

**Letter of Map Revision
LOMR Application**

Ebner Coulee Floodplain Analysis Report

Ebner Coulee
City of La Crosse
La Crosse County, Wisconsin

SEH No. LACRS 151816

July 2020

Letter of Map Revision (LOMR) Application
Ebner Coulee Floodplain Analysis Report
Ebner Coulee
City of La Crosse, La Crosse County, Wisconsin

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Executive Summary

Short Elliott Hendrickson, Inc. is submitting the enclosed information on behalf of the City of La Crosse, Wisconsin, as a submittal of the required materials for the Ebner Coulee Letter of Map Revision (LOMR). This application is for the revision of the Ebner Coulee FIRM based on a new hydrologic and hydraulic analysis using an alternate modeling methodology.

The purpose of this project is to reevaluate and update the hydrologic and hydraulic analysis of the Ebner Coulee watershed using an updated modeling methodology to more accurately depict the conditions of this complex urban floodplain system. The analysis was performed on behalf of the City of La Crosse, Wisconsin (WI) by Short Elliott Hendrickson Inc. (SEH). The goal of this reevaluation study is to update the floodplain boundaries for FEMA Map No. 55063C0262D in La Crosse, WI, to more accurately reflect hydrologic and hydraulic characteristics of the watershed.

Ebner Coulee consists, in part, of a manmade drainage channel running from Farnam Street up to a point where it begins to drain the channel out of a valley. The raised urban portion of the channel is approximately 3,700 feet long, and the effective model extends another 300 feet above that. At Farnam Street, it empties into an 8 x10 foot box culvert that is part of the cities storm sewer system. Located on the left bank of the channel is a low lying area drained only by City storm sewer. On the right bank of the channel is another low lying area drained by storm sewer and a railroad track. There is another area south of Farnam Street that is to be remapped as well, the effective modeling in this area is a level pool analysis as there is no raised channel to model with HEC-RAS.

The effective model cross-section data begins at Jackson Street with cross-section A, however subsequent remapping efforts extended the modeling all the way down to Farnam Street. This updated mapping added additional cross-sections to the model, but they do not appear to be present in the DFIRM XS data.

A 40-year flood event occurred in July of 2017, and high water marks were surveyed and residents in the floodplain were asked to complete a mail in survey allowing them to report any flooding they observed. An SRH-2D model was created to estimate the flow associated with the 2017 flood event based on the surveyed high water marks and citizen reports of flooding; this flow was then corrected to obtain a 100-year calibrated flow. This 2D model was then used to calculate flow split out the channel, which informed and validated the final HEC-RAS model being submitted as part of this LOMR.

A 1D/2D integrated, dynamic hydrologic and hydraulic model of Ebner Coulee and the surrounding City storm sewer system was developed using XPSWMM (Version 2018.2) to model the flooding and flow rates in the low lying areas adjacent to the raised channel.

A 1D HEC-RAS (version 5.0.7) model was created to update and replace the effective model. This model consists of a channel down the main Ebner Coulee ditch, as well as a separate channel to model overtopped flows running down 28th Street. Several low lying areas that would not have effective flow were modeled using a level pool analysis with elevations from the 1D HEC-RAS model and 1D/2D XPSWMM model. The complexity is necessary to keep a similar layout as the effective model and to accurately model this complex urban system.

U.S. DEPARTMENT OF HOMELAND SECURITY
 FEDERAL EMERGENCY MANAGEMENT AGENCY
OVERVIEW & CONCURRENCE FORM

*O.M.B No. 1660-0016
 Expires February 28, 2014*

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

- CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).
- LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Example: 480301 480287	City of Katy Harris County	TX TX	48473C 48201C	0005D 0220G	02/08/83 09/28/90
555562	La Crosse, City of	WI	55063C	0262D	01/16/09
550217	La Crosse County (Unincorporated Areas)	WI	46029C	0262D	01/16/09

2. a. Flooding Source: Ebner Coulee

- b. Types of Flooding: Riverine Coastal Shallow Flooding (e.g., Zones AO and AH)
 Alluvial fan Lakes Other (Attach Description)

3. Project Name/Identifier: Ebner Coulee Floodplain Analysis, LOMR Application

4. FEMA zone designations affected: A, AH, AO, AE, X (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

- Physical Change Improved Methodology/Data Regulatory Floodway Revision Base Map Changes
 Coastal Analysis Hydraulic Analysis Hydrologic Analysis Corrections
 Weir-Dam Changes Levee Certification Alluvial Fan Analysis Natural Changes
 New Topographic Data Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

Structures: Channelization Levee/Floodwall Bridge/Culvert

Dam Fill Other (Attach Description)

6. Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information.

C. REVIEW FEE

Has the review fee for the appropriate request category been included? Yes Fee amount: \$8,250

No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/fm_fees.shtm for Fee Amounts and Exemptions.

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.


Name: Lewis Kuhlman	Company: City of La Crosse, WI	
Mailing Address: 400 La Crosse St. La Crosse, WI 54601	Daytime Telephone No.: 608-789-7361	Fax No.: XXX
	E-Mail Address: LenzB@cityoflacrosse.org	
Signature of Requester (required):		Date:

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirements for when fill is placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: Lewis Kuhlman, Environmental Planner	Community Name: City of La Crosse, WI	
Mailing Address: 400 La Crosse St. La Crosse, WI 54601	Daytime Telephone No.: 608-789-7361	Fax No.: XXX
	E-Mail Address: kuhlmanl@cityoflacrosse.org	
Community Official's Signature (required):		Date:

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

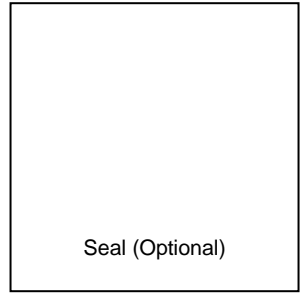
Certifier's Name: Brad Woznak	License No.: 8582	Expiration Date: 7/31/2022
Company Name: SEH Inc.	Telephone No.: 651-490-2125	Fax No.: 888-908-8166
Signature: 	Date: 12/20/13	E-Mail Address: bwoznak@sehinc.com

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)

Required if ...

- | | |
|---|---|
| <input checked="" type="checkbox"/> Riverine Hydrology and Hydraulics Form (Form 2) | New or revised discharges or water-surface elevations |
| <input type="checkbox"/> Riverine Structures Form (Form 3) | Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam |
| <input type="checkbox"/> Coastal Analysis Form (Form 4) | New or revised coastal elevations |
| <input type="checkbox"/> Coastal Structures Form (Form 5) | Addition/revision of coastal structure |
| <input type="checkbox"/> Alluvial Fan Flooding Form (Form 6) | Flood control measures on alluvial fans |



U.S. DEPARTMENT OF HOMELAND SECURITY
 FEDERAL EMERGENCY MANAGEMENT AGENCY
RIVERINE HYDROLOGY & HYDRAULICS FORM

*O.M.B No. 1660-0016
 Expires February 28, 2014*

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Ebner Coulee

Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

- | | | |
|---|--|--|
| <input type="checkbox"/> Not revised (skip to section B) | <input type="checkbox"/> No existing analysis | <input type="checkbox"/> Improved data |
| <input checked="" type="checkbox"/> Alternative methodology | <input type="checkbox"/> Proposed Conditions (CLOMR) | <input type="checkbox"/> Changed physical condition of watershed |

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	Effective/FIS (cfs)	Revised (cfs)
3,700 feet US from Farnam	0.61	1431	429

3. Methodology for New Hydrologic Analysis (check all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Statistical Analysis of Gage Records | <input checked="" type="checkbox"/> Precipitation/Runoff Model → Specify Model: <u>HMS, XPSWMM (2018Version)</u> |
| <input type="checkbox"/> Regional Regression Equations | <input checked="" type="checkbox"/> Other (please attach description) |

Please enclose all relevant models in digital format, maps, computations (including computation of parameters), and documentation to support the new analysis.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Is the hydrology for the revised flooding source(s) affected by sediment transport? Yes No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation..

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit*	<u>Farnam Street</u>	<u>0.83 Eff / -234 EX</u>	<u>651.10</u>	<u>654.62</u>
Upstream Limit*	<u>Floral Lane</u>	<u>4609 Eff / 4370</u> <u>FX</u>	<u>957.56</u>	<u>695.95</u>

*Proposed/Revised elevations must tie-into the Effective elevations within 0.5 foot at the downstream and upstream limits of revision.

2. Hydraulic Method/Model Used: HEC-RAS

3. Pre-Submittal Review of Hydraulic Models*

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS.

4.

<u>Models Submitted</u>	<u>Natural Run</u>		<u>Floodway Run</u>		<u>Datum</u>
Duplicate Effective Model*	File Name: <u>RAS5</u>	Plan Name: <u>08252010_Final</u>	File Name: _____	Plan Name: _____	<u>NAVD88</u>
Corrected Effective Model*	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	<u>NAVD88</u>
Existing or Pre-Project Conditions Model	File Name: <u>HEC-RAS Model</u>	Plan Name: <u>EX Conditions</u>	File Name: <u>HEC-RAS Model</u>	Plan Name: <u>100 FW</u>	<u>NAVD88</u>
Revised or Post-Project Conditions Model	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	<u>NAVD88</u>
Other - (attach description)	File Name: _____	Plan Name: _____	File Name: _____	Plan Name: _____	<u>NAVD88</u>

* For details, refer to the corresponding section of the instructions.

Digital Models Submitted? (Required)

C. MAPPING REQUIREMENTS

A **certified topographic work map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Digital Mapping (GIS/CADD) Data Submitted (preferred)

Topographic Information: DEM - 2017 LiDAR and SEH survey

Source: FEMA, SEH Date: Feb 2020

Accuracy: LiDAR: 2 ft cell size. SEH Survey 0.1 ft vertical

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach a **copy of the effective FIRM and/or FBFM**, at the same scale as the original, annotated to show the boundaries of the revised 1%-and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%-and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area on revision.

Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

1. For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) increase? Yes No
- a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot compared to pre-project conditions.
 - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot compared to pre-project conditions.
- b. Does this LOMR request cause increase in the BFE and/or SFHA compared with the effective BFEs and/or SFHA? Yes No
If Yes, please attach **proof of property owner notification and acceptance (if available)**. Elements of and examples of property owner notifications can be found in the MT-2 Form 2 Instructions.
2. Does the request involve the placement or proposed placement of fill? Yes No
- If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(A)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.
3. For LOMR requests, is the regulatory floodway being revised? Yes No
- If Yes, attach **evidence of regulatory floodway revision notification**. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being established. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)
4. For CLOMR requests, please submit documentation to FEMA and the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA).

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA. Please see the MT-2 instructions for more detail.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

FEDERAL EMERGENCY MANAGEMENT AGENCY
PAYMENT INFORMATION FORM

Community Name: **City of La Crosse, La Crosse County, Wisconsin**

Project Identifier: _____

THIS FORM MUST BE MAILED, ALONG WITH THE APPROPRIATE FEE, TO THE ADDRESS BELOW OR FAXED TO THE FAX NUMBER BELOW.

Please make check or money order payable to the National Flood Insurance Program.

Type of Request:

- MT-1 application }
 MT-2 application }

LOMC Clearinghouse
3601 Eisenhower Ave. Suite 500
Alexandria, VA 22304-6426
Attn.: LOMC Manager

- EDR application }

FEMA Project Library
3601 Eisenhower Ave. Suite 500
Alexandria, VA 22304-6426
FAX (703) 960-9125

Request No. (if known): _____ Check No.: _____ Amount: _____

INITIAL FEE* FINAL FEE FEE BALANCE** MASTER CARD VISA CHECK MONEY ORDER

*Note: Check only for EDR and/or Alluvial Fan requests (as appropriate).

**Note: Check only if submitting a corrected fee for an ongoing request.

COMPLETE THIS SECTION ONLY IF PAYING BY CREDIT CARD

CARD NUMBER

EXP. DATE

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	—	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	—	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	—	<input type="text"/>	<input type="text"/>	—	<input type="text"/>	<input type="text"/>		
1	2	3	4		5	6	7	8		9	10	11	12		13	14	15	16		Month	Year

_____ Date _____ Signature _____

NAME (AS IT APPEARS ON CARD): _____
(please print or type)

ADDRESS: _____
(for your credit card receipt—please print or type)

DAYTIME PHONE: _____

FEMA MT-2 FORM 2
Supporting Narrative

Ebner Coulee Floodplain Analysis Report
Ebner Coulee, La Crosse County
City of La Crosse, WI

Section A: Hydrology

Part 1: The reason for the new hydrologic analysis is an alternate modeling methodology. The original discharge rates used in the effective FIS dated January 6, 2012 have been updated to better reflect current hydrologic conditions. The effective model was developed with the Bureau of Public Roads Method, also called the Cook Method, with scaling of flood frequency from Gilmore Creek at Winona, MN. According to a letter from the USGS to the WiDNR dated September 29, 1994 (USGS, 1994), “the Bureau of Public Roads and Cook methods are highly empirical and inappropriate for a watershed as steep as Ebner Coulee, and the [flood frequency] scaling procedures applied are inconsistent with current recommended procedures.” The City believes the flow rates obtained are significantly too high, and more modern hydrologic modeling techniques support that claim.

Part 2: See the following tables in Form 2 Attachment C

- Table 1: 1-% Annual- Chance Discharge Comparison

Part 3: The updated discharge rates used in the HEC-RAS model have been developed using HEC-HMS and calibration to a 40-year flood event that occurred in July 2017. The calibration involved HWL survey and SRH2D modeling.

Part 4: Not Applicable –No review requirement by the community.

Part 5: Not Applicable

Section B: Hydraulics

Part 1: Information included in the attached MT-2 Form 2.

Due to being extended in 2012, the effective model now has it’s downstream end at Farnam Street and upstream end just above the culvert crossing. These points do not have a lettered cross-section, so to fill out box B.1, the downstream and upstream most lettered cross-sections from the original effective model were used instead.

The model does not tie into any other modeling, so the 0.5 foot tie in requirement is not applicable. Due to the flow rate decrease, elevations on the upstream end of the model are lower with the updated model. The elevation in the channel is several feet higher in the existing model compare to the effective mode at the downstream end; this is primarily due to the effective model only conveying less than 2 cfs within the channel at the bottom, which is not realistic.

Part 2: Information included in the attached MT-2 Form 2. HEC-RAS was used as the final model, however this model was informed by an SRH2D model and 1D/2D XPSWMM model due to the complicated nature of the channel and surrounding storm sewer.

Part 3: No review was carried out.

Part 4: Below is a summary description for each of the attached hydraulic models. Electronic copies of the models can be found on the attached CD titled “Ebner Coulee Floodplain Analysis Project, Calculations”.

Duplicate Effective Model:

Effective FIS Profile Plan: This model is a copy of the hydraulic model submitted in 2010 by Mead and Hunt, Inc. Dates in the model files indicate that it was completed in August of 2010. HEC-RAS version 4.1 was released in January 2010, so it was assumed that they used version 4.1, but it was not explicitly stated. The 2010 (effective in 2012) model submitted by Mead and Hunt was an updated of the original effective model, it extended the modeling from Jackson Street down to Farnam Street, and further upstream near Floral Lane.

Effective Floodway Plan: This model is a copy of the hydraulic model submitted in 2010 by Mead and Hunt, Inc. Dates in the model files indicate that it was completed in August of 2010. HEC-RAS version 4.1 was released in January 2010, so it was assumed that they used version 4.1, but it was not explicitly stated. The 2010 (effective in 2012) model submitted by Mead and Hunt was an updated of the original effective model, it extended the modeling from Jackson Street down to Farnam Street, and further upstream near Floral Lane.

Corrected Effective Model:

A Corrected Effective model was not made, SEH was not aware of any changes to the roadway crossing structures occurring since the latest Duplicate Effective model.

Existing Conditions Model:

Natural Run: This model was fully recreated by SEH with updated methodology, topography, cross-section locations, hydraulic structure data, and other inputs. This model uses the updated hydrology as discussed in the Floodplain Analysis Report. The updated hydrology (peak discharge rates) were developed using XPSWMM Stormwater and Wastewater Management Model (Version 2012), SRH2D, and HEC-HMS and calibrated to a storm event that occurred in July 2017.

Floodway Run: The floodway has been remapped down the SE channel (28th Street). The floodway within the Ebner Coulee raised channel has been remapped, but is essentially unchanged from the effective model..

Section C: Mapping Requirements

Part 1: Certified Topographic Work Map – See Form 2, Attachment A: Topographic Work Map and Annotated FIRM

Part 2: Annotated FIRM and/or FBFM – See Form 2, Attachment A: Topographic Work Map and Annotated FIRM

The following Digital Mapping Data files can be found on the attached CD titled “Ebner Coulee Floodplain Analysis Project, Calculations”.

Feature	File Name
stream cross sections	Cross Sections.shp
stream centerline	River Reaches.shp
Limit of proposed map revision	Limit of Proposed Revision.shp
streets	
Existing floodway	Floodway.shp
Existing 1% Annual Chance Floodplain supplemental information	Ineffective Flow Areas.shp, Storage Districts.shp, Lateral Structures.shp
Effective floodway	S_FLD_HAZ_AR.shp
Existing 1% Annual Chance Floodplain	SFHA_100.shp
Effective 1% and 0.2% Annual Chance Floodplain	S_FLD_HAZ_AR.shp
municipal boundary	S_POL_AR.shp
aerial imagery	NA
DEM used	LiDAR2017_withSEHChannelSurvey.tif

Projection: NAD 1983 State Plane Wisconsin South FIPS 4803 Feet
Vertical Datum: NAVD88

Section D: Common Regulatory Requirements

Part 1: The response is “YES”. See attached MT2 Form 2 Attachment C.

Part 1a: Not Applicable – no request for CLOMR

Part 1b: The response is “YES”. See attached MT2 Form 2 Attachment C.

The BFE is raised only in the channel section of the model due to differing outlet boundary conditions methodology and because the effective model only shows less than 2 cfs in the main channel at the outlet, which is not realistic. This will not impact any residential properties. Floodplain elevations in the areas modeled as a diversion channel and level pools are reduced compared to the Effective Model.

Part 2: Not Applicable – response is “NO”

Part 3: See Form 2 Attachment B for a copy of the floodway revision public notification.

Part 4: Not Applicable – no request for CLOMR

List of Attachments for MT-2 Form 2

Hard Copy: "Form 2 Attachments"

Attachment A: Topographic Work Map and Annotated FIRM

Attachment B: Public Notification

Attachment C: Tables

Table 1: 1% - Annual-Chance Discharge Comparison

Table 2: 100-Year Floodplain WSE Comparison

Table 3: 100-Year Floodway WSE Comparison

CDs: "Ebner Coulee Floodplain Analysis Project, Calculations"

HEC-RAS Modeling Files

HEC-RAS Files

Read Me File Summarizing HEC-RAS Model Files

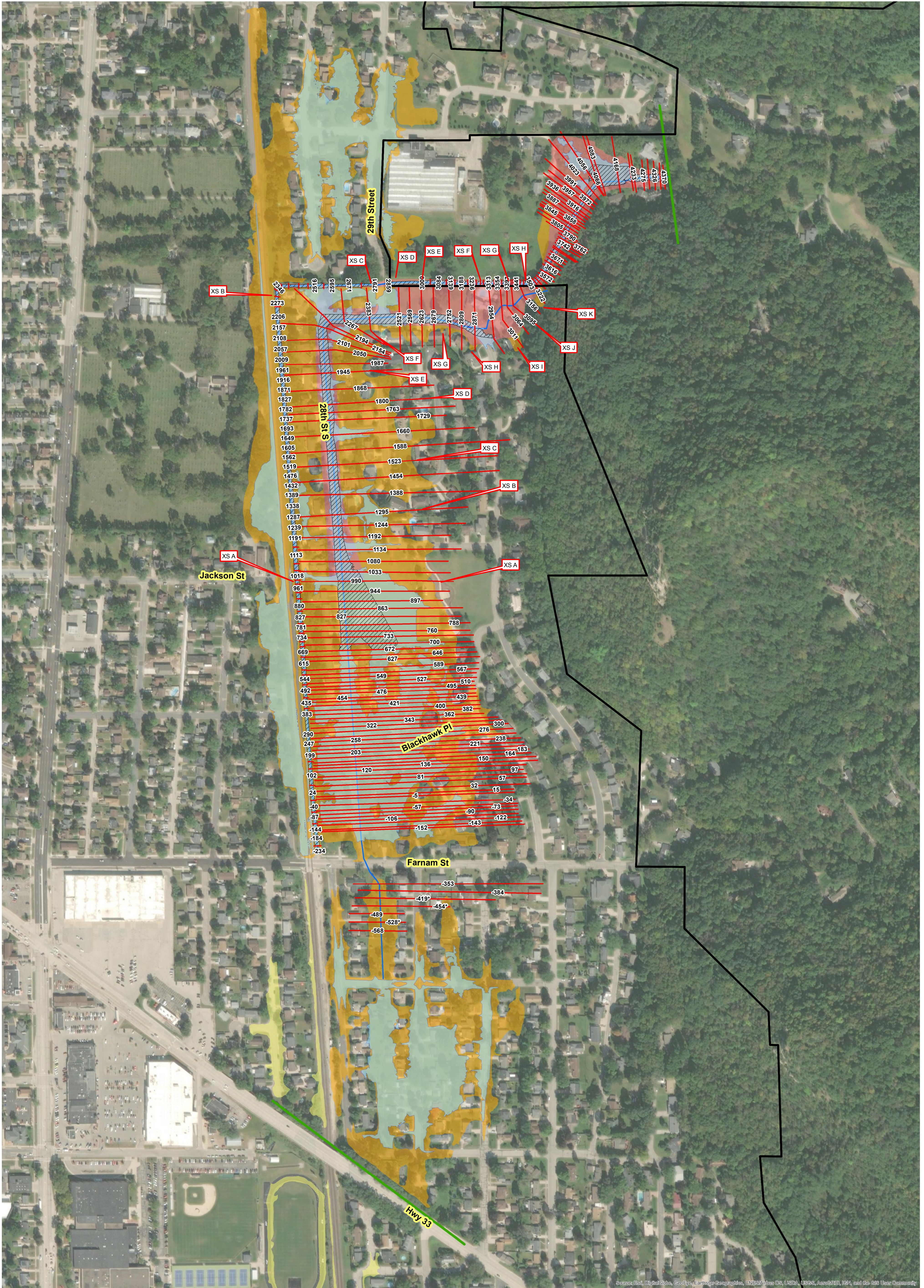
Digital Mapping Data

Map Shapefiles

Topographic Work Map and Annotated FIRM

Attachment A

Topographic Work Map and Annotated FIRM



Legend	
	Stream Cross-Section
	Stream Centerline
	Limit of Proposed Revision
	City Limits
	Cross-Section ID
Revised Flood Zones	
	Existing Floodway
	Existing 1% Annual Chance Flood Zone
Effective Flood Zones	
	Effective 1% Annual Chance Flood Zone
	Effective 0.2% Annual Chance Flood Zone
	Effective Floodway

Topographic Work Map and Annotated FIRM
Ebner Coulee
 La Crosse, WI
 La Crosse County

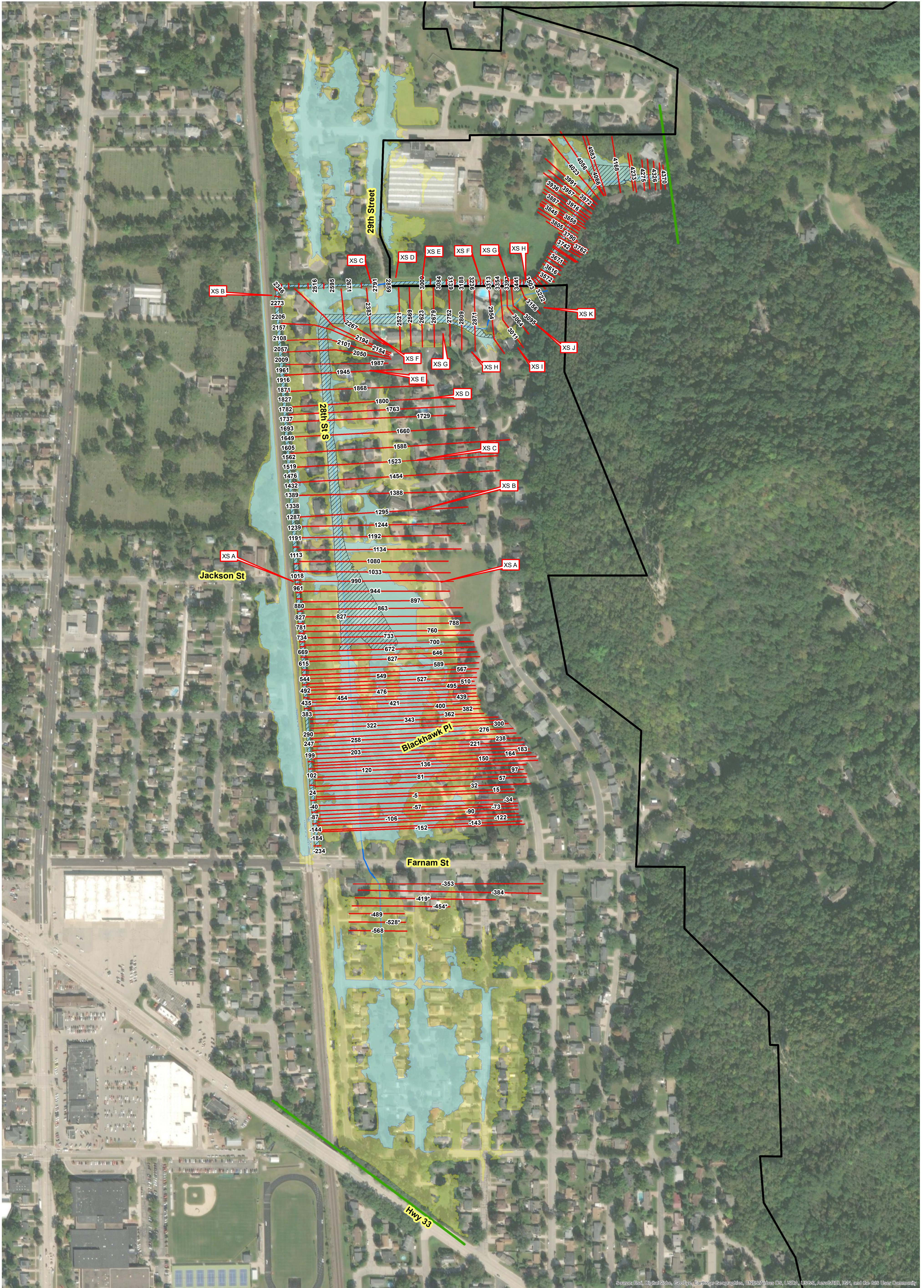
Topographic information not provided, Digital Elevation Model (DEM) was used to delineate existing floodplain boundary.
 Map prepared by Short Elliott Hendrickson Inc.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF WISCONSIN

BRAD T. WOZNAK, P.E., C.F.M. DATE
 REGISTRATION NUMBER E-36737

0 100 200 400 Feet

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. The map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.



Legend		Revised Flood Zones	
	Stream Cross-Section		Existing Floodway
	Stream Centerline		Existing 1% Annual Chance Flood Zone
	Limit of Proposed Revision		Existing 0.2% Annual Chance Flood Zone
	City Limits		
	Cross-Section ID		

Topographic Work Map and Annotated FIRM
Ebner Coulee
La Crosse, WI
La Crosse County

Topographic information not provided, Digital Elevation Model (DEM) was used to delineate existing floodplain boundary.

Map prepared by Short Elliott Hendrickson Inc.

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Attachment B

Public Notification

PUBLIC NOTICE

The City of La Crosse, in accordance with the National Flood Insurance Program regulation 65.7(b)(1), hereby gives notice of intent to revise the floodway along Ebner Coulee in regards to the recently completed Ebner Coulee Floodplain Analysis Project. Specifically, the floodway shall be revised from a point at the downstream end at Highway 33 to the point at the upstream end 4,500 feet upstream from Farnam Street. As a result of the floodway revision, the floodway shall narrow.

In addition, the 1% annual chance water surface elevations and the 1% annual chance floodplain shall be revised. As a result of the revision, the 1% annual chance water surface profile elevation shall decrease and the flood plain shall narrow within the area of revision.

Maps of the revision can be reviewed at La Crosse City Hall at 400 La Crosse St. If you have questions or concerns about the proposed revision or its effect upon your property, you may contact Lewis Kuhlman, Community Official, at 608-789-7361.

July 2020

Attachment C

Tables

- Table 1: 1% - Annual-Chance Discharges
- Table 2: 100-Year Floodplain WSE Comparison
- Table 3: 100-Year Floodway WSE Comparison

TABLE 1
EBNER COULEE
1% ANNUAL CHANCE DISCHARGES

Location	River Station	Effective FIS (cfs)	Existing Conditions Model (cfs)
Farnam Street	0.83 Effective / -234 SEH Revised	1.43	429
Above 3320 Floral Lane Driveway	4609 Effective / 4370 SEH Revised	1431	429

*Table does not account for flow split into diversion channel or storage areas, actual flow within channel ditch itself is less than value shown at Farnam Steet.

TABLE 2.1
EBNER COULEE
100-YEAR FLOODPLAIN BFE WSE COMPARISON (Main Channel) – Effective vs Existing

Channel/Ditch	Effective		Existing
River Sta (Effective)	W.S. Elev (ft)	River Sta (Existing)	W.S. Elev (ft)
4608.839 US Study Limit	697.56	4370	695.95
3736.559 H	678.83	3503	675.22
3654.649 G	677.37	3406	674.09
3536.677 F	674.79	3257	671.99
3258.906 E	670.68	3009	669.34
3138.223 D	668.46	2859	669.64
3022.270 C	667.36	2791	668.69
2547.079 B	663.47	2299	664.42
1238.181 A	654.17	1000	658.65
0.831085 DS Study Limit	651.10	-234	654.62

*Note that cross-section locations do not match exactly between models

TABLE 2.2
EBNER COULEE
100-YEAR FLOODPLAIN BFE WSE COMPARISON (Overflow/Road Channel) – Effective vs Existing

Overflow/Road			
	Effective		Existing
River Sta (Effective)	W.S. Elev (ft)	River Sta (Existing)	W.S. Elev (ft)
3456.827 K	673.15	3156	671.16
3357.580 J	670.96	3095	669.61
3250.714 I	669.73	2954	667.65
3190.874 H	667.86	2871	666.14
3009.540 G	665.94	2752	665.11
2701.941 F	664.88	2383	663.05
2243.292 E	662.55	1987	660.71
2073.464 D	661.83	1800	659.43
1797.463 C	660.94	1523	658.29
1568.343 B	660.66	1295	657.80
1259.992 A	660.69	990	656.40

*Note that cross-section locations do not match exactly between models

TABLE 3.1
EBNER COULEE
100-YEAR BFE and FLOODWAY WSE (Main Channel) (Existing Model)

Channel					
				EX	FW
Reach	River Sta (Existing)	FEMA Letter	Profile	W.S. Elev (ft)	W.S. Elev (ft)
Ebner_Main	4370	Limit of Study	Max WS	695.95	695.95
Ebner_Main	4352		Max WS	695.29	695.29
Ebner_Main	4326		Max WS	694.35	694.35
Ebner_Main	4300		Max WS	693.32	693.32
Ebner_Main	4275		Max WS	692.55	692.55
Ebner_Main	4233		Max WS	692.32	692.32
Ebner_Main	4220		Max WS	692.33	692.33
Ebner_Main	4200				
Ebner_Main	4168		Max WS	689.30	689.30
Ebner_Main	4083		Max WS	688.98	688.98

Ebner_Main	4074				
Ebner_Main	4066		Max WS	687.76	687.76
Ebner_Main	4061				
Ebner_Main	4056		Max WS	687.43	687.43
Ebner_Main	4023		Max WS	686.52	686.52
Ebner_Main	3991		Max WS	685.72	685.72
Ebner_Main	3972		Max WS	685.18	685.18
Ebner_Main	3957		Max WS	684.81	684.81
Ebner_Main	3936		Max WS	684.38	684.38
Ebner_Main	3916		Max WS	684.00	684.00
Ebner_Main	3902		Max WS	683.75	683.75
Ebner_Main	3887		Max WS	683.69	683.69
Ebner_Main	3871		Max WS	683.39	683.39
Ebner_Main	3858		Max WS	683.17	683.17
Ebner_Main	3845		Max WS	682.97	682.97
Ebner_Main	3837		Max WS	682.78	682.78
Ebner_Main	3822		Max WS	682.48	682.48
Ebner_Main	3805		Max WS	682.11	682.11
Ebner_Main	3790		Max WS	681.92	681.92
Ebner_Main	3777		Max WS	681.74	681.74
Ebner_Main	3762		Max WS	681.53	681.53
Ebner_Main	3751		Max WS	681.41	681.41
Ebner_Main	3742		Max WS	681.31	681.31
Ebner_Main	3732		Max WS	681.14	681.14
Ebner_Main	3713		Max WS	680.64	680.64
Ebner_Main	3706		Max WS	680.61	680.61
Ebner_Main	3686		Max WS	680.19	680.19
Ebner_Main	3671		Max WS	679.87	679.87
Ebner_Main	3653		Max WS	679.37	679.37
Ebner_Main	3635		Max WS	678.62	678.62
Ebner_Main	3616		Max WS	677.89	677.89
Ebner_Main	3590		Max WS	677.16	677.16
Ebner_Main	3572		Max WS	676.53	676.53
Ebner_Main	3555		Max WS	676.00	676.00
Ebner_Main	3540		Max WS	675.66	675.66
Ebner_Main	3526		Max WS	675.44	675.44
Ebner_Main	3515				
Ebner_Main	3503	H	Max WS	675.22	675.22
Ebner_Main	3473		Max WS	674.88	674.88
Ebner_Main	3456		Max WS	674.67	674.67
Ebner_Main	3441		Max WS	674.50	674.50

Ebner_Main	3424		Max WS	674.31	674.31
Ebner_Main	3415		Max WS	674.22	674.22
Ebner_Main	3406	H	Max WS	674.09	674.09
Ebner_Main	3397		Max WS	673.96	673.96
Ebner_Main	3389		Max WS	673.86	673.86
Ebner_Main	3372		Max WS	673.62	673.62
Ebner_Main	3363		Max WS	673.49	673.49
Ebner_Main	3354		Max WS	673.37	673.37
Ebner_Main	3337		Max WS	673.14	673.14
Ebner_Main	3320		Max WS	672.93	672.93
Ebner_Main	3313		Max WS	672.84	672.84
Ebner_Main	3305		Max WS	672.74	672.74
Ebner_Main	3289		Max WS	672.51	672.51
Ebner_Main	3276		Max WS	672.30	672.30
Ebner_Main	3257	F	Max WS	671.99	671.99
Ebner_Main	3247		Max WS	671.85	671.85
Ebner_Main	3236		Max WS	671.70	671.70
Ebner_Main	3217		Max WS	671.42	671.42
Ebner_Main	3197		Max WS	671.14	671.14
Ebner_Main	3188		Max WS	671.03	671.03
Ebner_Main	3178		Max WS	670.89	670.89
Ebner_Main	3158		Max WS	670.63	670.63
Ebner_Main	3139		Max WS	670.39	670.39
Ebner_Main	3118		Max WS	670.17	670.17
Ebner_Main	3084		Max WS	669.81	669.81
Ebner_Main	3046		Max WS	669.47	669.47
Ebner_Main	3009	E	Max WS	669.34	669.34
Ebner_Main	2969				
Ebner_Main	2859	D	Max WS	669.64	669.64
Ebner_Main	2824				
Ebner_Main	2791	C	Max WS	668.69	668.69
Ebner_Main	2785				
Ebner_Main	2728		Max WS	667.98	667.98
Ebner_Main	2671		Max WS	667.45	667.45
Ebner_Main	2595		Max WS	667.21	667.21
Ebner_Main	2556		Max WS	666.76	666.76
Ebner_Main	2516		Max WS	666.37	666.37
Ebner_Main	2485		Max WS	666.07	666.07
Ebner_Main	2442		Max WS	665.64	665.64
Ebner_Main	2395		Max WS	665.16	665.16
Ebner_Main	2363		Max WS	664.83	664.83

Ebner_Main	2346		Max WS	664.72	664.72
Ebner_Main	2328		Max WS	664.68	664.68
Ebner_Main	2323				
Ebner_Main	2299	B	Max WS	664.42	664.42
Ebner_Main	2273		Max WS	664.15	664.15
Ebner_Main	2253		Max WS	664.04	664.04
Ebner_Main	2206		Max WS	663.67	663.67
Ebner_Main	2157		Max WS	663.38	663.38
Ebner_Main	2108		Max WS	663.25	663.25
Ebner_Main	2057		Max WS	662.99	662.99
Ebner_Main	2009		Max WS	662.95	662.95
Ebner_Main	1961		Max WS	662.80	662.80
Ebner_Main	1916		Max WS	662.59	662.59
Ebner_Main	1871		Max WS	662.25	662.25
Ebner_Main	1827		Max WS	662.04	662.04
Ebner_Main	1782		Max WS	661.92	661.92
Ebner_Main	1737		Max WS	661.63	661.63
Ebner_Main	1693		Max WS	661.34	661.34
Ebner_Main	1649		Max WS	661.29	661.29
Ebner_Main	1605		Max WS	661.05	661.05
Ebner_Main	1562		Max WS	660.61	660.61
Ebner_Main	1519		Max WS	660.50	660.50
Ebner_Main	1476		Max WS	660.37	660.37
Ebner_Main	1432		Max WS	660.12	660.12
Ebner_Main	1389		Max WS	659.94	659.94
Ebner_Main	1338		Max WS	659.83	659.83
Ebner_Main	1287		Max WS	659.68	659.68
Ebner_Main	1239		Max WS	659.19	659.19
Ebner_Main	1191		Max WS	659.00	659.00
Ebner_Main	1151		Max WS	658.98	658.98
Ebner_Main	1113		Max WS	658.91	658.91
Ebner_Main	1075		Max WS	658.79	658.79
Ebner_Main	1043		Max WS	658.77	658.77
Ebner_Main	1018		Max WS	658.76	658.76
Ebner_Main	1000	A	Max WS	658.65	658.65
Ebner_Main	980		Max WS	658.65	658.65
Ebner_Main	961		Max WS	658.63	658.63
Ebner_Main	942		Max WS	658.55	658.55
Ebner_Main	913		Max WS	658.51	658.51
Ebner_Main	880		Max WS	658.47	658.47
Ebner_Main	856		Max WS	658.46	658.46

Ebner_Main	827		Max WS	658.44	658.44
Ebner_Main	799		Max WS	658.38	658.38
Ebner_Main	781		Max WS	658.33	658.33
Ebner_Main	754		Max WS	658.27	658.27
Ebner_Main	734		Max WS	658.26	658.26
Ebner_Main	717		Max WS	658.25	658.25
Ebner_Main	694		Max WS	658.25	658.25
Ebner_Main	669		Max WS	658.18	658.18
Ebner_Main	646		Max WS	658.14	658.14
Ebner_Main	615		Max WS	658.11	658.11
Ebner_Main	586		Max WS	658.05	658.05
Ebner_Main	565		Max WS	658.04	658.04
Ebner_Main	544		Max WS	657.99	657.99
Ebner_Main	519		Max WS	657.96	657.96
Ebner_Main	492		Max WS	657.88	657.88
Ebner_Main	460		Max WS	657.79	657.79
Ebner_Main	435		Max WS	657.71	657.71
Ebner_Main	410		Max WS	657.70	657.70
Ebner_Main	383		Max WS	657.55	657.55
Ebner_Main	290		Max WS	657.37	657.37
Ebner_Main	247		Max WS	657.27	657.27
Ebner_Main	199		Max WS	657.16	657.16
Ebner_Main	167		Max WS	657.02	657.02
Ebner_Main	133		Max WS	656.94	656.94
Ebner_Main	102		Max WS	656.83	656.83
Ebner_Main	58		Max WS	656.73	656.73
Ebner_Main	24		Max WS	656.54	656.54
Ebner_Main	-12		Max WS	656.41	656.41
Ebner_Main	-40		Max WS	656.20	656.20
Ebner_Main	-64		Max WS	655.98	655.98
Ebner_Main	-87		Max WS	655.77	655.77
Ebner_Main	-117		Max WS	655.42	655.42
Ebner_Main	-144		Max WS	655.23	655.23
Ebner_Main	-173		Max WS	654.92	654.92
Ebner_Main	-184		Max WS	654.77	654.77
Ebner_Main	-217		Max WS	654.40	654.40
Ebner_Main	-234	Limit of Study	Max WS	654.62	654.62

TABLE 3.2
EBNER COULEE
100-YEAR BFE and FLOODWAY WSE (Overflow/Road Channel) (Existing Model)

Overflow					
				EX	
Reach	FEMA Letter	River Sta	Profile	W.S. Elev	
				(ft)	
Overflow		3222	Max WS	674.70	674.70
Overflow	K	3156	Max WS	671.16	671.16
Overflow	J	3095	Max WS	669.61	669.61
Overflow		3064	Max WS	669.24	669.24
Overflow		3011	Max WS	668.74	668.74
Overflow	I	2954	Max WS	667.65	667.65
Overflow	H	2871	Max WS	666.14	666.14
Overflow		2809	Max WS	665.48	665.48
Overflow	G	2752	Max WS	665.11	665.11
Overflow		2679	Max WS	664.49	664.49
Overflow		2623	Max WS	664.10	664.10
Overflow		2569	Max WS	663.71	663.72
Overflow		2521	Max WS	663.66	663.66
Overflow	F	2383	Max WS	663.05	663.05
Overflow		2267	Max WS	662.30	662.30
Overflow		2194	Max WS	661.93	661.93
Overflow		2154	Max WS	661.75	661.75
Overflow		2101	Max WS	661.47	661.47
Overflow		2050	Max WS	661.12	661.12
Overflow	E	1987	Max WS	660.71	660.71
Overflow		1945	Max WS	660.48	660.48
Overflow		1868	Max WS	659.98	659.98
Overflow	D	1800	Max WS	659.43	659.43
Overflow		1763	Max WS	659.21	659.21
Overflow		1729	Max WS	659.07	659.07
Overflow		1660	Max WS	658.85	658.85
Overflow		1588	Max WS	658.57	658.57
Overflow	C	1523	Max WS	658.29	658.29
Overflow		1454	Max WS	658.08	658.08
Overflow		1388	Max WS	657.96	657.96
Overflow	B	1295	Max WS	657.80	657.80
Overflow		1244	Max WS	657.62	657.62

Overflow		1192	Max WS	657.37	657.37
Overflow		1134	Max WS	657.14	657.14
Overflow		1080	Max WS	656.97	656.97
Overflow		1033	Max WS	656.70	656.71
Overflow	A	990	Max WS	656.40	656.40
Overflow		944	Max WS	656.24	656.24
Overflow		897	Max WS	656.18	656.18
Overflow		863	Max WS	656.10	656.10
Overflow		827	Max WS	655.96	655.96
Overflow		788	Max WS	655.78	655.78
Overflow		760	Max WS	655.75	655.75
Overflow		733	Max WS	655.75	655.76
Overflow		700	Max WS	655.73	655.73
Overflow		672	Max WS	655.73	655.73
Overflow		646	Max WS	655.72	655.72
Overflow		627	Max WS	655.72	655.72
Overflow		589	Max WS	655.72	655.72
Overflow		567	Max WS	655.72	655.72
Overflow		549	Max WS	655.72	655.72
Overflow		527	Max WS	655.72	655.72
Overflow		510	Max WS	655.72	655.72
Overflow		495	Max WS	655.72	655.72
Overflow		476	Max WS	655.72	655.72
Overflow		454	Max WS	655.72	655.73
Overflow		439	Max WS	655.72	655.73
Overflow		421	Max WS	655.72	655.73
Overflow		400	Max WS	655.72	655.73
Overflow		382	Max WS	655.72	655.73
Overflow		362	Max WS	655.72	655.73
Overflow		343	Max WS	655.72	655.73
Overflow		322	Max WS	655.72	655.73
Overflow		300	Max WS	655.72	655.73
Overflow		276	Max WS	655.73	655.73
Overflow		258	Max WS	655.73	655.73
Overflow		238	Max WS	655.73	655.73
Overflow		221	Max WS	655.73	655.73
Overflow		203	Max WS	655.73	655.73
Overflow		183	Max WS	655.73	655.73
Overflow		164	Max WS	655.73	655.73
Overflow		150	Max WS	655.73	655.73
Overflow		136	Max WS	655.73	655.73

Overflow		120	Max WS	655.73	655.73
Overflow		97	Max WS	655.73	655.73
Overflow		81	Max WS	655.73	655.73
Overflow		57	Max WS	655.73	655.73
Overflow		32	Max WS	655.73	655.73
Overflow		15	Max WS	655.73	655.73
Overflow		-5	Max WS	655.73	655.73
Overflow		-34	Max WS	655.73	655.73
Overflow		-57	Max WS	655.73	655.73
Overflow		-73	Max WS	655.73	655.73
Overflow		-90	Max WS	655.73	655.73
Overflow		-106	Max WS	655.73	655.73
Overflow		-122	Max WS	655.73	655.73
Overflow		-143	Max WS	655.73	655.73
Overflow		-152	Max WS	655.72	655.73
Overflow		-312			
Overflow		-353	Max WS	652.84	652.84
Overflow		-384	Max WS	652.39	652.39
Overflow		-419*	Max WS	652.16	652.16
Overflow		-454*	Max WS	652.02	652.02
Overflow		-489	Max WS	651.85	651.85
Overflow		-528*	Max WS	651.49	651.49
Overflow		-568	Max WS	651.12	651.12