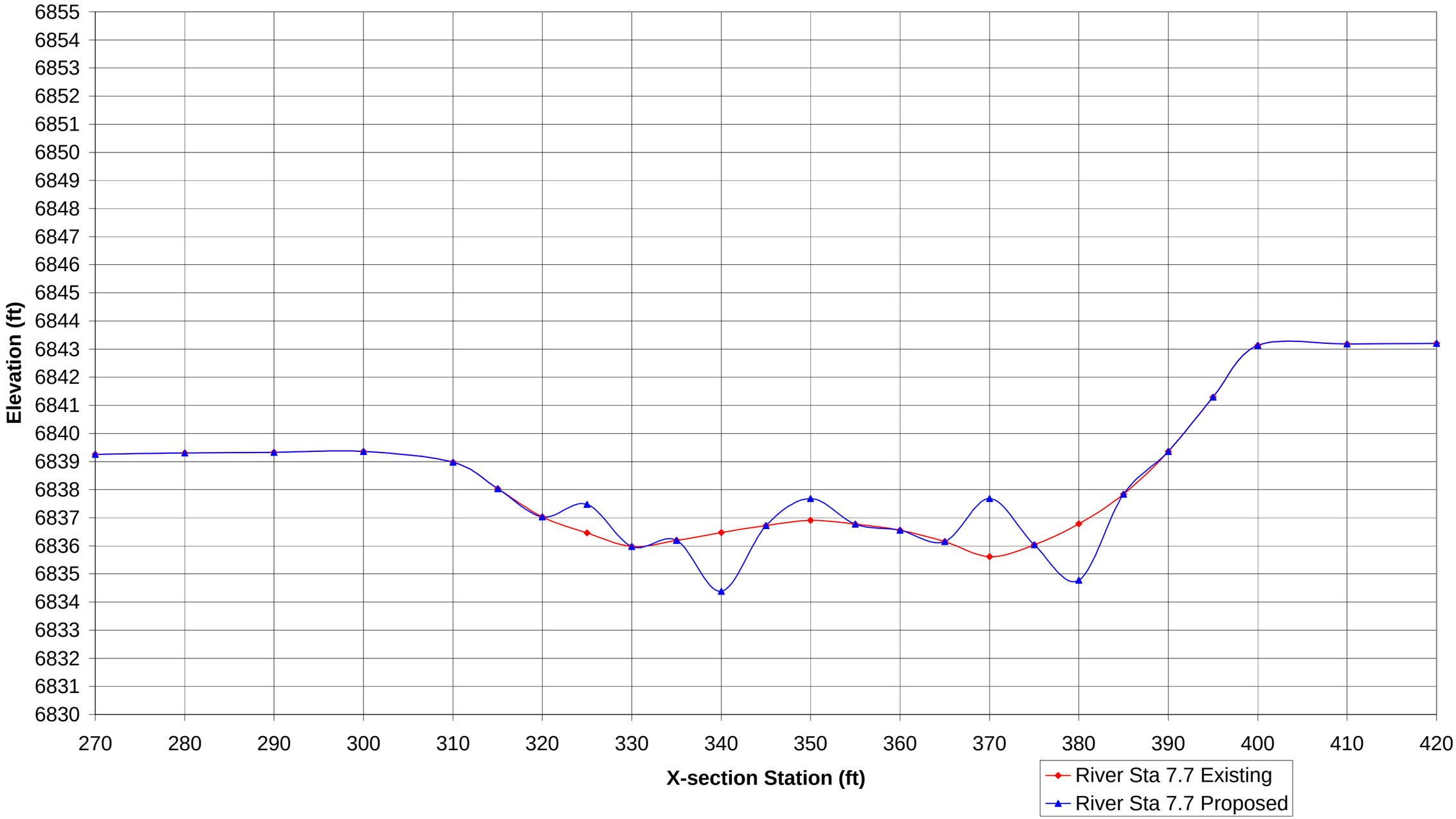
Cross Section Comparison
River Station 8



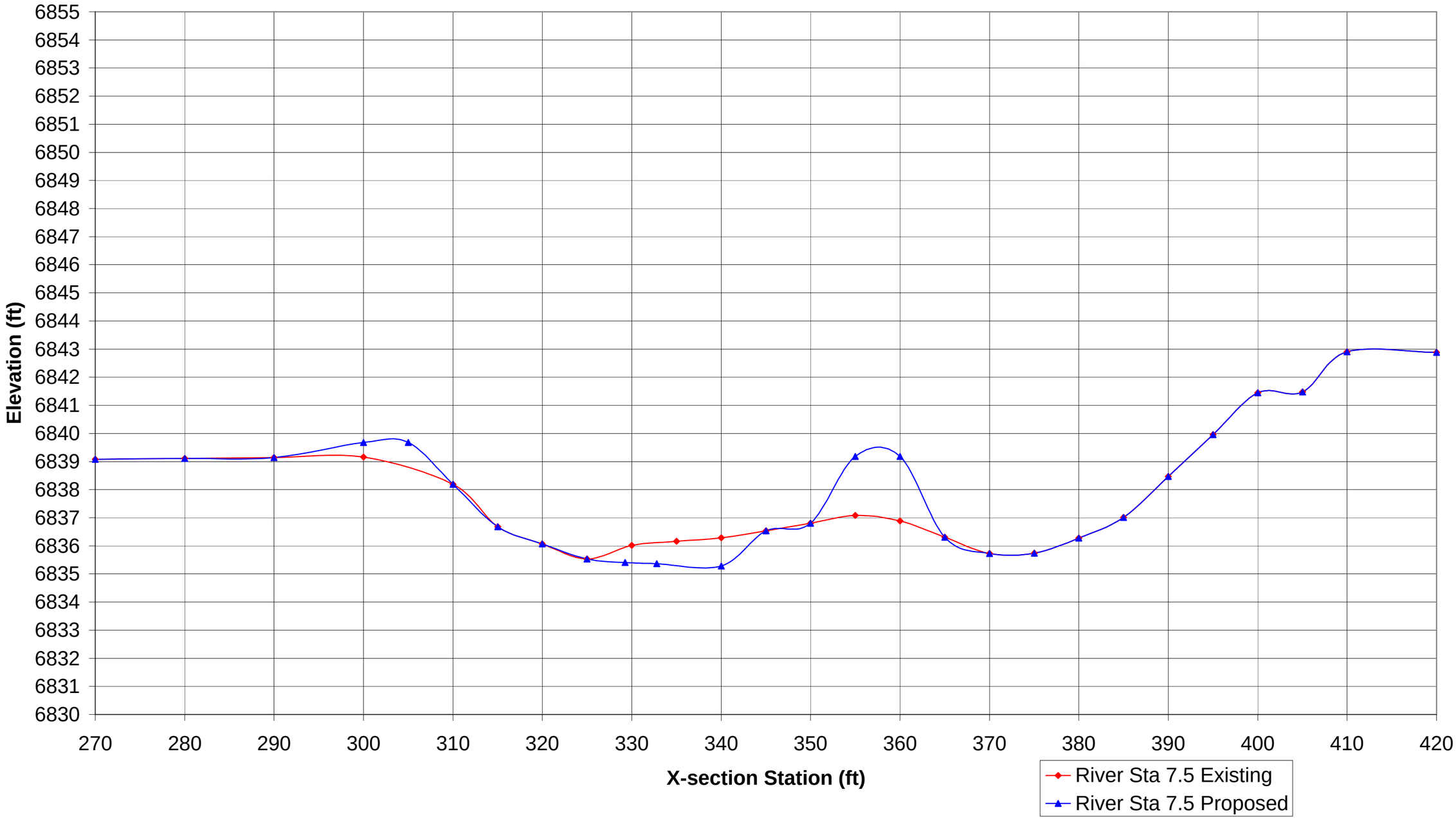
Cross Section Comparison
River Station 7



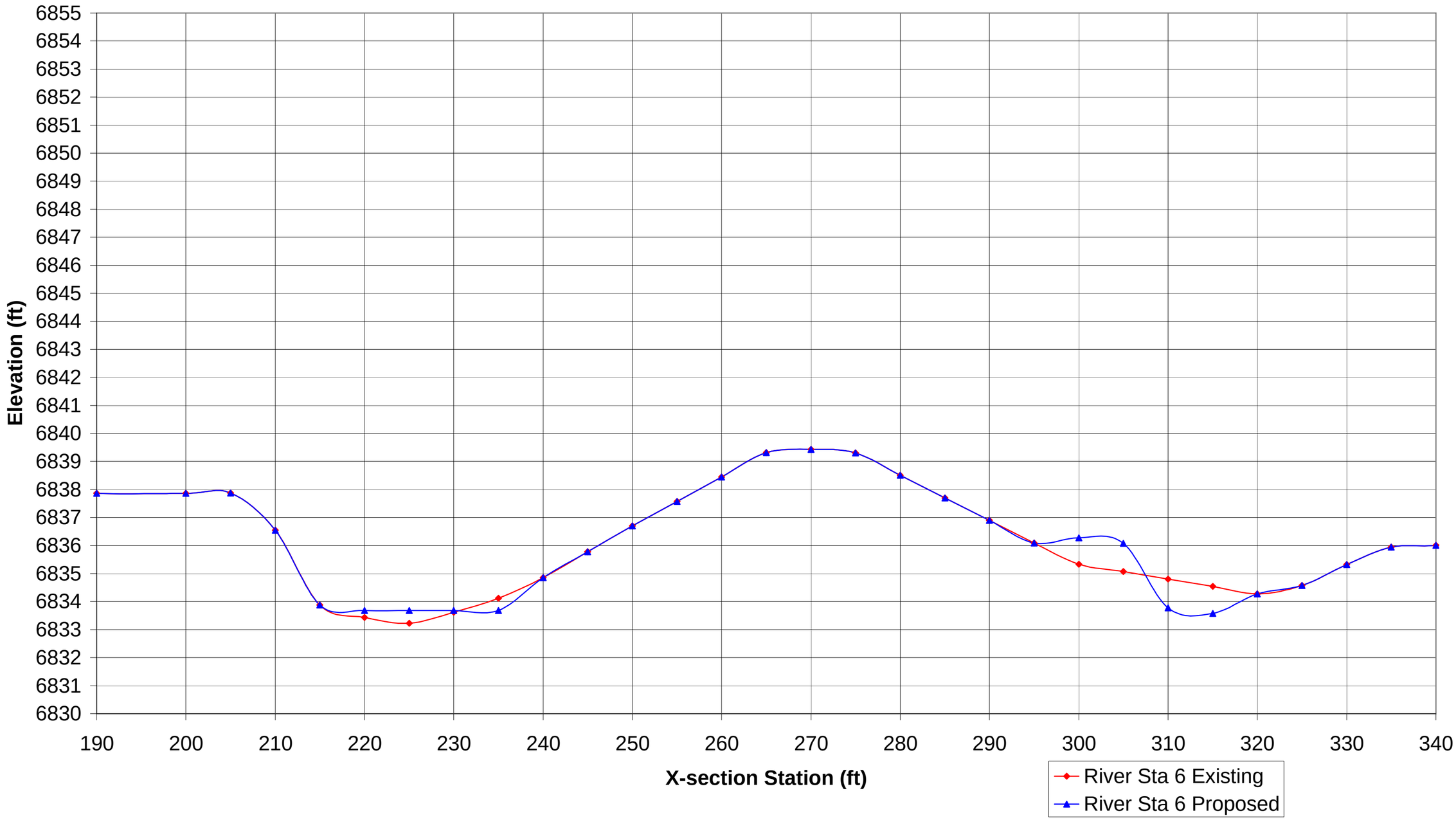
Cross Section Comparison
River Station 7.7



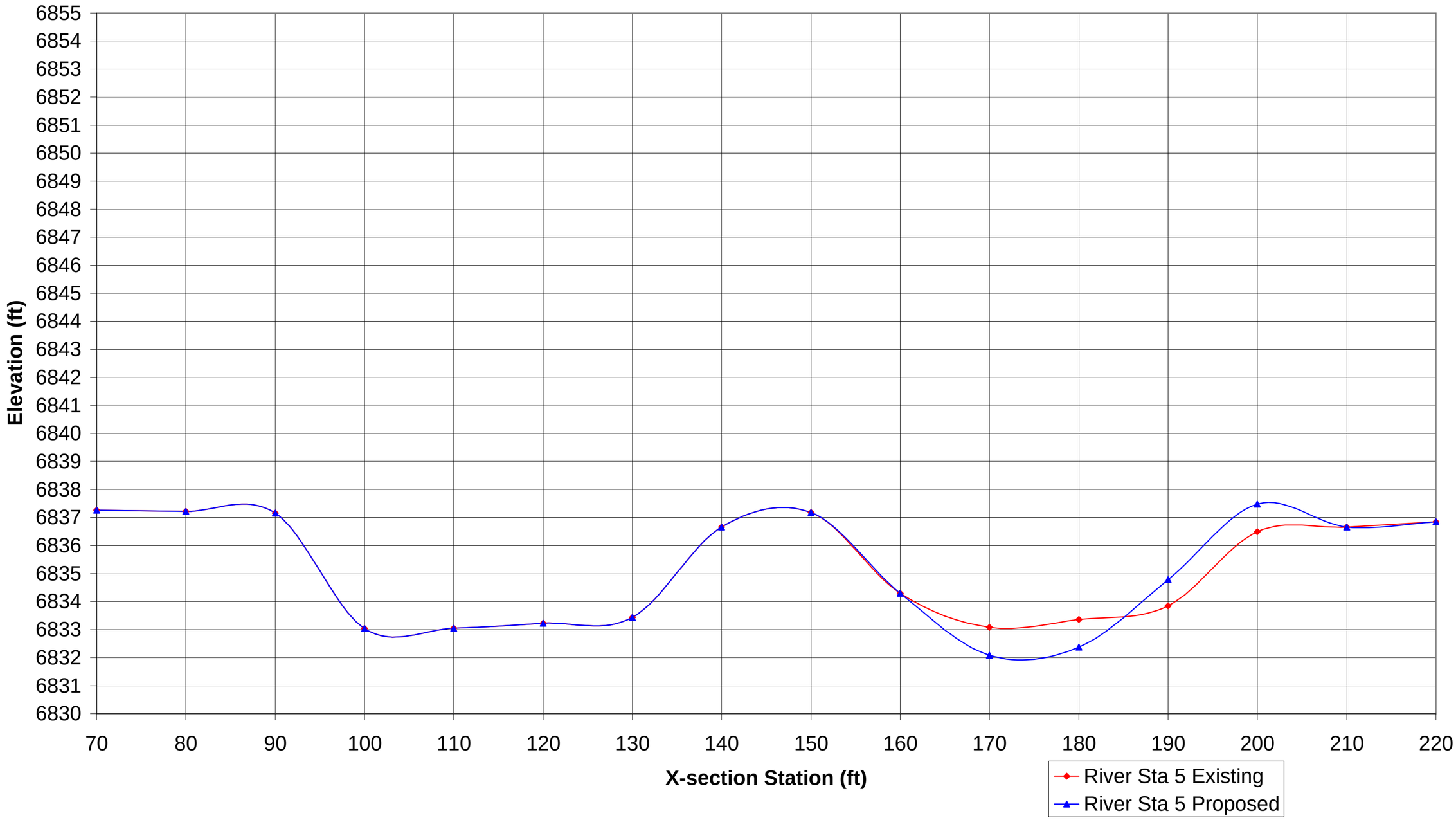
Cross Section Comparison
River Station 7.5



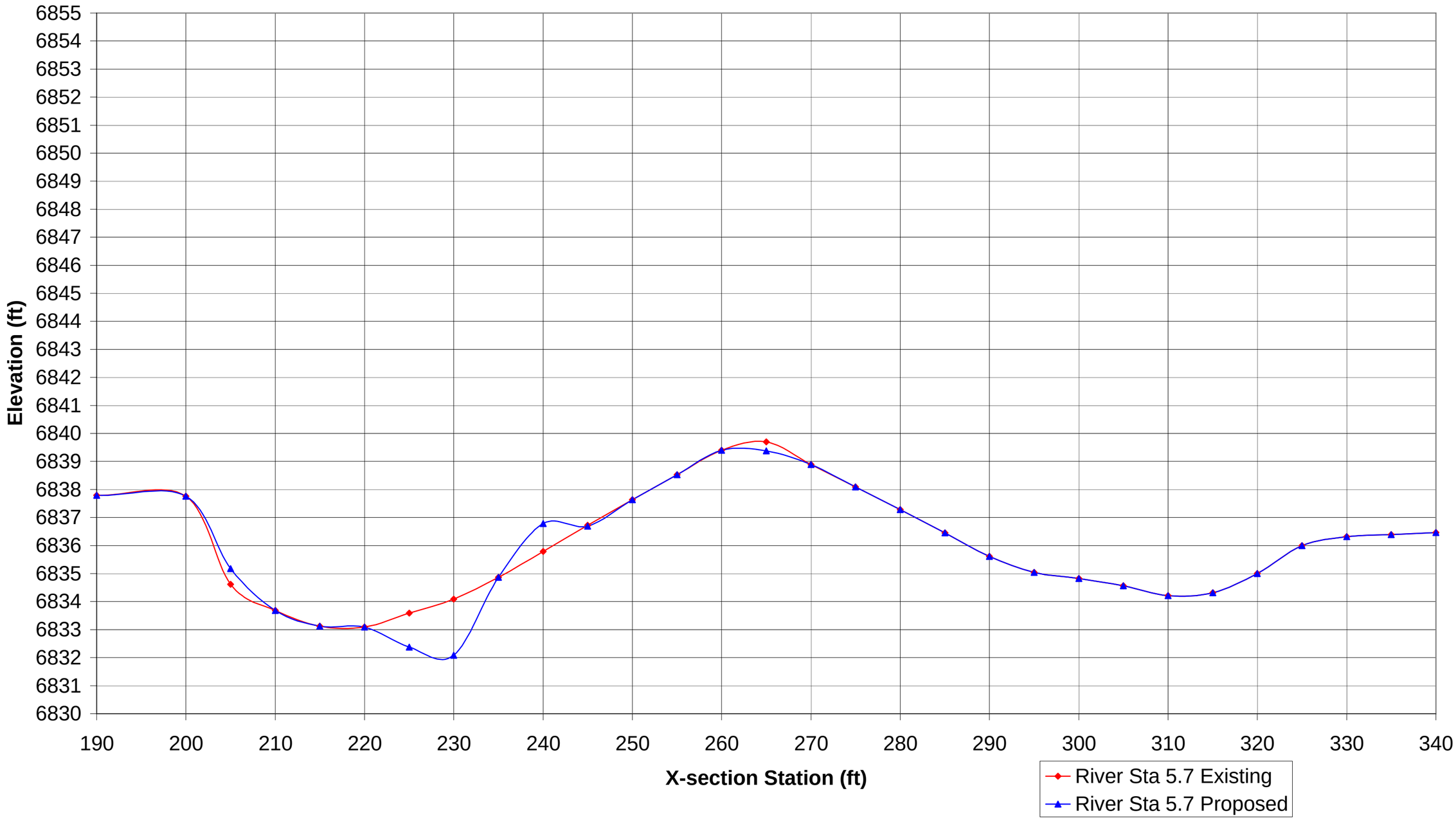
Cross Section Comparison
River Station 6



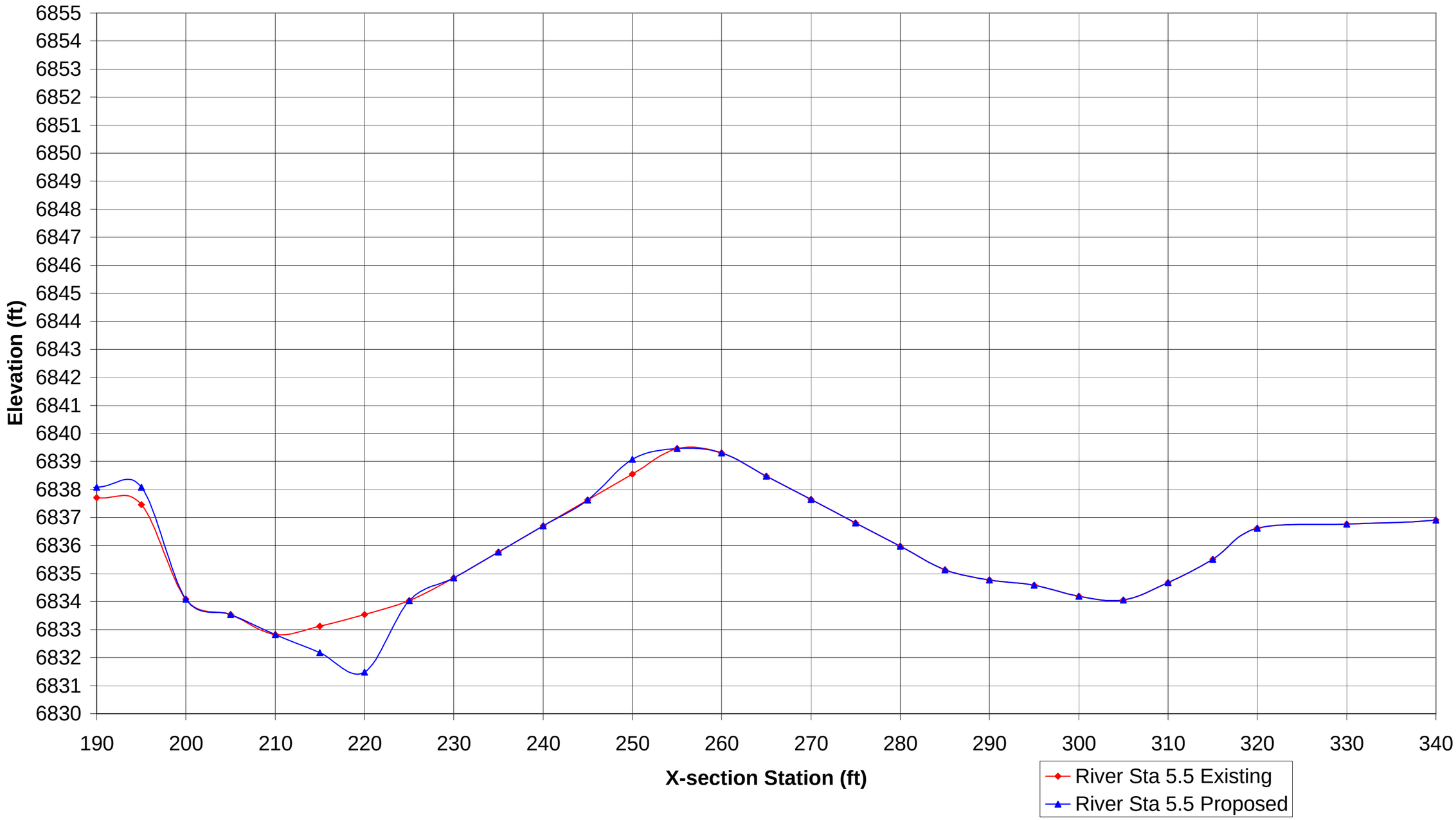
Cross Section Comparison
River Station 5



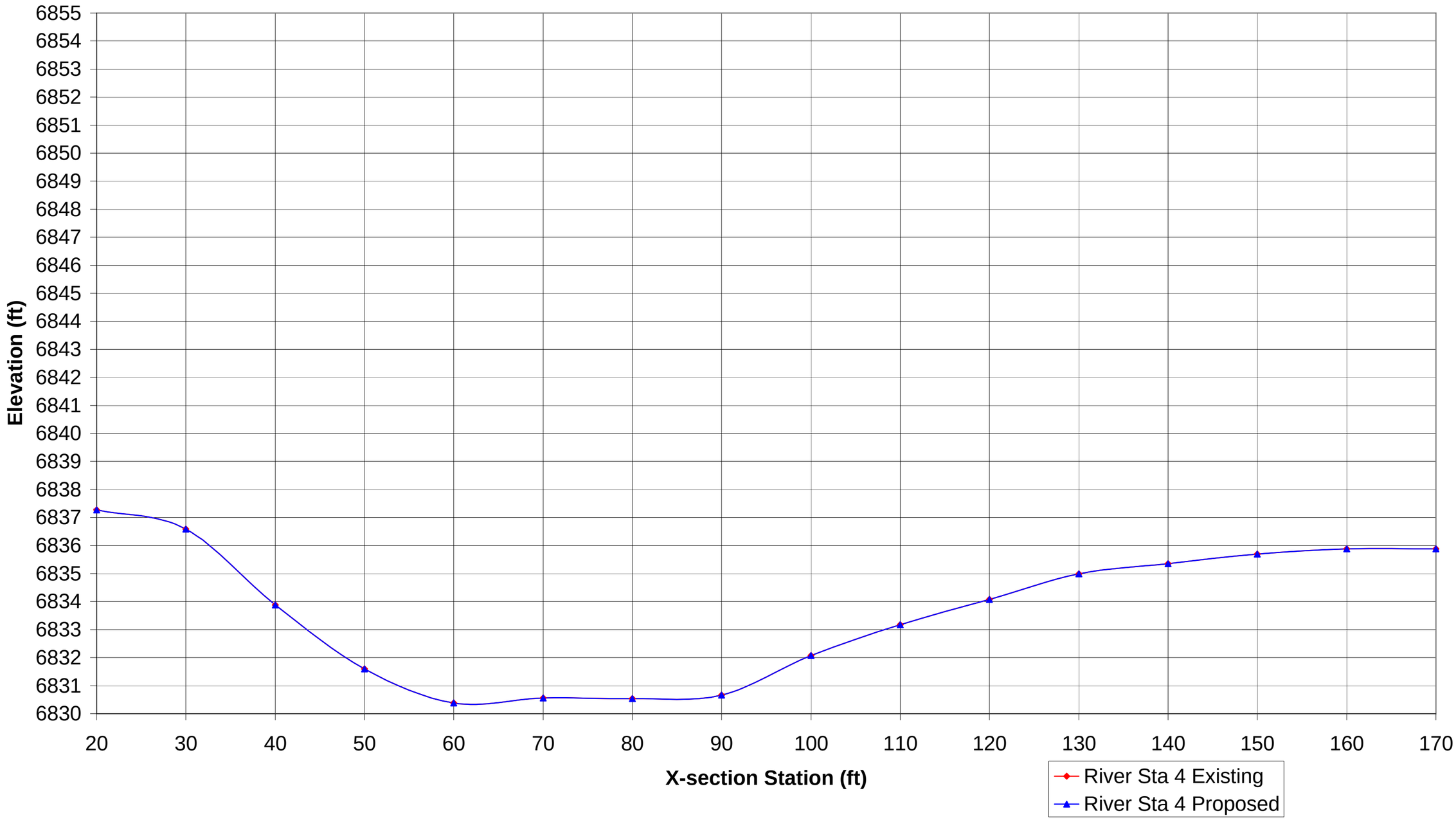
Cross Section Comparison
River Station 5.7

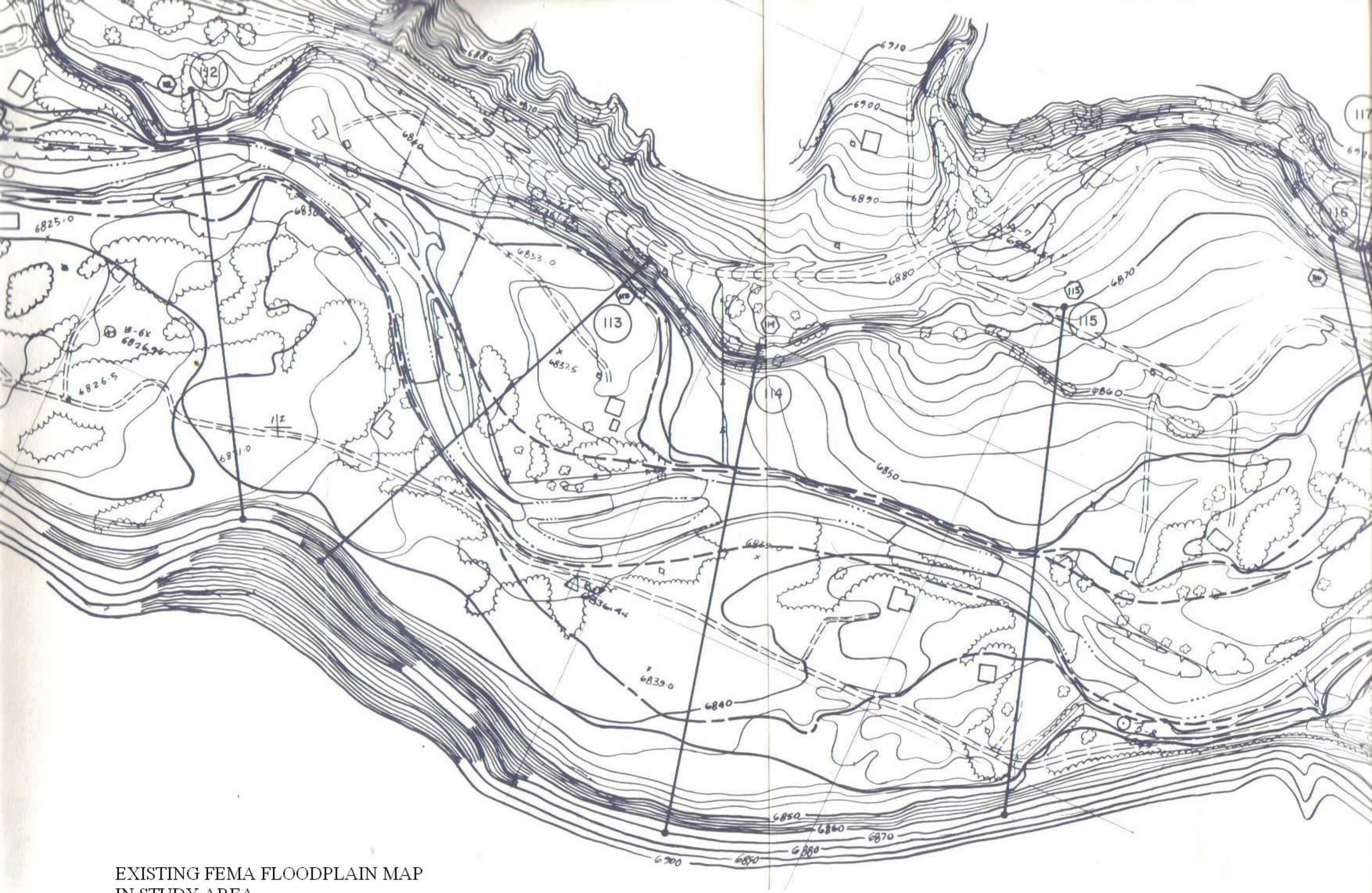


Cross Section Comparison
River Station 5.5



Cross Section Comparison
River Station 4





EXISTING FEMA FLOODPLAIN MAP
IN STUDY AREA
EFFECTIVE DATE JAN. 3RD 1979
NOT TO SCALE

HEC-RAS Version 4.0.0 March 2008
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
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PROJECT DATA
Project Title: Rio Blanco Floodstudy
Project File : RioBlancoFloodstu.prj
Run Date and Time: 6/25/2009 5:41:26 PM

Project in English units

PLAN DATA

Plan Title: Plan 10
Plan File : C:\RioBlancoFloodstu.p10

Geometry Title: Existing Conditions spring09
Geometry File : C:\RioBlancoFloodstu.g01

Flow Title : 100 yr fema flow
Flow File : C:\RioBlancoFloodstu.f01

Plan Summary Information:
Number of: Cross Sections = 19 Multiple Openings = 0
Culverts = 0 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: 100 yr fema flow

Flow File : C:\RioBlancoFloodstu.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Rio Blanco	Floodstudy Reach	15	5300

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Rio Blanco	Floodstudy Reach	PF 1		

Normal S = 0.005

GEOMETRY DATA

Geometry Title: Existing Conditions spring09
Geometry File : C:\RioBlancoFloodstu.g01

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 15

INPUT
Description: Upstream Boundary of Study Area
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-70	6848.18	-60	6846.18	0	6846.18	10	6846.14	20	6846.13
30	6846.12	40	6846.11	50	6846.11	60	6846.1	70	6846.09
80	6846.09	90	6846.08	100	6846.08	110	6846.07	120	6846.06
130	6846.06	140	6846.05	150	6846.04	160	6846.04	170	6846.03
180	6846.02	190	6846.02	200	6846.01	210	6846.01	220	6846
230	6845.99	240	6844.47	250	6841.62	260	6840.79	270	6840.81
280	6841.53	290	6842.62	300	6844.4	310	6844.56	320	6844.84
330	6845.13	340	6845.42	350	6845.71	360	6846	370	6846.28
380	6846.57	390	6846.86	400	6847.15	410	6847.44	420	6847.72
430	6848.01	440	6848.3	450	6848.59	460	6848.88	470	6849.16
480	6849.45	490	6849.74	540	6850.93	550	6851.09	560	6851.26
570	6851.43	575.11	6851.52						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-70	.04	250	.035	280	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
250	280	72	68	45	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 14

INPUT
Description:
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-70	6848.18	-60	6845.18	0	6844.85	10	6844.94	20	6845.03
30	6845.12	40	6845.21	50	6845.3	60	6845.39	70	6845.43
80	6845.41	90	6845.4	100	6845.39	110	6845.38	120	6845.37
130	6845.36	140	6845.35	150	6845.34	160	6845.33	170	6845.33
180	6845.32	190	6845.32	200	6845.31	210	6845.3	220	6845.3
230	6845.29	240	6845.28	250	6845.29	260	6845.28	270	6844.42
280	6842.59	290	6840.82	300	6839.83	310	6840.18	320	6841.5
330	6844.14	340	6844.35	350	6844.56	360	6844.95	370	6845.34
380	6845.72	390	6846.11	400	6846.49	410	6846.87	420	6847.67
430	6848.63	440	6849.6	450	6850.11	460	6850.3	470	6850.5
480	6850.69	490	6850.88	500	6851.07	510	6851.24	520	6851.38
530	6851.53	540	6851.68	550	6851.85	560	6852.02		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-70	.04	280	.035	320	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
280	320	55	83	60	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 13

INPUT
Description:
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	6848.18	-50	6845.18	0	6844.58	10	6844.62	20	6844.67
30	6844.71	40	6844.76	50	6844.8	60	6844.85	70	6844.89
80	6844.94	90	6844.98	100	6844.95	110	6844.91	120	6844.87
130	6844.83	140	6844.8	150	6844.76	160	6844.72	170	6844.68
180	6844.65	190	6844.61	200	6844.57	210	6844.53	220	6844.24
230	6843.93	240	6843.62	250	6843.3	260	6842.61	270	6841.22
280	6840.19	290	6839.4	300	6840.06	310	6842.4	320	6845.88
330	6848.91	340	6849.22	350	6849.54	360	6849.86	370	6850.18
380	6850.49	390	6850.75	400	6850.91	410	6851.07	420	6851.23
430	6851.39	440	6851.55	450	6851.68	460	6851.8	470	6851.92
480	6852.04	490	6852.16	500	6852.28	510	6852.4	520	6852.53

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-60	.04	270	.035	310	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
270	310	60	70	70	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 12

INPUT
Description:
Station Elevation Data num= 54

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

-50	6847.18	-40	6844.68	0	6844.3	10	6844.23	20	6844.23
30	6844.24	40	6844.24	50	6844.24	60	6844.24	70	6844.24
80	6844.24	90	6844.24	100	6844.24	110	6844.24	120	6844.24
130	6844.24	140	6844.24	150	6844.24	160	6844.22	170	6844.16
180	6844.1	190	6844.04	200	6843.76	210	6843.71	220	6843.65
230	6843.6	240	6843.27	250	6842.3	260	6840.98	270	6839.77
280	6839.31	290	6839.02	300	6839.52	310	6842.15	320	6845.49
330	6848.88	340	6849.81	350	6850.1	360	6850.35	370	6850.59
380	6850.83	390	6851.08	400	6851.32	410	6851.56	420	6851.74
430	6851.87	440	6852.12	450	6852.39	460	6852.66	470	6852.93
480	6853.21	490	6853.48	500	6853.75	510	6854.02		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-50	.04	260	.035	310	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
260	310	61	61	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 11

INPUT
Description:
Station Elevation Data num= 63

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-30	6846.18	-20	6844.18	0	6843.68	10	6843.52	20	6843.37
30	6843.23	40	6843.21	50	6843.52	60	6844.05	70	6844.59
80	6844.61	90	6843.68	100	6843.14	110	6843.13	120	6843.12
130	6843.1	140	6843.09	150	6843.08	160	6843.06	170	6843.05
180	6843.03	190	6843.02	200	6843.01	210	6843.03	220	6843.07
230	6843.12	240	6843.16	250	6843.21	260	6843.25	270	6843.29
280	6843.34	290	6843.38	300	6843.19	310	6842.91	320	6842.62
330	6842.33	340	6841.97	350	6839.94	360	6839.23	370	6838.67
380	6838.4	390	6838.87	400	6840.81	410	6843.93	420	6847.1
430	6849.47	440	6849.72	450	6849.97	460	6850.22	470	6850.47
480	6850.76	490	6851.13	500	6851.57	510	6852.22	520	6852.72
530	6853.2	540	6853.68	550	6854.15	560	6854.51	570	6854.79
580	6855.07	590	6855.35	600	6855.63				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-30	.04	350	.035	400	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
350	400	35	35	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 10.5

INPUT
Description: Section At House
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6846.18	10	6843.18	20	6843.08	30	6843.08	40	6843.08
50	6843.08	60	6842.98	70	6842.85	80	6842.7	90	6842.55
100	6842.4	110	6842.25	120	6842.18	130	6842.16	140	6842.16

150	6842.56	160	6842.14	170	6842.13	180	6842.12	190	6842.13
200	6842.17	210	6842.22	220	6842.27	230	6842.31	240	6842.36
250	6842.41	260	6842.45	270	6842.5	280	6842.55	290	6842.59
300	6842.64	310	6842.69	320	6842.73	330	6842.78	340	6842.83
350	6842.87	360	6842.92	370	6842.75	380	6842.46	390	6842.09
400	6841.72	410	6839.53	418	6838.59	430	6838.1	440	6838.09
450	6839.01	460	6841.12	470	6844.1	480	6847.11	490	6849.33
500	6849.58	510	6849.89	520	6850.27	530	6850.64	540	6851.01
550	6851.39	560	6851.78	570	6852.43	580	6853.07	590	6853.72
600	6854.29	610	6854.76	620	6855.23	630	6855.6	640	6855.87
646.2876	6856.05								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	418	.035	450	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
418	450	72	72	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
310	350	6854.18

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 10

INPUT
Description:
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20	6844.18	0	6842.18	10	6841.71	20	6841.62	30	6841.47
40	6841.32	50	6841.17	60	6841.02	70	6840.87	80	6840.72
90	6840.57	100	6840.42	110	6840.35	120	6840.42	130	6840.48
140	6840.55	150	6840.62	160	6840.69	170	6840.76	180	6840.82
190	6840.89	200	6840.96	210	6841.03	220	6841.1	230	6841.16
240	6841.23	250	6841.3	260	6841.37	270	6841.44	280	6841.5
290	6841.57	300	6841.64	310	6841.7	320	6841.42	330	6841.18
335	6841.12	340	6841.06	345	6841	350	6840.2	355	6838.24
360	6837.43	365	6836.4	370	6836.21	375	6836.63	380	6837.01
385	6837.34	390	6837.68	395	6838.56	400	6840.09	405	6841.65
410	6843.21	415	6844.77	420	6846.3	430	6849.23	440	6849.65
450	6850.07	460	6850.5	470	6850.92	480	6851.34	490	6851.76
500	6852.14	510	6852.55	520	6853.19	530	6853.83	540	6854.48
550	6855.12	560	6855.77	570	6856.41	580	6857.03	590	6857.59

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20	.04	350	.035	400	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
350	400	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 9.7

INPUT
Description:
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20	6843.18	0	6841.54	10	6841.47	20	6841.39	30	6841.24
40	6841.09	50	6840.94	60	6840.79	70	6840.64	80	6840.49
90	6840.34	100	6840.21	110	6840.25	120	6840.28	130	6840.33
140	6840.39	150	6840.44	160	6840.5	170	6840.55	180	6840.61
190	6840.66	200	6840.72	210	6840.79	220	6840.86	230	6840.93
240	6840.99	250	6841.06	260	6841.13	270	6841.2	280	6841.27
290	6841.33	300	6841.4	310	6841.38	320	6841.14	330	6841.02
335	6840.96	340	6840.9	345	6840.84	350	6839.79	355	6837.8
360	6836.99	365	6836.68	370	6836.23	375	6836.48	380	6836.72
385	6837.18	390	6837.47	395	6838.87	400	6840.49	405	6842.05
410	6843.62	415	6845.18	420	6846.73	430	6849.3	440	6849.72
450	6850.14	460	6850.56	470	6850.99	480	6851.41	490	6851.83
500	6852.25	510	6852.67	520	6853.32	530	6853.93	540	6854.49
550	6855.05	560	6855.61	570	6856.16	580	6856.72	590	6857.14

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20	.04	350	.035	400	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
350	400	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 9.5

INPUT
Description:
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	6843.18	10	6841.19	20	6841.13	30	6840.98	40	6840.83
50	6840.67	60	6840.52	70	6840.37	80	6840.22	90	6840.07
100	6840.1	110	6840.13	120	6840.16	130	6840.2	140	6840.24
150	6840.29	160	6840.35	170	6840.4	180	6840.46	190	6840.51
200	6840.57	210	6840.62	220	6840.67	230	6840.73	240	6840.78
250	6840.84	260	6840.89	270	6840.95	280	6841	290	6841.06
300	6841.12	310	6841.08	320	6840.96	330	6840.84	335	6840.78
340	6840.72	345	6840.66	350	6839.38	355	6837.52	360	6836.99
365	6836.59	370	6836.19	375	6836.26	380	6836.57	385	6836.86
390	6837.42	395	6838.9	400	6840.58	405	6842.26	410	6843.94
415	6845.61	420	6847.04	430	6849.35	440	6849.77	450	6850.19
460	6850.61	470	6851.01	480	6851.36	490	6851.7	500	6852.05
510	6852.42	520	6852.97	530	6853.53	540	6854.09	550	6854.65
560	6855.2	570	6855.76	580	6856.16				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.04	350	.035	395	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
350	395	62	75	80	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 9

INPUT
Description:

Station Elevation Data num= 58

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	6843.18	0	6840.68	10	6840.32	20	6840.25	30	6840.18
40	6840.02	50	6839.87	60	6839.71	70	6839.61	80	6839.64
90	6839.67	100	6839.7	110	6839.73	120	6839.76	130	6839.79
140	6839.82	150	6839.85	160	6839.88	170	6839.91	180	6839.94
190	6839.97	200	6840.02	210	6840.07	220	6840.13	230	6840.18
240	6840.23	250	6840.28	260	6840.33	270	6840.38	280	6840.44
290	6840.43	300	6840.33	310	6840.24	320	6840.15	330	6840.13
340	6840.18	350	6839.25	360	6837.2	370	6836.39	380	6836
390	6836.23	400	6838.56	410	6843.9	420	6847.58	430	6847.81
440	6848.04	450	6848.27	460	6848.5	470	6848.73	480	6848.91
490	6848.97	500	6849.17	510	6849.44	520	6849.69	530	6849.93
540	6850.17	550	6850.45	560	6850.73				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.04	360	.035	400	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
360	400	107	125	146	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 8

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	6841.78	0	6839.68	10	6839.41	20	6839.31	30	6839.21
40	6839.11	50	6839.1	60	6839.12	70	6839.14	80	6839.16
90	6839.18	100	6839.2	110	6839.22	120	6839.24	130	6839.26
140	6839.28	150	6839.3	160	6839.32	170	6839.34	180	6839.36
190	6839.38	200	6839.4	210	6839.42	220	6839.44	230	6839.46
240	6839.45	250	6839.36	260	6839.36	270	6839.41	280	6839.46
290	6839.52	300	6839.55	310	6839.55	315	6838.87	320	6837.94
325	6837.01	330	6836.5	335	6836.12	340	6836.11	345	6836.38
350	6836.48	355	6836.35	360	6836.22	365	6835.84	370	6835.67
375	6836.44	380	6837.18	385	6839.19	390	6841.18	395	6843.11
400	6843.44	405	6843.44	410	6843.45	420	6843.47	430	6843.49
440	6843.51	450	6843.57	460	6843.68	470	6843.77	480	6843.85
490	6843.93	500	6844	510	6844.08	520	6844.16	530	6843.99
540	6843.82	550	6843.66	560	6843.48	570	6843.28	580	6843.09
590	6843.22	597.1392	6843.32						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-60	.04	320	.035	380	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
320	380	15	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 7.7

INPUT
Description:

Station Elevation Data num= 69

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	6841.78	20	6839.12	30	6839.02	40	6838.93	50	6838.97
60	6839	70	6839.04	80	6839.07	90	6839.1	100	6839.12
110	6839.14	120	6839.16	130	6839.18	140	6839.2	150	6839.22
160	6839.24	170	6839.26	180	6839.28	190	6839.3	200	6839.32
210	6839.34	220	6839.35	230	6839.37	240	6839.3	250	6839.21
260	6839.2	270	6839.25	280	6839.31	290	6839.33	300	6839.36
310	6838.97	315	6838.03	320	6837.03	325	6836.46	330	6835.98
335	6836.19	340	6836.47	345	6836.72	350	6836.91	355	6836.77
360	6836.56	365	6836.15	370	6835.61	375	6836.04	380	6836.78
385	6837.84	390	6839.36	395	6841.29	400	6843.13	410	6843.18
420	6843.2	430	6843.22	440	6843.22	450	6843.19	460	6843.24
470	6843.32	480	6843.4	490	6843.48	500	6843.56	510	6843.63
520	6843.55	530	6843.39	540	6843.22	550	6843.05	560	6842.88
570	6842.7	580	6842.5	590	6842.46597.1392		6842.56		

Manning's n Values num= 1

Sta	n Val
-60	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
315	385	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 7.5

INPUT
Description:
Station Elevation Data num= 71

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	6841.18	30	6838.84	40	6838.78	50	6838.81	60	6838.85
70	6838.88	80	6838.92	90	6838.95	100	6838.99	110	6839.03
120	6839.06	130	6839.09	140	6839.11	150	6839.13	160	6839.15
170	6839.17	180	6839.19	190	6839.21	200	6839.23	210	6839.25
220	6839.27	230	6839.25	240	6839.16	250	6839.06	260	6839.03
270	6839.08	280	6839.11	290	6839.14	300	6839.16	310	6838.19
315	6836.68	320	6836.07	325	6835.53	330	6836.02	335	6836.16
340	6836.29	345	6836.53	350	6836.8	355	6837.08	360	6836.89
365	6836.31	370	6835.73	375	6835.74	380	6836.28	385	6837.01
390	6838.47	395	6839.96	400	6841.45	405	6841.48	410	6842.9
420	6842.88	430	6842.85	440	6842.81	450	6842.78	460	6842.76
470	6842.84	480	6842.92	490	6843	500	6843.08	510	6843.11
520	6842.94	530	6842.78	540	6842.61	550	6842.44	560	6842.28
570	6842.11	580	6841.92	590	6841.73597.1392		6841.75	610	6842.18
660	6844.18								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-60	.04	310	.035	345	.045	365	.035	390	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
310	390	56	52	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 7

INPUT
Description:
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6840.68	10	6838.88	20	6838.8	30	6838.77	40	6838.73
50	6838.7	60	6838.66	70	6838.67	80	6838.7	90	6838.73
100	6838.76	110	6838.79	120	6838.82	130	6838.85	140	6838.88
150	6838.91	160	6838.94	170	6838.97	180	6839	190	6838.93
200	6838.73	210	6838.62	220	6838.51	230	6838.49	240	6838.49
250	6838.5	260	6838.5	270	6837.13	280	6834.43	290	6834.92
300	6835.6	310	6837.49	320	6839.96	330	6838.86	340	6837.46
350	6835.62	360	6836.01	370	6837.43	380	6839.69	390	6841.66
400	6841.61	410	6841.56	420	6841.51	430	6841.46	440	6841.43
450	6841.43	460	6841.52	470	6841.58	480	6841.58	490	6841.58
500	6841.58	510	6841.58	520	6841.58	530	6841.58	540	6841.58
550	6841.68	560	6842.18	570	6844.18	578.7326	6845.18		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	270	.035	310	.045	340	.035	370	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
270	370	90	90	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 6

INPUT
Description:
Station Elevation Data num= 75

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20	6840.18	0	6839.38	10	6839.28	20	6839.25	30	6839.22
40	6839.19	50	6839.16	60	6839.13	70	6839.1	80	6839.07
90	6839.04	100	6839.01	110	6838.98	120	6838.95	130	6838.91
140	6838.86	150	6838.69	160	6838.5	170	6838.31	180	6838.1
190	6837.86	200	6837.86	205	6837.87	210	6836.55	215	6833.88
220	6833.43	225	6833.23	230	6833.62	235	6834.12	240	6834.85
245	6835.78	250	6836.7	255	6837.57	260	6838.44	265	6839.32
270	6839.43	275	6839.31	280	6838.51	285	6837.7	290	6836.9
295	6836.09	300	6835.33	305	6835.07	310	6834.8	315	6834.54
320	6834.27	325	6834.57	330	6835.32	335	6835.94	340	6836.01
345	6836.31	350	6836.98	360	6838.35	370	6839.4	380	6839.31
390	6839.22	400	6839.12	410	6839.03	420	6838.94	430	6838.82
440	6838.71	450	6838.61	460	6838.53	470	6838.45	480	6838.39
490	6838.36	500	6838.33	510	6838.31	520	6838.28	530	6838.25
540	6838.23	550	6838.25	554.5311	6838.18	600	6838.28	610	6840.08

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-20	.04	210	.035	255	.045	285	.035	350	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
210	350	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 5.7

INPUT
Description:
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20	6840.18	20	6839.09	30	6839.06	40	6839.03	50	6839
60	6838.97	70	6838.93	80	6838.9	90	6838.87	100	6838.85
110	6838.82	120	6838.8	130	6838.78	140	6838.68	150	6838.54
160	6838.38	170	6838.2	180	6838.01	190	6837.79	200	6837.76
205	6834.62	210	6833.68	215	6833.12	220	6833.09	225	6833.59
230	6834.09	235	6834.86	240	6835.79	245	6836.72	250	6837.64
255	6838.53	260	6839.4	265	6839.7	270	6838.89	275	6838.09
280	6837.28	285	6836.45	290	6835.61	295	6835.04	300	6834.82
305	6834.56	310	6834.21	315	6834.32	320	6835	325	6836
330	6836.32	335	6836.39	340	6836.46	345	6836.53	350	6837.19
360	6838.55	370	6838.77	380	6838.67	390	6838.58	400	6838.49
410	6838.39	420	6838.3	430	6838.21	440	6838.11	450	6838.02
460	6837.93	470	6837.85	480	6837.77	490	6837.7	500	6837.67
510	6837.65	520	6837.65	530	6837.64	540	6837.64	550	6837.63
556.8613	6837.63	600	6838.18	620	6841.18				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-20	.04	200	.035	250	.045	280	.035	360	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
200	360	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 5.5

INPUT
Description:
Station Elevation Data num= 71

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20	6840.18	20	6838.92	30	6838.89	40	6838.86	50	6838.84
60	6838.81	70	6838.79	80	6838.77	90	6838.74	100	6838.72
110	6838.7	120	6838.67	130	6838.58	140	6838.47	150	6838.34
160	6838.18	170	6838.03	180	6837.87	190	6837.71	195	6837.46
200	6834.09	205	6833.54	210	6832.82	215	6833.12	220	6833.54
225	6834.04	230	6834.84	235	6835.77	240	6836.7	245	6837.62
250	6838.55	255	6839.46	260	6839.31	265	6838.48	270	6837.65
275	6836.81	280	6835.98	285	6835.14	290	6834.77	295	6834.58
300	6834.19	305	6834.06	310	6834.68	315	6835.51	320	6836.62
330	6836.76	340	6836.91	350	6837.4	360	6838.24	370	6838.13
380	6838.04	390	6837.94	400	6837.85	410	6837.86	420	6837.93
430	6838	440	6838.07	450	6838.14	460	6838	470	6837.84
480	6837.67	490	6837.5	500	6837.46	510	6837.46	520	6837.45
530	6837.44	540	6837.44	550	6837.43	559.1915	6837.43	600	6838.18
620	6840.18								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-20	.04	195	.035	245	.045	270	.035	320	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
195	320	90	90	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 5

INPUT
Description:
Station Elevation Data num= 58

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-110	6839.18	-100	6838.38	-50	6838.18	0	6838.07	10	6837.84
20	6837.74	30	6837.65	40	6837.55	50	6837.45	60	6837.36
70	6837.26	80	6837.22	90	6837.16	100	6833.04	110	6833.05
120	6833.23	130	6833.43	140	6836.66	150	6837.18	160	6834.29
170	6833.08	180	6833.36	190	6833.85	200	6836.49	210	6836.66
220	6836.85	230	6837.03	240	6837.26	250	6837.35	260	6837.44
270	6837.53	280	6837.62	290	6837.71	300	6837.8	310	6837.9
320	6837.99	330	6838.08	340	6838.17	350.48	6838.17	358.24	6838.17
370	6838.18	380	6838.18	390	6838.18	400	6838.18	410	6838.18
420	6838.18	430	6838.18	440	6838.18	450	6838.18	460	6838.18
470	6838.18	480	6838.18	490	6838.18	500	6838.38	510	6838.38
510.9994	6838.38	570	6838.68	580	6839.18				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-110	.04	90	.035	140	.04	160	.035	200	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
90	200	96	82	64	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
360.7	385	6847.58

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 4

INPUT
Description: Downstream boundary of study reach
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10	6837.9	20	6837.27	30	6836.59	40	6833.88	50	6831.6
60	6830.38	70	6830.56	80	6830.54	90	6830.66	100	6832.07
110	6833.17	120	6834.08	130	6834.99	140	6835.35	150	6835.7
160	6835.88	170	6835.88	180	6835.88	190	6835.88	200	6835.88
210	6835.88	220	6835.89	230	6835.89	240	6835.89	250	6835.92
260	6835.99	270	6836.05	280	6836.12	290	6836.19	300	6836.25
310	6836.32	320	6836.38	330	6836.45	340	6836.52	350	6836.58
360	6836.65	370	6836.72	380	6836.78	390	6836.85	400	6836.92
410	6836.99	420	6837.09	490	6838.18				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
10	.04	40	.035	100	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
40	100	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Rio Blanco

Reach	River Sta.	n1	n2	n3	n4	n5
Floodstudy Reach	15	.04	.035	.04		
Floodstudy Reach	14	.04	.035	.04		
Floodstudy Reach	13	.04	.035	.04		
Floodstudy Reach	12	.04	.035	.04		
Floodstudy Reach	11	.04	.035	.04		
Floodstudy Reach	10.5	.04	.035	.04		
Floodstudy Reach	10	.04	.035	.04		
Floodstudy Reach	9.7	.04	.035	.04		
Floodstudy Reach	9.5	.04	.035	.04		
Floodstudy Reach	9	.04	.035	.04		
Floodstudy Reach	8	.04	.035	.04		
Floodstudy Reach	7.7	.04				
Floodstudy Reach	7.5	.04	.035	.045	.035	.04
Floodstudy Reach	7	.04	.035	.045	.035	.04
Floodstudy Reach	6	.04	.035	.045	.035	.04
Floodstudy Reach	5.7	.04	.035	.045	.035	.04
Floodstudy Reach	5.5	.04	.035	.045	.035	.04
Floodstudy Reach	5	.04	.035	.04	.035	.04
Floodstudy Reach	4	.04	.035	.04		

SUMMARY OF REACH LENGTHS

River: Rio Blanco

Reach	River Sta.	Left	Channel	Right
Floodstudy Reach	15	72	68	45
Floodstudy Reach	14	55	83	60
Floodstudy Reach	13	60	70	70
Floodstudy Reach	12	61	61	61
Floodstudy Reach	11	35	35	35
Floodstudy Reach	10.5	72	72	72
Floodstudy Reach	10	15	15	15
Floodstudy Reach	9.7	15	15	15
Floodstudy Reach	9.5	62	75	80

Floodstudy Reach	9	107	125	146
Floodstudy Reach	8	15	15	15
Floodstudy Reach	7.7	15	15	15
Floodstudy Reach	7.5	56	52	52
Floodstudy Reach	7	90	90	90
Floodstudy Reach	6	15	15	15
Floodstudy Reach	5.7	15	15	15
Floodstudy Reach	5.5	90	90	50
Floodstudy Reach	5	96	82	64
Floodstudy Reach	4			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Rio Blanco

Reach	River Sta.	Contr.	Expan.
Floodstudy Reach	15	.1	.3
Floodstudy Reach	14	.1	.3
Floodstudy Reach	13	.1	.3
Floodstudy Reach	12	.1	.3
Floodstudy Reach	11	.1	.3
Floodstudy Reach	10.5	.1	.3
Floodstudy Reach	10	.1	.3
Floodstudy Reach	9.7	.1	.3
Floodstudy Reach	9.5	.1	.3
Floodstudy Reach	9	.1	.3
Floodstudy Reach	8	.1	.3
Floodstudy Reach	7.7	.1	.3
Floodstudy Reach	7.5	.1	.3
Floodstudy Reach	7	.1	.3
Floodstudy Reach	6	.1	.3
Floodstudy Reach	5.7	.1	.3
Floodstudy Reach	5.5	.1	.3
Floodstudy Reach	5	.1	.3
Floodstudy Reach	4	.1	.3

HEC-RAS Version 4.0.0 March 2008
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Rio Blanco Floodstudy
Project File : RioBlancoFloodstu.prj
Run Date and Time: 6/25/2009 10:32:25 AM

Project in English units

PLAN DATA

Plan Title: Plan 11
Plan File : C:\RioBlancoFloodstu.p11

Geometry Title: Proposed Conditions fall 2009
Geometry File : C:\RioBlancoFloodstu.g03

Flow Title : 100 yr fema flow
Flow File : C:\RioBlancoFloodstu.f01

Plan Summary Information:
Number of: Cross Sections = 19 Multiple Openings = 0
Culverts = 0 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: 100 yr fema flow

Flow File : C:\RioBlancoFloodstu.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Rio Blanco	Floodstudy Reach	15	5300

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Rio Blanco	Floodstudy Reach	PF 1		

Normal S = 0.005

GEOMETRY DATA

Geometry Title: Proposed Conditions fall 2009
Geometry File : C:\RioBlancoFloodstu.g03

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 15

INPUT
Description: Upstream Boundary of Study Area
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-70	6848.18	-60	6846.18	0	6846.18	10	6846.14	20	6846.13
30	6846.12	40	6846.11	50	6846.11	60	6846.1	70	6846.09
80	6846.09	90	6846.08	100	6846.08	110	6846.07	120	6846.06
130	6846.06	140	6846.05	150	6846.04	160	6846.04	170	6846.03
180	6846.02	190	6846.02	200	6846.01	210	6846.01	220	6846
230	6845.99	240	6844.47	250	6841.62	260	6840.79	270	6840.81
280	6841.53	290	6842.62	300	6844.4	310	6844.56	320	6844.84
330	6845.13	340	6845.42	350	6845.71	360	6846	370	6846.28
380	6846.57	390	6846.86	400	6847.15	410	6847.44	420	6847.72
430	6848.01	440	6848.3	450	6848.59	460	6848.88	470	6849.16
480	6849.45	490	6849.74	540	6850.93	550	6851.09	560	6851.26
570	6851.43	575.11	6851.52						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-70	.04	250	.035	280	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
250	280	72	68	45	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 14

INPUT
Description:
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-70	6848.18	-60	6845.18	0	6844.85	10	6844.94	20	6845.03
30	6845.12	40	6845.21	50	6845.3	60	6845.39	70	6845.43
80	6845.41	90	6845.4	100	6845.39	110	6845.38	120	6845.37
130	6845.36	140	6845.35	150	6845.34	160	6845.33	170	6845.33
180	6845.32	190	6845.32	200	6845.31	210	6845.3	220	6845.3
230	6845.29	240	6845.28	250	6845.29	260	6845.28	270	6844.42
280	6843.59	290	6841.82	300	6838.78	310	6839.18	320	6840.48
330	6844.14	340	6844.35	350	6844.56	360	6844.95	370	6845.34
380	6845.72	390	6846.11	400	6846.49	410	6846.87	420	6847.67
430	6848.63	440	6849.6	450	6850.11	460	6850.3	470	6850.5
480	6850.69	490	6850.88	500	6851.07	510	6851.24	520	6851.38
530	6851.53	540	6851.68	550	6851.85	560	6852.02		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-70	.04	280	.035	320	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
280	320	55	83	60	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 13

INPUT
Description:
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	6848.18	-50	6845.18	0	6844.58	10	6844.62	20	6844.67
30	6844.71	40	6844.76	50	6844.8	60	6844.85	70	6844.89
80	6844.94	90	6844.98	100	6844.95	110	6844.91	120	6844.87
130	6844.83	140	6844.8	150	6844.76	160	6844.72	170	6844.68
180	6844.65	190	6844.61	200	6844.57	210	6844.53	220	6844.24
230	6843.93	240	6843.62	250	6843.3	260	6842.61	270	6842.22
280	6841.19	290	6838.38	300	6838.98	310	6841.38	319	6845.88
320	6847.88	321	6845.88	330	6848.91	340	6849.22	350	6849.54
360	6849.86	370	6850.18	380	6850.49	390	6850.75	400	6850.91
410	6851.07	420	6851.23	430	6851.39	440	6851.55	450	6851.68
460	6851.8	470	6851.92	480	6852.04	490	6852.16	500	6852.28
510	6852.4	520	6852.53						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-60	.04	270	.035	310	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
270	310	60	70	70	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 12

INPUT
Description:
Station Elevation Data num= 58

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-50	6847.18	-40	6844.68	0	6844.3	10	6844.23	20	6844.23
30	6844.24	40	6844.24	50	6844.24	60	6844.24	70	6844.24
80	6844.24	90	6844.24	100	6844.24	110	6844.24	120	6844.24
130	6844.24	140	6844.24	150	6844.24	160	6844.22	170	6844.16
180	6844.1	190	6844.04	200	6843.76	210	6843.71	220	6843.65
230	6843.6	240	6843.27	250	6842.3	260	6840.98	270	6838.68
280	6838.28	280.5	6840.18	285	6841.18	289.9	6840.18	290	6839.02
295	6839.08	300	6840.52	310	6843.15	320	6845.49	330	6848.88
340	6849.81	350	6850.1	360	6850.35	370	6850.59	380	6850.83
390	6851.08	400	6851.32	410	6851.56	420	6851.74	430	6851.87
440	6852.12	450	6852.39	460	6852.66	470	6852.93	480	6853.21
490	6853.48	500	6853.75	510	6854.02				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-50	.04	260	.035	310	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
260	310	61	61	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 11

INPUT
Description:
Station Elevation Data num= 64

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-30	6846.18	-20	6844.18	0	6843.68	10	6843.52	20	6843.37
30	6843.23	40	6843.21	50	6843.52	60	6844.05	70	6844.59
80	6844.61	90	6843.68	100	6843.14	110	6843.13	120	6843.12
130	6843.1	140	6843.09	150	6843.08	160	6843.06	170	6843.05
180	6843.03	190	6843.02	200	6843.01	210	6843.03	220	6843.07
230	6843.12	240	6843.16	250	6843.21	260	6843.25	270	6843.29
280	6843.34	290	6843.38	300	6843.19	310	6842.91	320	6842.62
330	6842.33	340	6841.97	350	6839.94	360	6839.23	370	6837.58
380	6837.38	385	6838.48	390	6839.87	400	6841.81	410	6843.93
420	6847.1	430	6849.47	440	6849.72	450	6849.97	460	6850.22
470	6850.47	480	6850.76	490	6851.13	500	6851.57	510	6852.22
520	6852.72	530	6853.2	540	6853.68	550	6854.15	560	6854.51
570	6854.79	580	6855.07	590	6855.35	600	6855.63		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-30	.04	350	.035	400	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
350	400	35	35	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 10.5

INPUT
Description: Section At House
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6846.18	10	6843.18	20	6843.08	30	6843.08	40	6843.08

50	6843.08	60	6842.98	70	6842.85	80	6842.7	90	6842.55		
100	6842.4	110	6842.25	120	6842.18	130	6842.16	140	6842.16		
150	6842.56	160	6842.14	170	6842.13	180	6842.12	190	6842.13		
200	6842.17	210	6842.22	220	6842.27	230	6842.31	240	6842.36		
250	6842.41	260	6842.45	270	6842.5	280	6842.55	290	6842.59		
300	6842.64	310	6842.69	320	6842.73	330	6842.78	340	6842.83		
350	6842.87	360	6842.92	370	6842.75	380	6842.46	390	6842.09		
400	6841.72	410	6839.53	418	6838.59	430	6837.08	440	6838.08		
450	6839.98	460	6842.08	470	6844.1	480	6847.11	490	6849.33		
500	6849.58	510	6849.89	520	6850.27	530	6850.64	540	6851.01		
550	6851.39	560	6851.78	570	6852.43	580	6853.07	590	6853.72		
600	6854.29	610	6854.76	620	6855.23	630	6855.6	640	6855.87		
646.2876	6856.05										

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	418	.035	450	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
418	450	72	72	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
310	350	6854.18

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 10

INPUT
Description:
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20	6844.18	0	6842.18	10	6841.71	20	6841.62	30	6841.47
40	6841.32	50	6841.17	60	6841.02	70	6840.87	80	6840.72
90	6840.57	100	6840.42	110	6840.35	120	6840.42	130	6840.48
140	6840.55	150	6840.62	160	6840.69	170	6840.76	180	6840.82
190	6840.89	200	6840.96	210	6841.03	220	6841.1	230	6841.16
240	6841.23	250	6841.3	260	6841.37	270	6841.44	280	6841.5
290	6841.57	300	6841.64	310	6841.7	320	6841.42	330	6841.18
335	6841.12	340	6841.06	345	6841	350	6840.2	355	6838.24
360	6837.43	365	6837.38	370	6837.28	375	6837.18	380	6837.18
385	6837.18	390	6837.68	395	6838.56	400	6840.09	405	6841.65
410	6843.21	415	6844.77	420	6846.3	430	6849.23	440	6849.65
450	6850.07	460	6850.5	470	6850.92	480	6851.34	490	6851.76
500	6852.14	510	6852.55	520	6853.19	530	6853.83	540	6854.48
550	6855.12	560	6855.77	570	6856.41	580	6857.03	590	6857.59

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20	.04	350	.035	400	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
350	400	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 9.7

INPUT

Description:
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20	6843.18	0	6841.54	10	6841.47	20	6841.39	30	6841.24
40	6841.09	50	6840.94	60	6840.79	70	6840.64	80	6840.49
90	6840.34	100	6840.21	110	6840.25	120	6840.28	130	6840.33
140	6840.39	150	6840.44	160	6840.5	170	6840.55	180	6840.61
190	6840.66	200	6840.72	210	6840.79	220	6840.86	230	6840.93
240	6840.99	250	6841.06	260	6841.13	270	6841.2	280	6841.27
290	6841.33	300	6841.4	310	6841.38	320	6841.14	330	6841.02
335	6840.96	340	6840.9	345	6840.84	350	6839.79	355	6837.8
360	6837.98	365	6836.68	370	6834.38	375	6834.48	380	6834.68
385	6835.18	390	6838.38	395	6838.87	400	6840.49	405	6842.05
410	6843.62	415	6845.18	420	6846.73	430	6849.3	440	6849.72
450	6850.14	460	6850.56	470	6850.99	480	6851.41	490	6851.83
500	6852.25	510	6852.67	520	6853.32	530	6853.93	540	6854.49
550	6855.05	560	6855.61	570	6856.16	580	6856.72	590	6857.14

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20	.04	350	.035	400	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
350	400	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 9.5

INPUT
Description:
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	6843.18	10	6841.19	20	6841.13	30	6840.98	40	6840.83
50	6840.67	60	6840.52	70	6840.37	80	6840.22	90	6840.07
100	6840.1	110	6840.13	120	6840.16	130	6840.2	140	6840.24
150	6840.29	160	6840.35	170	6840.4	180	6840.46	190	6840.51
200	6840.57	210	6840.62	220	6840.67	230	6840.73	240	6840.78
250	6840.84	260	6840.89	270	6840.95	280	6841	290	6841.06
300	6841.12	310	6841.08	320	6840.96	330	6840.84	335	6841.28
340	6841.18	345	6841.08	350	6839.88	355	6837.52	360	6836.99
365	6836.59	370	6835.38	375	6835.08	380	6834.58	385	6835.78
390	6837.28	395	6838.9	400	6841.08	405	6842.19	410	6843.69
415	6845.61	420	6847.04	430	6849.35	440	6849.77	450	6850.19
460	6850.61	470	6851.01	480	6851.36	490	6851.7	500	6852.05
510	6852.42	520	6852.97	530	6853.53	540	6854.09	550	6854.65
560	6855.2	570	6855.76	580	6856.16				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.04	350	.035	395	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
350	395	62	75	80	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 9

INPUT
Description:
Station Elevation Data num= 58

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	6843.18	0	6840.68	10	6840.32	20	6840.25	30	6840.18
40	6840.02	50	6839.87	60	6839.71	70	6839.61	80	6839.64
90	6839.67	100	6839.7	110	6839.73	120	6839.76	130	6839.79
140	6839.82	150	6839.85	160	6839.88	170	6839.91	180	6839.94
190	6839.97	200	6840.02	210	6840.07	220	6840.13	230	6840.18
240	6840.23	250	6840.28	261.41	6840.32	270.04	6840.4	280	6840.44
290	6840.43	300	6840.33	310	6840.24	320	6840.15	330	6840.13
340	6840.18	350	6839.25	360	6838.18	370	6837.18	380	6834.98
390	6835.18	400	6838.56	410	6843.9	420	6847.58	430	6847.81
440	6848.04	450	6848.27	460	6848.5	470	6848.73	480	6848.91
490	6848.97	500	6849.17	510	6849.44	520	6849.69	530	6849.93
540	6850.17	550	6850.45	560	6850.73				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.04	360	.035	400	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
360	400	107	125	146	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 8

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	6841.78	0	6839.68	10	6839.41	20	6839.31	30	6839.21
40	6839.11	50	6839.1	60	6839.12	70	6839.14	80	6839.16
90	6839.18	100	6839.2	110	6839.22	120	6839.24	130	6839.26
140	6839.28	150	6839.3	160	6839.32	170	6839.34	180	6839.36
190	6839.38	200	6839.4	210	6839.42	220	6839.44	230	6839.46
240	6839.45	250	6839.36	260	6839.36	270	6839.41	280	6839.46
290	6839.52	300	6839.55	310	6839.55	315	6838.87	320	6837.94
325	6837.01	330	6836.5	335	6836.18	340	6836.18	345	6836.18
350	6836.18	354.54	6836.38	360	6836.22	365	6836.28	370	6836.28
375	6836.44	380	6837.18	385	6839.19	390	6841.18	395	6843.11
400	6843.44	405	6843.44	410	6843.45	420	6843.47	430	6843.49
440	6843.51	450	6843.57	460	6843.68	470	6843.77	480	6843.85
490	6843.93	500	6844	510	6844.08	520	6844.16	530	6843.99
540	6843.82	550	6843.66	560	6843.48	570	6843.28	580	6843.09
590	6843.22	597.1392	6843.32						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-60	.04	320	.035	380	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
320	380	15	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 7.7

INPUT
Description:
Station Elevation Data num= 69

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	6841.78	20	6839.12	30	6839.02	40	6838.93	50	6838.97
60	6839	70	6839.04	80	6839.07	90	6839.1	100	6839.12
110	6839.14	120	6839.16	130	6839.18	140	6839.2	150	6839.22
160	6839.24	170	6839.26	180	6839.28	190	6839.3	200	6839.32
210	6839.34	220	6839.35	230	6839.37	240	6839.3	250	6839.21
260	6839.2	270	6839.25	280	6839.31	290	6839.33	300	6839.36
310	6838.97	315	6838.03	320	6837.03	325	6837.48	330	6835.98
335	6836.19	340	6834.38	345	6836.72	350	6837.68	355	6836.77
360	6836.56	365	6836.15	370	6837.68	375	6836.04	380	6834.78
385	6837.84	390	6839.36	395	6841.29	400	6843.13	410	6843.18
420	6843.2	430	6843.22	440	6843.22	450	6843.19	460	6843.24
470	6843.32	480	6843.4	490	6843.48	500	6843.56	510	6843.63
520	6843.55	530	6843.39	540	6843.22	550	6843.05	560	6842.88
570	6842.7	580	6842.5	590	6842.46597.1392		6842.56		

Manning's n Values num= 1

Sta	n Val
-60	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
315	385	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 7.5

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	6841.18	30	6838.84	40	6838.78	50	6838.81	60	6838.85
70	6838.88	80	6838.92	90	6838.95	100	6838.99	110	6839.03
120	6839.06	130	6839.09	140	6839.11	150	6839.13	160	6839.15
170	6839.17	180	6839.19	190	6839.21	200	6839.23	210	6839.25
220	6839.27	230	6839.25	240	6839.16	250	6839.06	260	6839.03
270	6839.08	280	6839.11	290	6839.14	300	6839.68	305	6839.68
310	6838.19	315	6836.68	320	6836.07	325	6835.53	329.25	6835.41
332.78	6835.37	340	6835.28	345	6836.53	350	6836.8	355	6839.18
360	6839.18	365	6836.31	370	6835.73	375	6835.74	380	6836.28
385	6837.01	390	6838.47	395	6839.96	400	6841.45	405	6841.48
410	6842.9	420	6842.88	430	6842.85	440	6842.81	450	6842.78
460	6842.76	470	6842.84	480	6842.92	490	6843	500	6843.08
510	6843.11	520	6842.94	530	6842.78	540	6842.61	550	6842.44
560	6842.28	570	6842.11	580	6841.92	590	6841.73597.1392		6841.75
610	6842.18	660	6844.18						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-60	.04	310	.035	345	.045	365	.035	390	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
310	390	56	52	.1	.3

CROSS SECTION

RIVER: Rio Blanco

REACH: Floodstudy Reach RS: 7

INPUT
Description:
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6840.68	10	6838.88	20	6838.8	30	6838.77	40	6838.73
50	6838.7	60	6838.66	70	6838.67	80	6838.7	90	6838.73
100	6838.76	110	6838.79	120	6838.82	130	6838.85	140	6838.88
150	6838.91	160	6838.94	170	6838.97	180	6839	190	6838.93
200	6838.73	210	6838.62	220	6838.51	230	6838.49	240	6838.49
250	6838.5	260	6838.5	270	6837.13	280	6834.43	290	6834.92
300	6835.6	310	6837.49	320	6839.96	330	6838.86	340	6838.38
350	6836.58	360	6834.98	370	6836.38	380	6839.69	390	6841.66
400	6841.61	410	6841.56	420	6841.51	430	6841.46	440	6841.43
450	6841.43	460	6841.52	470	6841.58	480	6841.58	490	6841.58
500	6841.58	510	6841.58	520	6841.58	530	6841.58	540	6841.58
550	6841.68	560	6842.18	570	6844.18578.7326		6845.18		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	270	.035	310	.045	340	.035	370	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
270	370	90	90	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 6

INPUT
Description:
Station Elevation Data num= 75

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20	6840.18	0	6839.38	10	6839.28	20	6839.25	30	6839.22
40	6839.19	50	6839.16	60	6839.13	70	6839.1	80	6839.07
90	6839.04	100	6839.01	110	6838.98	120	6838.95	130	6838.91
140	6838.86	150	6838.69	160	6838.5	170	6838.31	180	6838.1
190	6837.86	200	6837.86	205	6837.87	210	6836.55	215	6833.88
220	6833.68	225	6833.68	230	6833.68	235	6833.68	240	6834.85
245	6835.78	250	6836.7	255	6837.57	260	6838.44	265	6839.32
270	6839.43	275	6839.31	280	6838.51	285	6837.7	290	6836.9
295	6836.09	300	6836.28	305	6836.08	310	6833.78	315	6833.58
320	6834.27	325	6834.57	330	6835.32	335	6835.94	340	6836.01
345	6836.31	350	6836.98	360	6838.35	370	6839.4	380	6839.31
390	6839.22	400	6839.12	410	6839.03	420	6838.94	430	6838.82
440	6838.71	450	6838.61	460	6838.53	470	6838.45	480	6838.39
490	6838.36	500	6838.33	510	6838.31	520	6838.28	530	6838.25
540	6838.23	550	6838.2554.5311		6838.18	600	6838.28	610	6840.08

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-20	.04	210	.035	255	.045	285	.035	350	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
210	350	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco

REACH: Floodstudy Reach RS: 5.7

INPUT
Description:
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20	6840.18	20	6839.09	30	6839.06	40	6839.03	50	6839
60	6838.97	70	6838.93	80	6838.9	90	6838.87	100	6838.85
110	6838.82	120	6838.8	130	6838.78	140	6838.68	150	6838.54
160	6838.38	170	6838.2	180	6838.01	190	6837.79	200	6837.76
205	6835.18	210	6833.68	215	6833.12	220	6833.09	225	6832.38
230	6832.08	235	6834.86	240	6836.78	245	6836.69	250	6837.64
255	6838.53	260	6839.4	265	6839.38	270	6838.89	275	6838.09
280	6837.28	285	6836.45	290	6835.61	295	6835.04	300	6834.82
305	6834.56	310	6834.21	315	6834.32	320	6835	325	6836
330	6836.32	335	6836.39	340	6836.46	345	6836.53	350	6837.19
360	6838.55	370	6838.77	380	6838.67	390	6838.58	400	6838.49
410	6838.39	420	6838.3	430	6838.21	440	6838.11	450	6838.02
460	6837.93	470	6837.85	480	6837.77	490	6837.7	500	6837.67
510	6837.65	520	6837.65	530	6837.64	540	6837.64	550	6837.63
556.8613	6837.63	600	6838.18	620	6841.18				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-20	.04	200	.035	250	.045	280	.035	360	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
200	360	15	15	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 5.5

INPUT
Description:
Station Elevation Data num= 71

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20	6840.18	20	6838.92	30	6838.89	40	6838.86	50	6838.84
60	6838.81	70	6838.79	80	6838.77	90	6838.74	100	6838.72
110	6838.7	120	6838.67	130	6838.58	140	6838.47	150	6838.34
160	6838.18	170	6838.03	180	6837.87	190	6838.08	195	6838.08
200	6834.09	205	6833.54	210	6832.82	215	6832.18	220	6831.48
225	6834.04	230	6834.84	235	6835.77	240	6836.7	245	6837.62
250	6839.08	255	6839.46	260	6839.31	265	6838.48	270	6837.65
275	6836.81	280	6835.98	285	6835.14	290	6834.77	295	6834.58
300	6834.19	305	6834.06	310	6834.68	315	6835.51	320	6836.62
330	6836.76	340	6836.91	350	6837.4	360	6838.24	370	6838.13
380	6838.04	390	6837.94	400	6837.85	410	6837.86	420	6837.93
430	6838	440	6838.07	450	6838.14	460	6838	470	6837.84
480	6837.67	490	6837.5	500	6837.46	510	6837.46	520	6837.45
530	6837.44	540	6837.44	550	6837.43	559.1915	6837.43	600	6838.18
620	6840.18								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-20	.04	195	.035	245	.045	270	.035	320	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
195	320	90	90	50	.1	.3

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 5

INPUT
Description:
Station Elevation Data num= 58

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-110	6839.18	-100	6838.38	-50	6838.18	0	6838.07	10	6837.84
20	6837.74	30	6837.65	40	6837.55	50	6837.45	60	6837.36
70	6837.26	80	6837.22	90	6837.16	100	6833.04	110	6833.05
120	6833.23	130	6833.43	140	6836.66	150	6837.18	160	6834.29
170	6832.08	180	6832.38	190	6834.78	200	6837.48	210	6836.66
220	6836.85	230	6837.03	240	6837.26	250	6837.35	260	6837.44
270	6837.53	280	6837.62	290	6837.71	300	6837.8	310	6837.9
320	6837.99	330	6838.08	340	6838.17	350.48	6838.17	358.24	6838.17
370	6838.18	380	6838.18	390	6838.18	400	6838.18	410	6838.18
420	6838.18	430	6838.18	440	6838.18	450	6838.18	460	6838.18
470	6838.18	480	6838.18	490	6838.18	500	6838.38	510	6838.38
510.9994	6838.38	570	6838.68	580	6839.18				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-110	.04	90	.035	140	.04	160	.035	200	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
90	200	96	82	64	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
360.7	385	6847.58

CROSS SECTION

RIVER: Rio Blanco
REACH: Floodstudy Reach RS: 4

INPUT
Description: Downstream boundary of study reach
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10	6837.9	20	6837.27	30	6836.59	40	6833.88	50	6831.6
60	6830.38	70	6830.56	80	6830.54	90	6830.66	100	6832.07
110	6833.17	120	6834.08	130	6834.99	140	6835.35	150	6835.7
160	6835.88	170	6835.88	180	6835.88	190	6835.88	200	6835.88
210	6835.88	220	6835.89	230	6835.89	240	6835.89	250	6835.92
260	6835.99	270	6836.05	280	6836.12	290	6836.19	300	6836.25
310	6836.32	320	6836.38	330	6836.45	340	6836.52	350	6836.58
360	6836.65	370	6836.72	380	6836.78	390	6836.85	400	6836.92
410	6836.99	420	6837.09	490	6838.18				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
10	.04	40	.035	100	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
40	100	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Rio Blanco

Reach	River Sta.	n1	n2	n3	n4	n5
Floodstudy Reach	15	.04	.035	.04		
Floodstudy Reach	14	.04	.035	.04		
Floodstudy Reach	13	.04	.035	.04		
Floodstudy Reach	12	.04	.035	.04		
Floodstudy Reach	11	.04	.035	.04		
Floodstudy Reach	10.5	.04	.035	.04		
Floodstudy Reach	10	.04	.035	.04		
Floodstudy Reach	9.7	.04	.035	.04		
Floodstudy Reach	9.5	.04	.035	.04		
Floodstudy Reach	9	.04	.035	.04		
Floodstudy Reach	8	.04	.035	.04		
Floodstudy Reach	7.7	.04				
Floodstudy Reach	7.5	.04	.035	.045	.035	.04
Floodstudy Reach	7	.04	.035	.045	.035	.04
Floodstudy Reach	6	.04	.035	.045	.035	.04
Floodstudy Reach	5.7	.04	.035	.045	.035	.04
Floodstudy Reach	5.5	.04	.035	.045	.035	.04
Floodstudy Reach	5	.04	.035	.04	.035	.04
Floodstudy Reach	4	.04	.035	.04		

SUMMARY OF REACH LENGTHS

River: Rio Blanco

Reach	River Sta.	Left	Channel	Right
Floodstudy Reach	15	72	68	45
Floodstudy Reach	14	55	83	60
Floodstudy Reach	13	60	70	70
Floodstudy Reach	12	61	61	61
Floodstudy Reach	11	35	35	35
Floodstudy Reach	10.5	72	72	72
Floodstudy Reach	10	15	15	15

Floodstudy Reach	9.7	15	15	15
Floodstudy Reach	9.5	62	75	80
Floodstudy Reach	9	107	125	146
Floodstudy Reach	8	15	15	15
Floodstudy Reach	7.7	15	15	15
Floodstudy Reach	7.5	56	52	52
Floodstudy Reach	7	90	90	90
Floodstudy Reach	6	15	15	15
Floodstudy Reach	5.7	15	15	15
Floodstudy Reach	5.5	90	90	50
Floodstudy Reach	5	96	82	64
Floodstudy Reach	4			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Rio Blanco

Reach	River Sta.	Contr.	Expan.
Floodstudy Reach	15	.1	.3
Floodstudy Reach	14	.1	.3
Floodstudy Reach	13	.1	.3
Floodstudy Reach	12	.1	.3
Floodstudy Reach	11	.1	.3
Floodstudy Reach	10.5	.1	.3
Floodstudy Reach	10	.1	.3
Floodstudy Reach	9.7	.1	.3
Floodstudy Reach	9.5	.1	.3
Floodstudy Reach	9	.1	.3
Floodstudy Reach	8	.1	.3
Floodstudy Reach	7.7	.1	.3
Floodstudy Reach	7.5	.1	.3
Floodstudy Reach	7	.1	.3
Floodstudy Reach	6	.1	.3
Floodstudy Reach	5.7	.1	.3
Floodstudy Reach	5.5	.1	.3
Floodstudy Reach	5	.1	.3
Floodstudy Reach	4	.1	.3