

# City of Hastings

## Planning Commission Memorandum

**To:** Planning Commission  
**From:** Justin Fortney, Associate Planner  
**Date:** July 23, 2012  
**Item:** **Tabled-** Conditional Use Permit #2012-19 – Addition of fill to the floodway.

**Action Requested:**

Remove from table and the floodway fill request.

**Background Information:**

In 2008 the City performed an EAW (Environmental Assessment Worksheet) that was approved by the Planning Commission and City Council. The EAW included the following three steps. The applicant has completed the first two. The current proposal is part of step number three:

- I. Study previously permitted items including a sewage pumping station, dock reconfiguration, and a safety station barge, which is moored up to their dock.
- II. Increase the number of slips from 50 to 80.
- III. To prepare the southern portion of Hub's property for the Boating Infrastructure Grant (BIG). This grant exists to provide transient dockage for boats that are 26 feet or greater. Dedicated transient dockage would promote Hastings as a destination and provide economic benefit to Hastings' downtown businesses. Hastings' new public dock will provide easy access to downtown for boats that stay in the area. In addition, we currently provide shuttle services to town for those who moor at Hub's and do not want to walk across the highway bridge. SmartRide is another resource for boaters who want to spend time in Hastings.

We would need to remove part of our property to create a safe harbor and install dockage. The southern portion of Hub's property was previously at a higher elevation. The elevation was reduced when the Highway 61 bridge was constructed back in the late 1940's. We plan to dig out a portion of this area that was land and to create the harbor and use this land to fill along the south shoreline. There are also large piles of dead trees and driftwood that have become lodged in this area. Most of this dead wood would be removed, but some would remain for "fish finger" habitat.

Shoreline restoration and revitalization are also included as part of this plan. There are approximately 700 feet of shoreline lined with dumped concrete pieces and some of it is eroding. Initial work in Phase III would restore the banks with limestone Rip Rap and native vegetation. The shoreline on the south end would also be reinforced with Rip Rap and native vegetation. We would

follow the Minnesota's Department of Natural Resources Shoreline Alteration "Riprap" guidelines, which use riprap and a vegetation buffer.

### **Floodway Fill**

The proposed shoreline restoration will place fill above the OHW (ordinary high water level). This will create an area of more usable land, but not create additional land considered part of the river. The floodway ordinance 151 requires that an engineering study is done when areas in the floodway are filled to assure that the proposed fill does not increase flooding elsewhere.

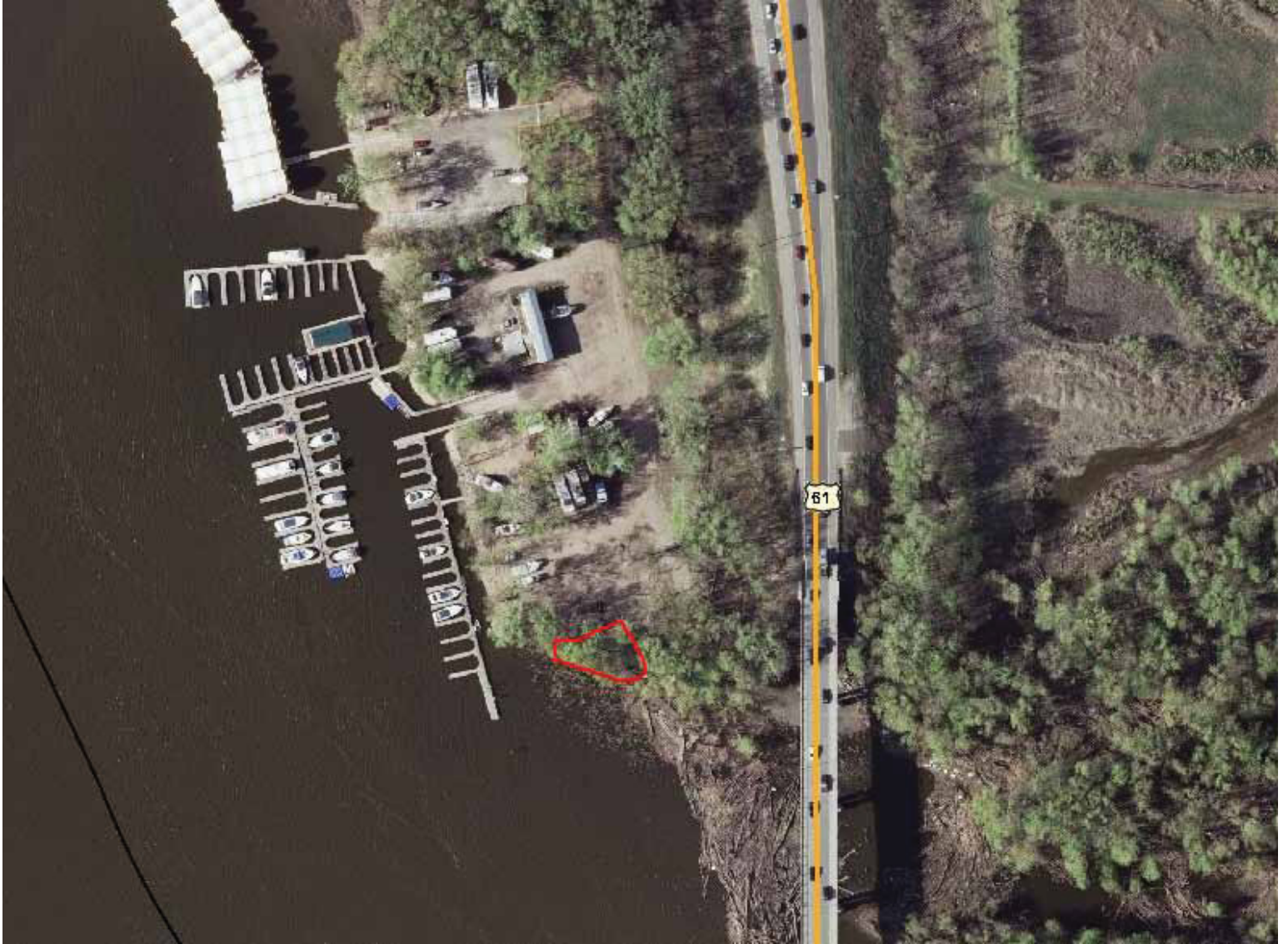
The applicant's engineer has performed a model showing that the proposed fill will not cause flooding impacts to other areas. The model was based on input prior to the fill that the State of Minnesota's Department of Transportation added for the bridge project. The applicant's engineer has obtained data from MnDot's modeling for the bridge project to complete their modeling. The Engineer has run the models, which show no rise in the flood elevation as a result of the proposed work. The Engineer has signed a "No-Rise" Certificate thereby certifying that the fill will not result in a rise of the flood level.

### **Recommendation**

Approval of the floodway fill application

### **Attachments**

- Aerial Map
- Engineer drawings of proposal
- No rise certificate
- Memo summarizing flood analysis



This map shows an approximate location of the fill. Fill areas are proposed to behind the OHW of 681.7

# g and Marina Shoreline Restoration Above OHW

er  
[t.frazer@lawson.com](mailto:t.frazer@lawson.com)

to the project limits. The project  
 for to starting excavation.  
 installed prior to excavation.

Hastings TH 61 SWPPP Amendment 1B - Additional Excavation  
 (dock wall, wing dam, Pier 6 and 7)

Permit required for the City of Hastings.

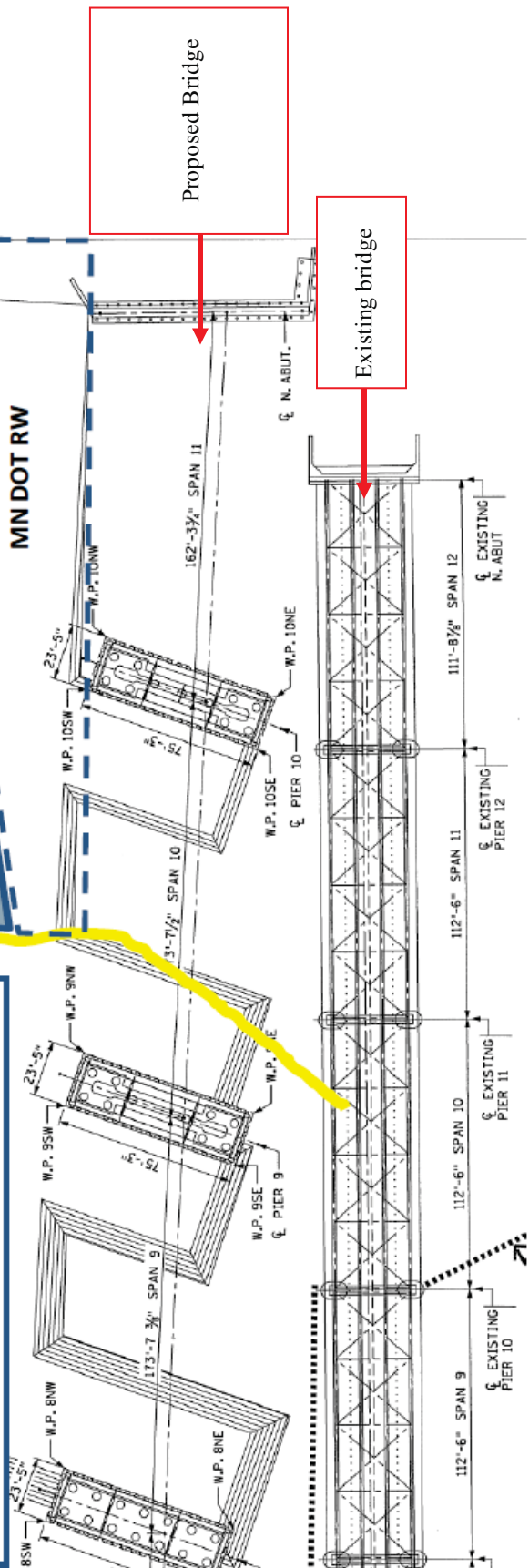
- OHW elevation 681.7
- 9,673 sq. ft.
- Finished Elevations 684.7
- Average 4' depth for fill
- Total Cubic feet of fill is 29,019

OHW Mark

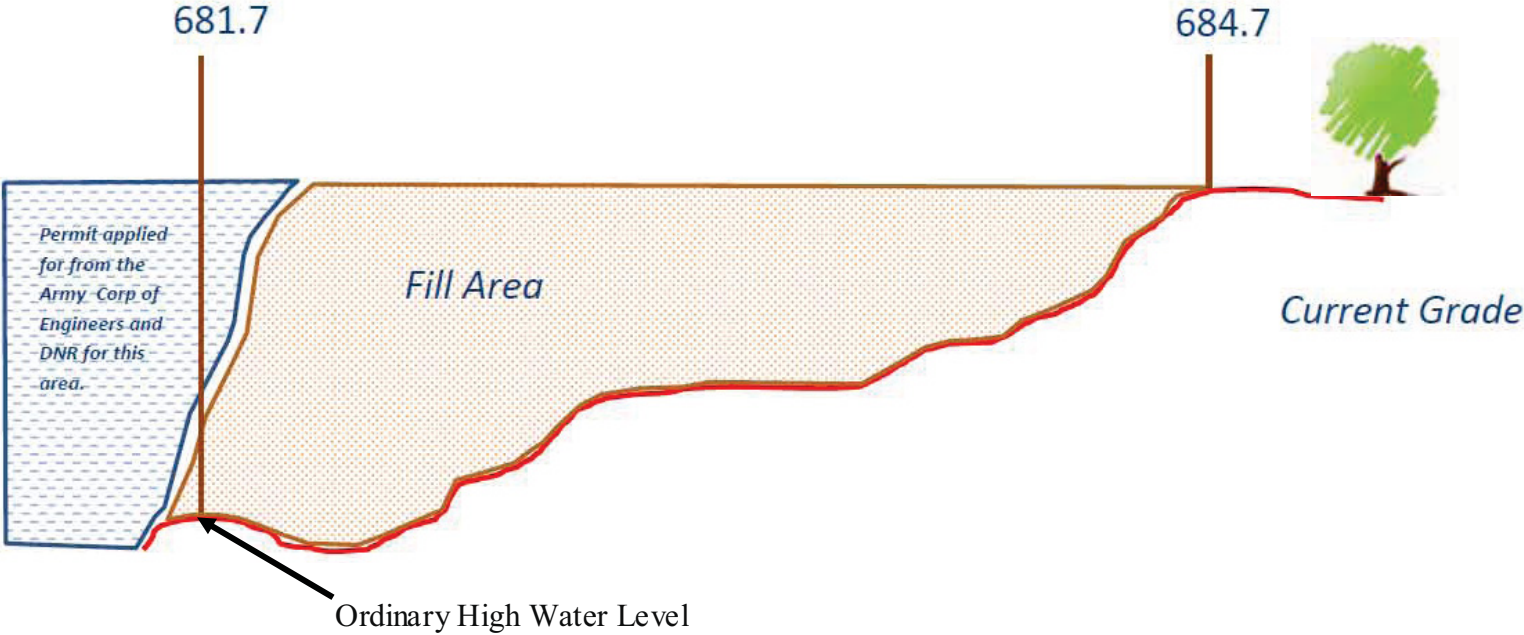
Approximate location of wing dam



Our property being leased to MN DOT  
 during construction we like to ask them to  
 get this material there when complete.



# Cross section view



**BRAEMAR ASSOCIATES**  
CONSULTING SERVICES

**MINNESOTA "NO-RISE" CERTIFICATION**

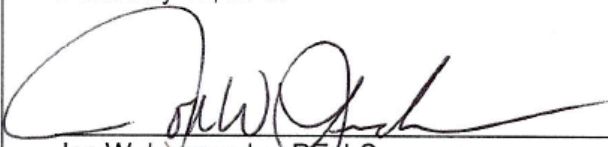
This is to certify that I am a duly qualified professional engineer licensed to practice in the State of Minnesota.

It is further to certify that the attached technical data supports the fact that the proposal to add fill material in the southeast corner of the Hubs Landing Marina in Hastings Minnesota raising a portion of the site above the Ordinary High Water elevation of 681.7 to a final elevation of 684.7 feet, will not impact the floodway width or 100-year flood elevation (will not raise or lower by more than 0.00 feet) on the Mississippi River at published sections in the Flood Insurance Study for Hastings, Minnesota dated February 3<sup>rd</sup>, 2010 and will not impact the 100-year flood elevation (will not raise or lower by more than 0.00 feet) at unpublished cross-sections in the vicinity of the proposed development / project.

Attached are the following documents that support my findings:

Memo on HEC-RAS Analysis – Hubs Landing Marina Grading Modifications

Date: July 13, 2012



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Jon W. Lennander, PE/LS  
Professional Engineer  
Braemar Associates, Consulting Services

**BRAEMAR ASSOCIATES**  
CONSULTING SERVICES

**Memo**

Date: July 6, 2012

To: Mark Frazier, Hubs Landing Marina

From: Jon Lennander, PE, LS

Subject: HEC RAS Analysis – Hubs Landing Marina Grading Modifications

This Memo summarizes the analysis of flood elevation of the Mississippi River resulting from the proposed grading changes planned for the southeast corner of the Hubs Landing Marina property. Based on the requirements of the City, and the Department of Natural Resources, the limits of grading on the site are limited to that portion of the site above the Ordinary High Water elevation of 681.70 feet. The proposed grading is planned to raise the site to match the existing grade of the remaining area of the site (approximately 684.70 feet). The proposed extents of the grading are shown in Figure 1.

**Method**

A HEC-RAS model (US Army Corps of Engineers) was prepared by CH2MHill for the Minnesota Department of Transportation as a part of the design and approval of the new Hastings Bridge over the Mississippi River. This model was obtained from MnDOT for analysis of the changes to Hubs Landing Marina.

A similar study of Hubs Landing Marina was completed in 2008 by URS which identified Cross Section 814.10 is located in the vicinity of the Marina, and is shown on Figure 2. This cross section was further modified as a part of the MnDOT project to account for current soundings of the river channel.

The area of proposed fill is approximately 60 feet downstream of Section 814.1 as shown on both the figures in the MnDOT Report and the URS study. To model the impacts of the proposed fill, a new cross section was added to the model using Cross Section 814.1 and modifying it to match the portion of the marina site above the ordinary high water elevation (OHW). Cross Section 814.1, the existing condition Cross Section 814.0, and proposed Cross Section 814.0 are shown in Appendix B.

The new cross section was identified in the model as Section 814.0, and the revised model output compared to the results of the MnDOT model. With the new cross section in place, there was no change in water surface elevation, or energy grade elevation for the 100 year flood discharge (151,000 cfs) compared to the MnDOT model for the either cross section above or below Cross Section 814.0 (Cross Section 814.1 and Cross Section 813.98).

To determine the impact of the proposed fill, Cross Section 814.0 was modified to reflect the proposed fill, and compared to the revised existing conditions model for Cross Section 814.1, Cross Section 814.0 and Cross Section 813.98.

## **Results**

The results of the Modeling are summarized in Table 1. As shown in the table, there are no increases in water surface elevation or energy grade elevation after the addition of the fill material at any of the cross sections of concern.

Table 1  
Hubs Landing Marina  
HEC-RAS Model Results

X-Section Conditions	MnDOT Model		Existing Condition w/ new X-Section		Proposed Conditions	
	WS Elev.	EG Elev.	WS Elev.	EG Elev.	WS Elev.	EG Elev.
814.1	693.91	694.16	693.91	694.16	693.91	694.16
814.0	NA	NA	693.91	694.15	693.91	694.15
813.98	693.85	694.11	693.85	694.11	693.85	694.11

## **Conclusions**

Based on the results of this study, the proposed fill on the Hubs Landing Marina site will have no impact on the 100 year flood elevation of the Mississippi River. The amount fill that will be placed is approximately 200 cubic yards calculated from the topography shown on the Washington County aerial topography for this site and the limits of grading above the OHW.

This work will not impact the floodway width or 100-year flood elevation at published Sections in the Flood Insurance Study for Hastings, Minnesota, and will not impact the 100-year flood elevation (will not raise or lower by more than 0.00 feet) at unpublished cross-sections in the vicinity of the proposed development / project.



## **Appendix A**

### **Figures**

**Figure 1 – Hubs Landing Site ..... A-1**

**Figure 2 – Existing Cross Section Locations (from MnDOT Report)..... A-2**



Figure 1  
Hubs Landing Marina Site

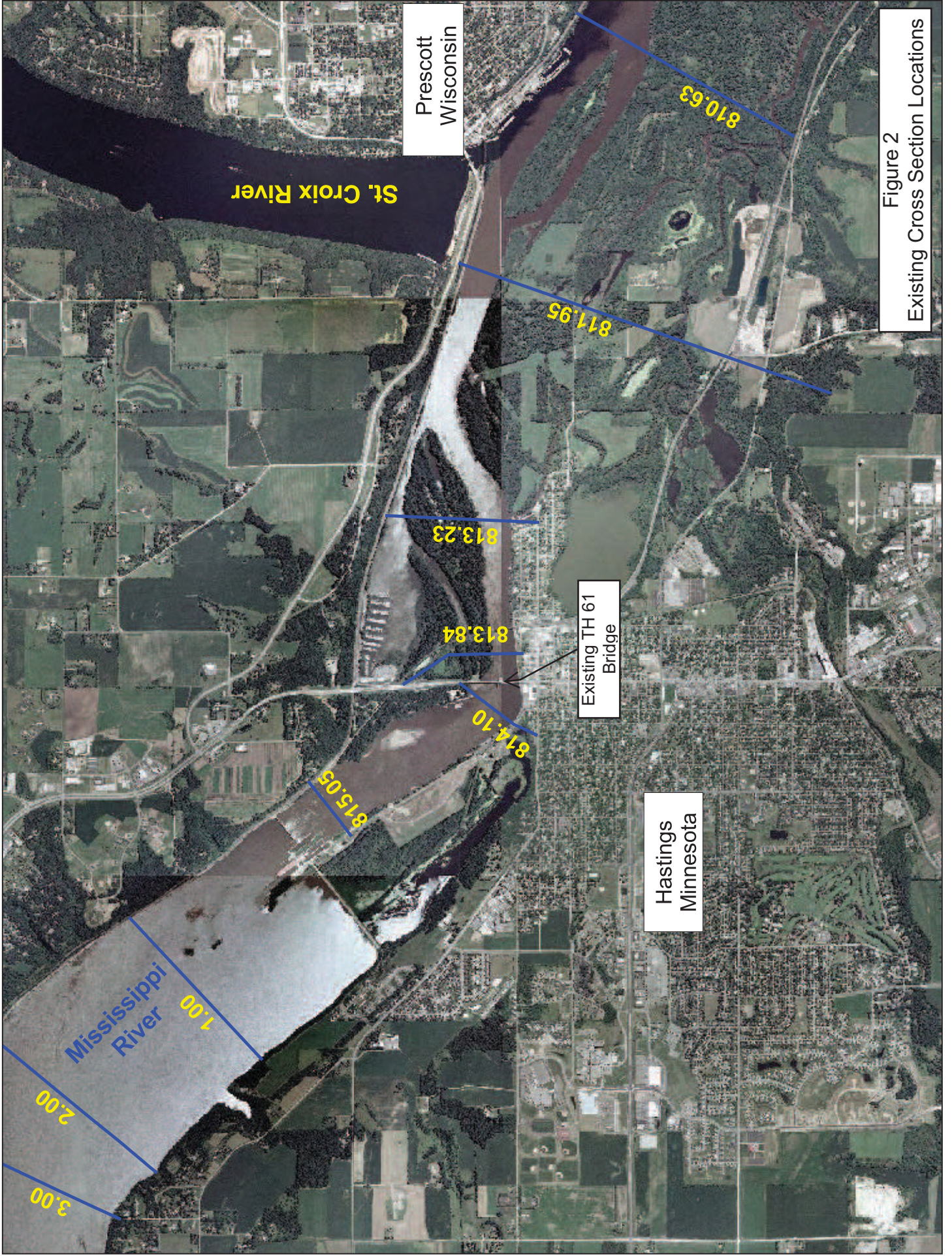


Figure 2  
Existing Cross Section Locations

## **Appendix B**

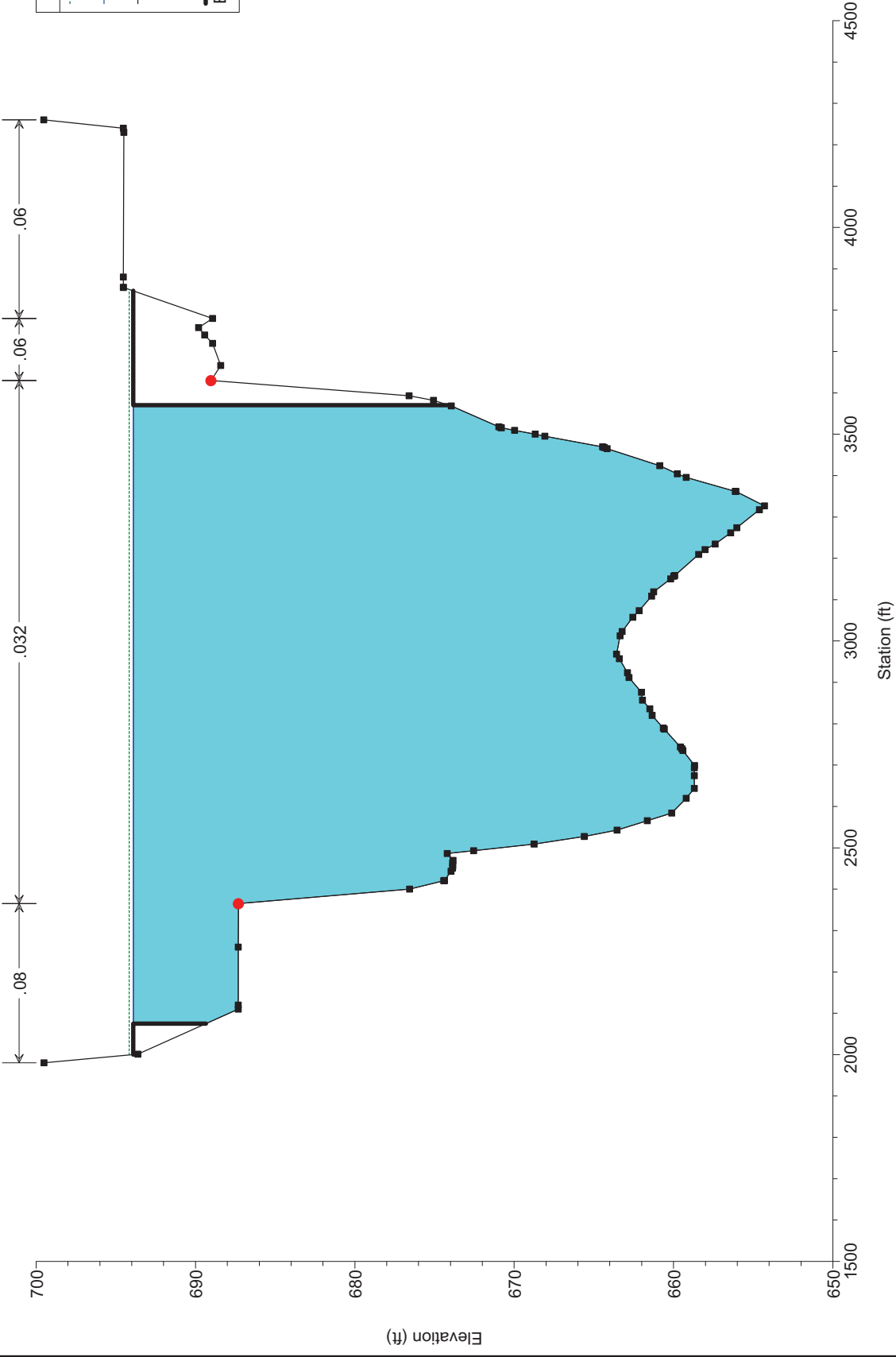
### **HEC-RAS Model Output**

HEC-RAS Plan: Exis\_w\_nw\_rvr\_su River: RIVER-1 Reach: Reach-2 Profile: PF 4

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-2	820.04	PF 4	142100.00	664.20	696.935		697.008	0.000069	2.73	72291.39	4550.63	0.10
Reach-2	819.33	PF 4	151000.00	669.00	696.690		696.756	0.000073	2.51	77997.84	5120.47	0.10
Reach-2	818.94	PF 4	151000.00	667.00	696.575		696.629	0.000052	2.23	84995.55	4897.24	0.09
Reach-2	818.32	PF 4	151000.00	671.00	696.381		696.443	0.000065	2.66	78999.26	4481.72	0.10
Reach-2	817.85	PF 4	151000.00	660.60	696.185		696.267	0.000070	3.06	72790.13	4121.04	0.11
Reach-2	817.47	PF 4	151000.00	668.90	696.026		696.098	0.000069	2.78	76420.70	4576.71	0.10
Reach-2	817.05	PF 4	151000.00	669.10	695.940		695.982	0.000034	1.82	96129.65	5175.81	0.07
Reach-2	816.07	PF 4	151000.00	656.60	695.601		695.685	0.000053	2.90	78288.63	4630.56	0.09
Reach-2	815.27	PF 4	151000.00	656.60	694.710		695.177	0.000197	5.48	27599.95	4620.04	0.18
Reach-2	815.05	PF 4	151000.00	650.60	694.380		694.551	0.000051	3.33	45460.04	1359.00	0.10
Reach-2	814.64	PF 4	151000.00	658.11	694.192		694.412	0.000094	3.91	45331.72	2289.00	0.13
Reach-2	814.10	PF 4	151000.00	654.29	693.907		694.157	0.000080	4.03	39092.23	1495.00	0.13
Reach-2	813.98	PF 4	151000.00	644.23	693.845		694.107	0.000078	4.14	38289.15	1250.00	0.13
Reach-2	813.97	PF 4	151000.00	639.57	693.810	661.56	694.093	0.000082	4.31	37819.68	1260.00	0.13
Reach-2	813.965		Mult Open									
Reach-2	813.96	PF 4	151000.00	639.89	693.793		694.070	0.000078	4.28	38539.25	1260.00	0.13
Reach-2	813.94	PF 4	151000.00	637.03	693.740		694.052	0.000085	4.56	37449.28	1274.00	0.14
Reach-2	813.84	PF 4	151000.00	637.44	693.586		693.980	0.000095	5.30	40179.29	1620.00	0.14
Reach-2	813.74	PF 4	151000.00	634.87	693.411		693.890	0.000174	5.90	36602.14	1765.00	0.17
Reach-2	813.73	PF 4	151000.00	634.87	693.429	661.57	693.863	0.000105	5.54	38777.82	1765.00	0.15
Reach-2	813.725		Bridge									
Reach-2	813.72	PF 4	151000.00	642.00	693.264		693.743	0.000128	5.86	37304.65	1765.00	0.17
Reach-2	813.23	PF 4	151000.00	655.50	692.987		693.324	0.000137	5.21	43667.40	2959.00	0.17
Reach-2	811.95	PF 4	151000.00	659.82	691.270		691.941	0.000314	6.77	31824.76	3542.00	0.25
Reach-2	810.63	PF 4	192500.00	657.02	690.950	669.23	691.108	0.000056	3.34	97459.89	5686.05	0.11

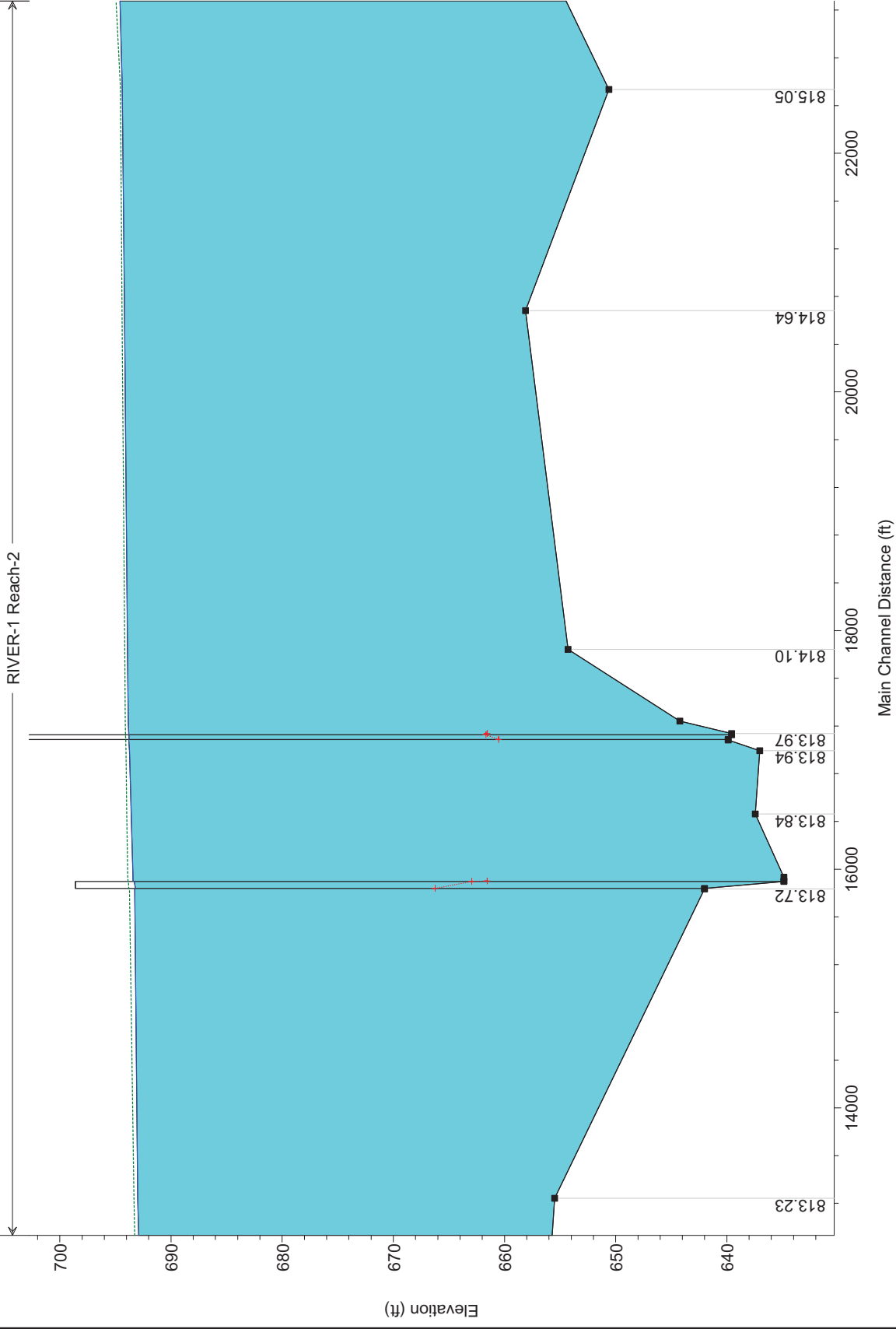
Hastings Existing Model Plan: Exist bridges with new river survey added 7/9/2012

River = RIVER-1 Reach = Reach-2 RS = 814.10 814.1



Legend	
EG PF 4	—
WS PF 4	—
Ground	—
Bank Sta	●
Encroachment	—

Hastings Existing Model Plan: Exist bridges with new river survey added 7/9/2012



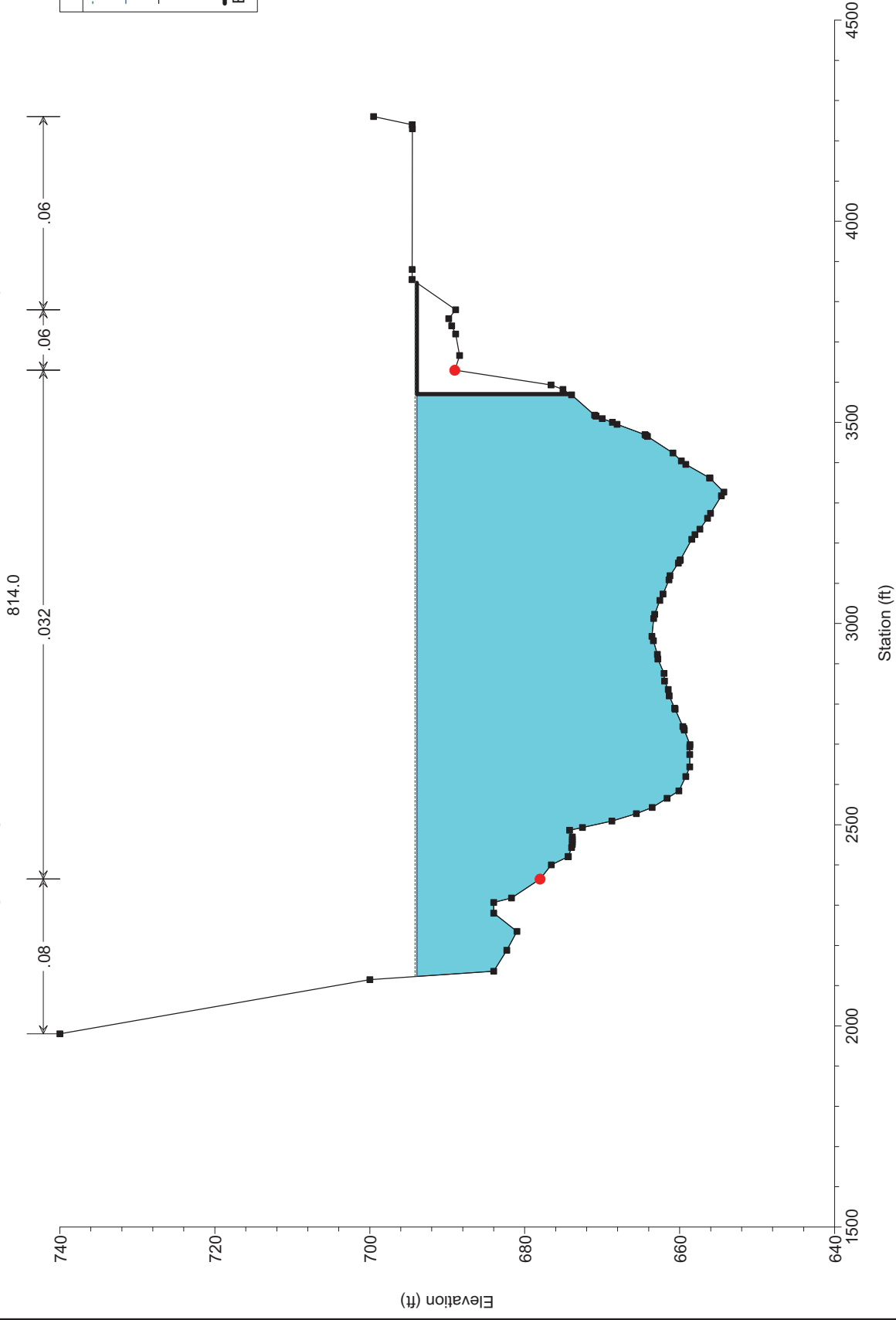
Legend	
EG PF 4	(Dotted green line)
WS PF 4	(Solid blue line)
Crit PF 4	(Dashed red line)
Ground	(Solid black line)
Set WS	(Diamond symbol)

HEC-RAS Plan: Exist Conditions River: RIVER-1 Reach: Reach-2 Profile: PF 4

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
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Reach-2	818.32	PF 4	151000.00	671.00	696.381		696.443	0.000065	2.66	78999.26	4481.72	0.10
Reach-2	817.95	PF 4	151000.00	660.60	696.185		696.267	0.000070	3.06	72790.13	4121.04	0.11
Reach-2	817.47	PF 4	151000.00	668.90	696.026		696.098	0.000069	2.78	76420.70	4576.71	0.10
Reach-2	817.05	PF 4	151000.00	669.10	695.940		695.982	0.000034	1.82	96129.65	5175.81	0.07
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Reach-2	815.27	PF 4	151000.00	656.60	694.710		695.177	0.000197	5.48	27599.95	4620.04	0.18
Reach-2	815.05	PF 4	151000.00	650.60	694.385		694.557	0.000051	3.33	45467.34	1359.00	0.10
Reach-2	814.64	PF 4	151000.00	658.11	694.198		694.417	0.000094	3.91	45344.43	2289.00	0.13
Reach-2	814.10	PF 4	151000.00	654.29	693.912		694.163	0.000080	4.03	39100.62	1495.00	0.13
Reach-2	814.0	PF 4	151000.00	654.29	693.911		694.153	0.000077	3.98	40147.81	1447.01	0.13
Reach-2	813.98	PF 4	151000.00	644.23	693.845		694.107	0.000078	4.14	38289.15	1250.00	0.13
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Hubs Landing Existing Conditions Plan: Exist conditions with new river survey 7/9/2012

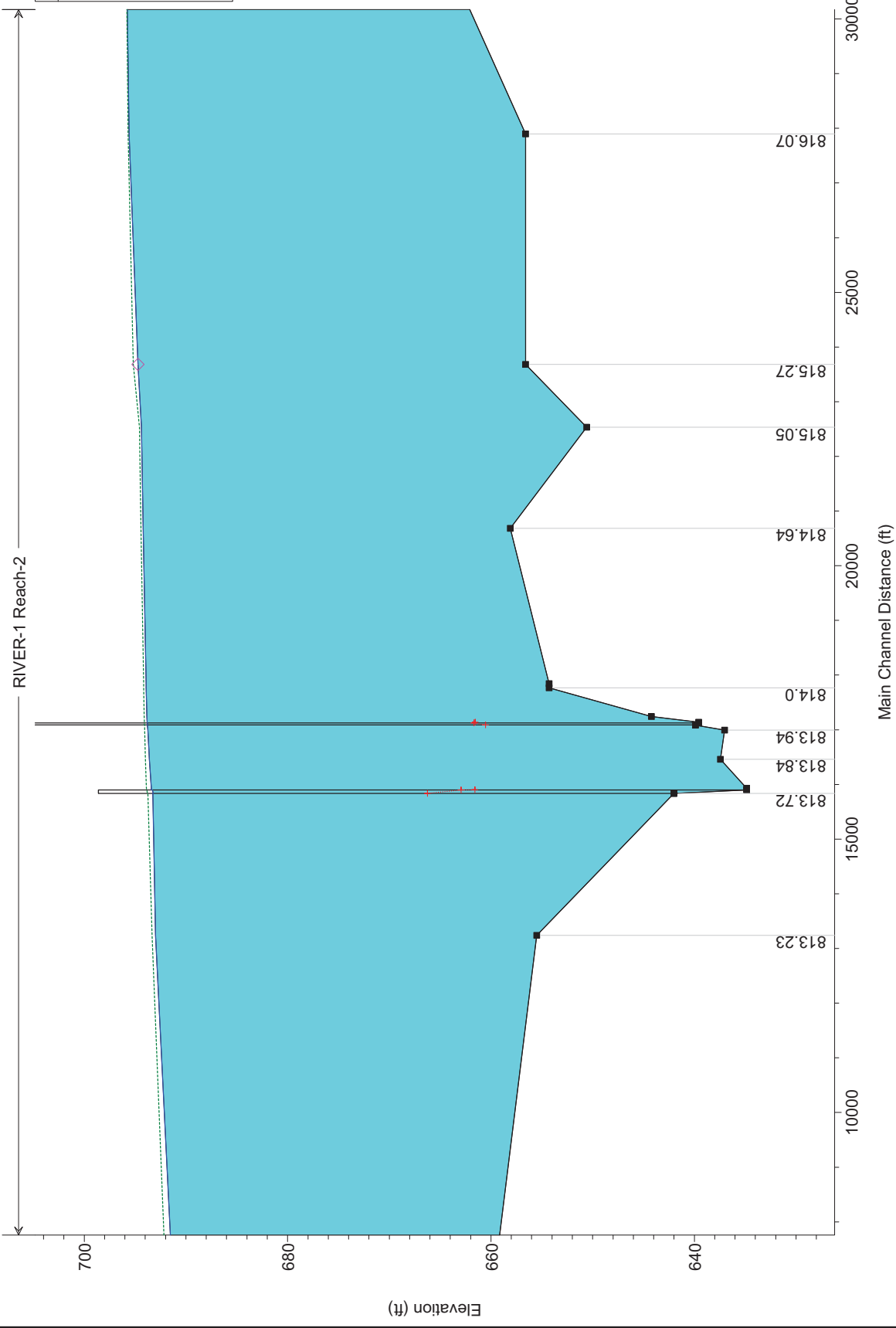


Legend	
EG PF 4	(Dashed line)
WS PF 4	(Solid line)
Ground	(Black line with square markers)
Bank Sta	(Red dot)
Encroachment	(Thick black line)

Hubs Landing Existing Conditions Plan: Exist conditions with new river survey 7/9/2012

RIVER-1 Reach-2

Legend	
EG PF 4	
WS PF 4	
Crit PF 4	
Ground	
Set WS	



Elevation (ft)

Main Channel Distance (ft)

HEC-RAS Plan: Hubs PC River: RIVER-1 Reach: Reach-2 Profile: PF 4

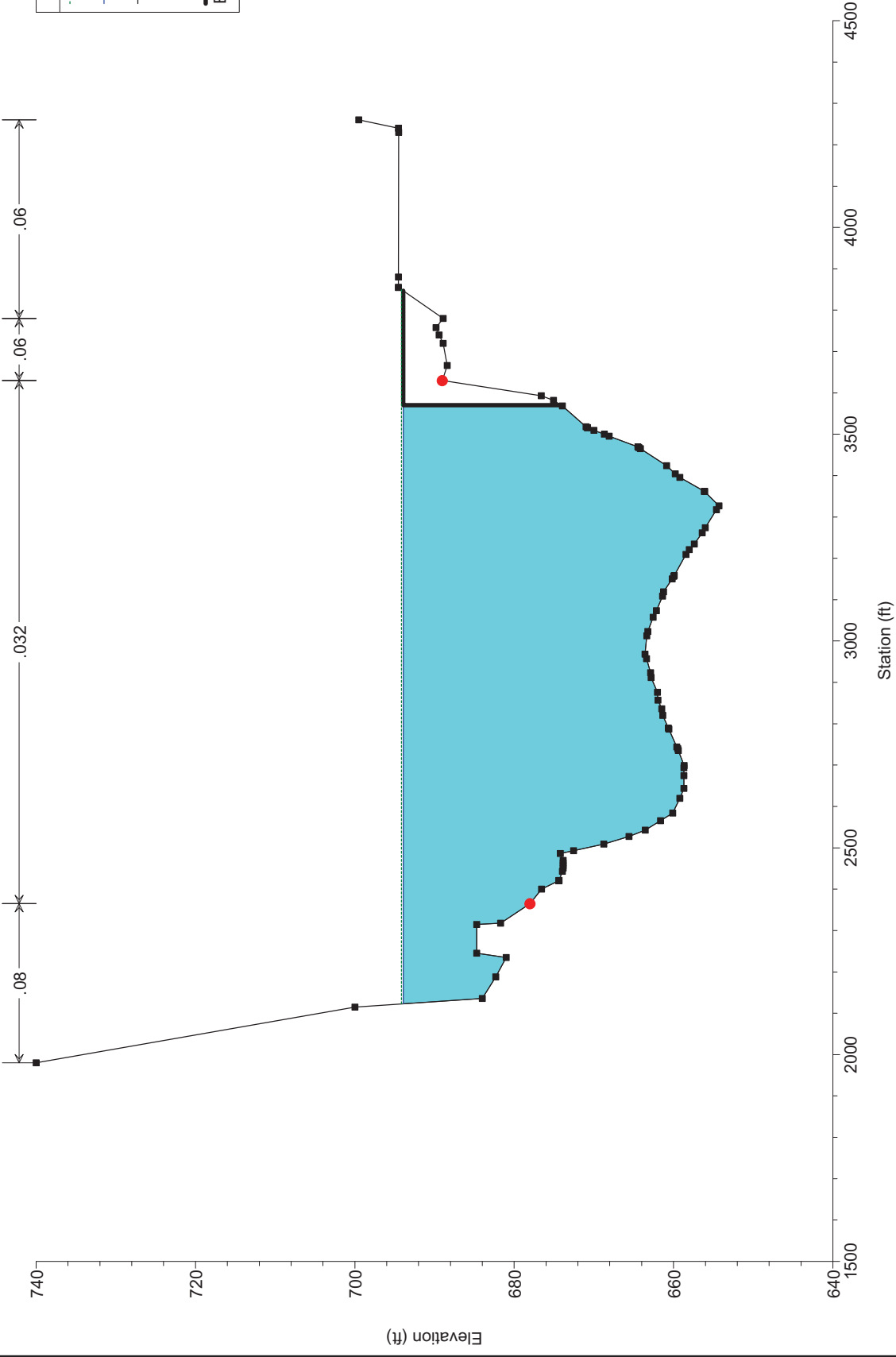
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
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Reach-2	815.05	PF 4	151000.00	650.60	694.384		694.556	0.000051	3.33	45466.59	1359.00	0.10
Reach-2	814.64	PF 4	151000.00	658.11	694.197		694.417	0.000094	3.91	45343.17	2289.00	0.13
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Hubs Landing Proposed Conditions Plan: Hubs Landing Proposed Conditions 7/9/2012

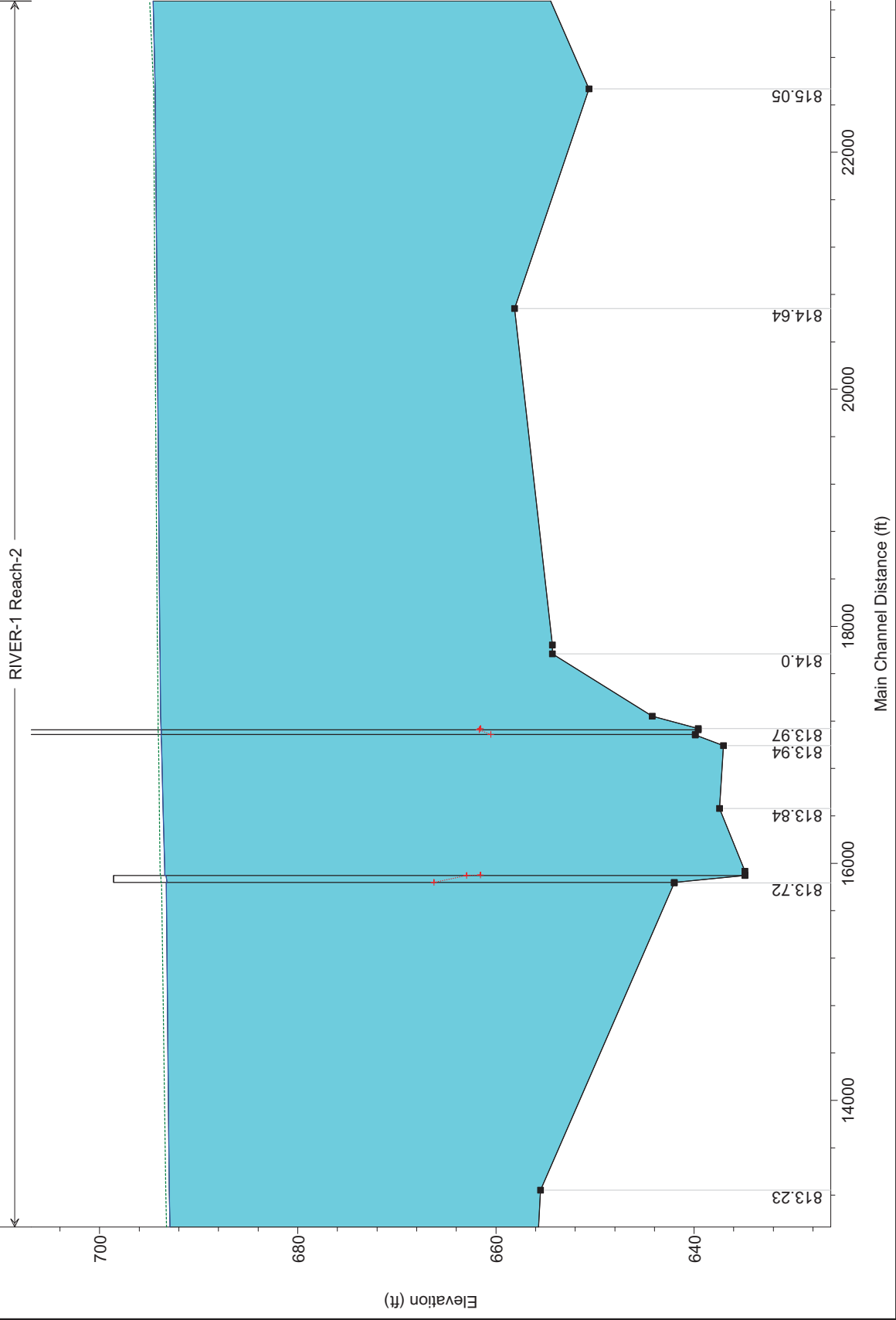
River = RIVER-1 Reach = Reach-2 RS = 814.0 814.0



Legend	
EG PF 4	
WS PF 4	
Ground	
Bank Sta	
Encroachment	



Hubs Landing Proposed Conditions Plan: Hubs Landing Proposed Conditions 7/9/2012



## **Appendix C**

### **Photos**



fill area from dock looking north



fill area from dock looking northeast



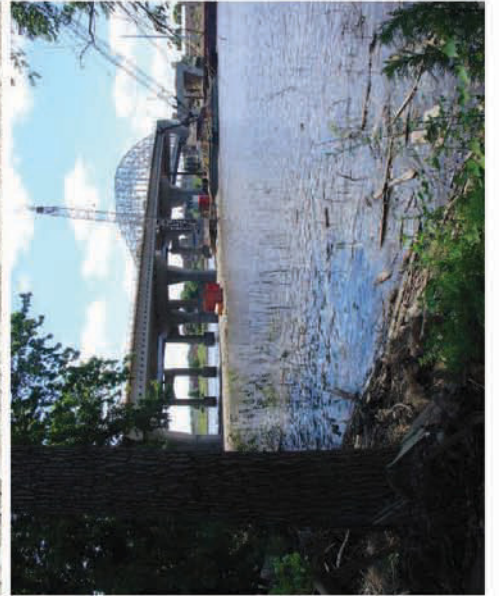
fill area from dock looking northwest



from across the river



from fill area looking northwest



from fill area looking south



from fill area looking southeast



from fill area looking west



new bridge construction