



DEPARTMENT OF THE ARMY
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS
P.O. BOX 80
VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO
ATTENTION OF:

CEMVD-PD-SP

23 AUG 2016

MEMORANDUM FOR Commander, St. Paul District

SUBJECT: Review Plan Approval for the St. Paul District, Mouse River Enhanced Flood Protection Project (MREFPP) Phases 1, 2, & 3, Souris River Basin, ND

1. References:

a. Memorandum, CEMVP-PM-B, 25 May 2016, subject: St. Paul District, Souris Basin Section 408 Alteration Specific Review Plan - Review Plan Approval (encl 1).

b. Memorandum, CEIWR-RMC, 29 April 2016, subject: Risk Management Center Endorsement, Flood Risk Reduction Project at Minot, ND and the Flood Risk Reduction Projects from Burlington, ND to Minot, ND, 408 Request, Review Plan (encl 2).

c. Memorandum, CEMVD-RB-T, 21 July 2016, subject: St. Paul District, Souris (Mouse) River Enhanced Flood Protection Project (MREFPP) Phases 1, 2, & 3, Souris River Basin, ND (encl 3).

d. EC 1165-2-214, Civil Works Review Policy, 15 December 2012.

e. EC 1165-2-216, Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408, 30 September 2015.

2. The enclosed Section 408 Alteration Specific Review Plan (RP) (encl 4) for the St. Paul District, MREFPP Phases 1, 2, & 3, Souris River Basin has been prepared in accordance with EC 1165-2-214. The RP has been coordinated with the Upper District Support Team and the Regional Business Technical Division who concurred with the plan in reference 1.c.

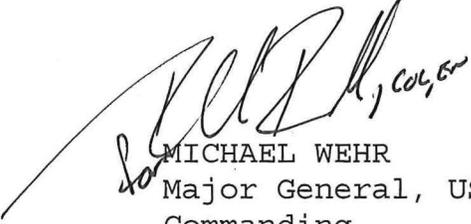
CEMVD-PD-SP

SUBJECT: Review Plan Approval for the St. Paul District, Mouse River Enhanced Flood Protection Project (MREFPP) Phases 1, 2, & 3, Souris River Basin, ND

3. MVD hereby approves this RP which is subject to change as circumstances require, consistent with development under the Project Management Business Process. Any subsequent revisions to this RP or its execution will require new written approval from this office. Non-substantive changes to this RP do not require further approval. The district should post the approved RP to its web site.

4. The MVD point of contact is Mr. Ben Robinson, CEMVD-PD-SP, (601) 634-5310.

4 Encls


MICHAEL WEHR
Major General, USA
Commanding



DEPARTMENT OF THE ARMY
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS
P.O. BOX 80
VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO
ATTENTION OF:

CEMVD-RB-T

21 Jul 2016

MEMORANDUM FOR CEMVD-PD-SP (Don Balch)

SUBJECT: St. Paul District, Souris (Mouse) River Enhanced Flood Protection Project (MREFPP) Phases 1, 2, & 3, Souris River Basin, ND

1. Reference memorandum, CEMVP-PM-B, 25 May 2016, subject as above.
2. RB-T has reviewed the subject review plan and is in concurrence with corrections provided by the St. Paul District. Approval of the plan is granted as requested.
3. RB-T POC is Scott Stewart, 601-634-5883.

A handwritten signature in black ink, appearing to read "M. Turner", is positioned above the typed name.

for MICHAEL A. TURNER
Chief, Business Technical
Division



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
180 FIFTH STREET EAST, SUITE 700
ST. PAUL MINNESOTA 55101-1678

CEMVP-PM-B

25 May 16

MEMORANDUM FOR Commander, Mississippi Valley Division (CEMVD-PD-SP/Mr. Ben Robinson), P.O. Box 80 Vicksburg, MS 39181-0080

SUBJECT: St. Paul District, Souris Basin Section 408 Alteration Specific Review Plan – Review Plan Approval

1. In accordance with EC 1165-2-216, the Souris Basin Section 408 Alteration Specific review plan is attached for MVD review and approval. This review plan establishes the review procedures to be used by the St. Paul District, non-Federal Sponsor and Independent external Peer Review panel for the Souris Basin Section 408.
2. The review plan was prepared in accordance with EC 1165-2-214 and EC 1165-2-216. As required by EC1165-2-216, approval of the review plan will be conducted by the Mississippi Valley Division Commander.
3. The Section 408 Alteration Specific Review plan has been reviewed and endorsed by the Risk Management Center.
4. If you have any questions regarding the transmittal package, please contact Mr. Nathan Wallerstedt, project manager, at 651-290-5477.

- 3 Encls
1. Hard Copy Review Plan
 2. RMC Endorsement
 3. CD of Review Plan with appendices


DANIEL C. KOPROWSKI
COL, EN
Commanding

ENCL 1



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
RISK MANAGEMENT CENTER
12596 WEST BAYAUD AVE., SUITE 400
LAKEWOOD, CO 80228

REPLY TO
ATTENTION OF

CEIWR-RMC

29 April 2016

MEMORANDUM FOR: Commander, St. Paul District, ATTN: CEMVP-PM-B

SUBJECT: Risk Management Center Endorsement, Flood Risk Reduction Project at Minot, ND and the Flood Risk Reduction Projects from Burlington, ND to Minot, ND, 408 Request, Review Plan

1. The Risk Management Center (RMC) has reviewed the Review Plan (RP) for – Flood Risk Reduction Project at Minot, ND and the Flood Risk Reduction Projects from Burlington, ND to Minot, ND, 408 Request, dated 28 April 2016, and concurs that this RP complies with the current peer review policy requirements outlined in EC 1165-2-214 “Civil Works Review Policy” and EC 1165-2-216, “Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408”, dated 15 December, 2012 and 31 July 2014 respectively.
2. This review plan was prepared by St. Paul District and the requestor, reviewed by MVD, and the RMC, and all review comments have been satisfactorily resolved. For this project a Type II IEPR will be performed.
3. The RMC endorses this document to be approved by the MSC Commander. Upon approval of the RP, please provide a copy of the approved RP, a copy of the MSC Commander’s approval memorandum to the RMC Senior Review Manager (rmc.review@usace.army.mil).
4. Thank you for the opportunity to assist in the preparation of this RP. Please coordinate all aspects of the Agency Technical Review and the Independent External Peer Review (as appropriate) efforts defined in the RP. For further information, please contact me at 601-631-5896

Sincerely,

HERR.DUSTIN.CHA
RLES.1384614082

Digital signed by
HERR.DUSTIN.CHA/RLES.1384614082
DN: cn=HERR.DUSTIN.CHA, o=US Army Corps of Engineers, ou=US Army Corps of Engineers, email=herr.dustin.cha@usace.army.mil, c=US
Date: 2016.04.29 11:32:00 -0500

Dustin C. Herr, P.E.
Review Manager
Risk Management Center

CF:
CEIWR-RMC (Mr. Snorteland)
CEMVD-DQM (Division Quality Manager)

ENCL 2

**U.S. Army Corps of Engineers
Mississippi Valley Division
St. Paul District**

**Review Plan for *Mouse River*
Enhanced Flood Protection Project
(MREFPP)
Phases 1, 2, & 3
Souris River Basin, ND
Pursuant to 33 USC § 408**

ENDORSED
BY:

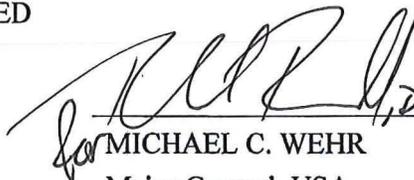


7-20-16

Dustin C. Herr, P.E.
USACE, Risk Management Center

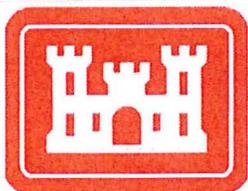
DATE

APPROVED
BY:


for MICHAEL C. WEHR
Major General, USA
Commanding

8-19-16

DATE



**US Army Corps
of Engineers®**

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Appendices

- A. Preliminary Mouse River Enhanced Flood Protection (MREFP) Project Plans (Burlington through Minot)
- B. Requestor Type II IEPR Review Plan
- C. Requester Quality Assurance/Quality Control Plan
- D. MREFP Project Preliminary Implementation Schedule (All Phases)

Attachments

- 1. Completion of Agency Technical Review Certification

1. Introduction

a. Purpose of This Review Plan

This Alteration-Specific Review Plan is intended to ensure quality of the review by the St. Paul District for the request to alter a U.S. Army Corps of Engineers (USACE) civil works project within the St. Paul District's area of responsibility. This review plan was prepared in accordance with Engineer Circular (EC) 1165-2-216, "Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408" (reference paragraph 7.c.(4) in EC 1165-2-216). This review plan provides the review guidelines associated with a specific alteration request pursuant to 33 USC 408 (Section 408).

b. Description and Information

This Review Plan covers the project review procedures and requirements for documents submitted by the Souris River Joint Water Resource Board (SRJB) (the "requester") supporting a Section 408 request, and for District Quality Control of the Summary of Findings (SOF) report and National Environmental Policy Act (NEPA) compliance documents required for this action. A Type II Independent External Peer Review (IEPR)/ Safety Assurance Review (SAR) will be conducted in conjunction with the Section 408 review process and is described within this review plan. Separate Section 408 request reviews and SARs will be performed for each design phase as outlined in subsequent sections of this review plan.

The Souris (Mouse) River had the flood of record in 2011 with flows exceeding 27,000 cfs. These flows devastated the community, caused the evacuation and displacement of more than 11,000 residents, and extensively damaged approximately 4,000 homes, six schools, and public infrastructure. The total damage to private and public property is estimated to be approximately \$1 billion throughout the basin. A large flood fight effort and sufficient warning time prevented loss of life due to the flood event.

As a result of the 2011 flood, the SRJB, in conjunction with the North Dakota State Water Commission (NDSWC), developed an overall plan for the Souris (Mouse) River Basin to reduce the risk of damages from river flows comparable to the 2011 flood, including development of alignments for new levees, floodwalls, and other flood risk management measures. The plan is referred to as the Mouse River Enhanced Flood Protection Project (MREFPP). Implementation will involve a multiple phase effort to construct reaches as funding is available. The MREFPP is not a federally funded project.

The SRJB has contacted and is working closely with U.S. Army Corps of Engineers, St. Paul District concerning the proposed alterations as they will affect multiple existing federally constructed flood control projects within the basin. Additionally, close coordination is being conducted with USACE Omaha District Regulatory office in Bismarck, North Dakota regarding Section 404 permits that will be required as part of the project.

Project Location:

The Souris (Mouse) River has its headwaters in Saskatchewan, Canada. It flows southeasterly into North Dakota near Sherwood, continues southeast through the cities of Burlington, Minot, Sawyer and Velva, then turns back north and re-enters Canada into Manitoba. Eventually it flows into the Assiniboine River near Brandon—which joins the Red River of the North at Winnipeg. Within North Dakota, as shown in **Figure 1**, the Mouse River first flows through Renville County, with the Lake Darling Dam and the Upper Souris National Wildlife Refuge as key features, then through Ward County where a major tributary, the Des Lacs River, joins it at Burlington. It continues on through the cities of Minot and Sawyer, then passes into McHenry County and the city of Velva, and finally passes through Bottineau County and the J. Clark Salyer National Wildlife Refuge and exits back into Canada near Westhope, ND.

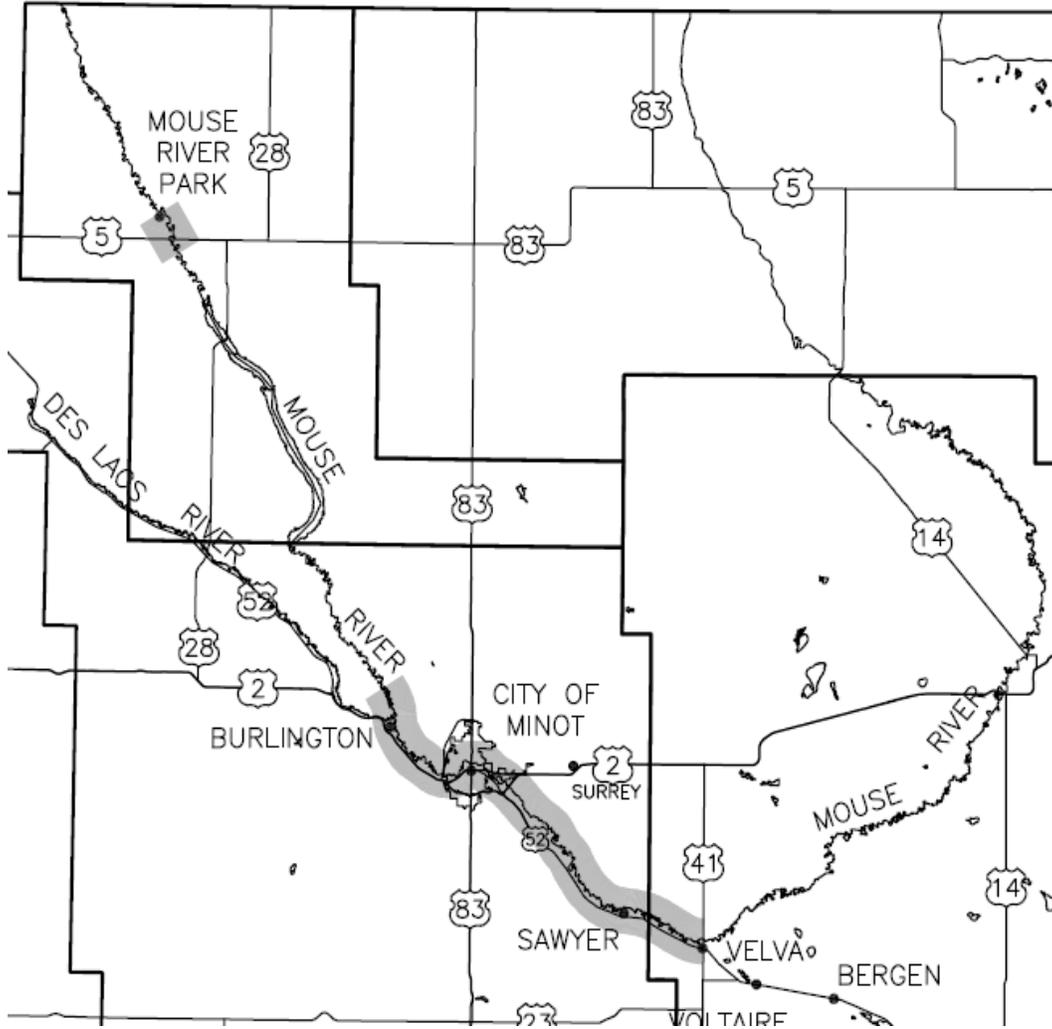


Figure 1 – Layout of Souris (Mouse) River Basin within the U.S.

The project proposed by the SRJB will alter seven independent Federal Flood Risk Management (FRM) projects which include eight levee systems within the Souris River Basin located between Burlington, North Dakota to the downstream end of Minot, North Dakota including the Eastside Estates neighborhood and the five subdivisions located in between those two cities. See **Figure 2**.

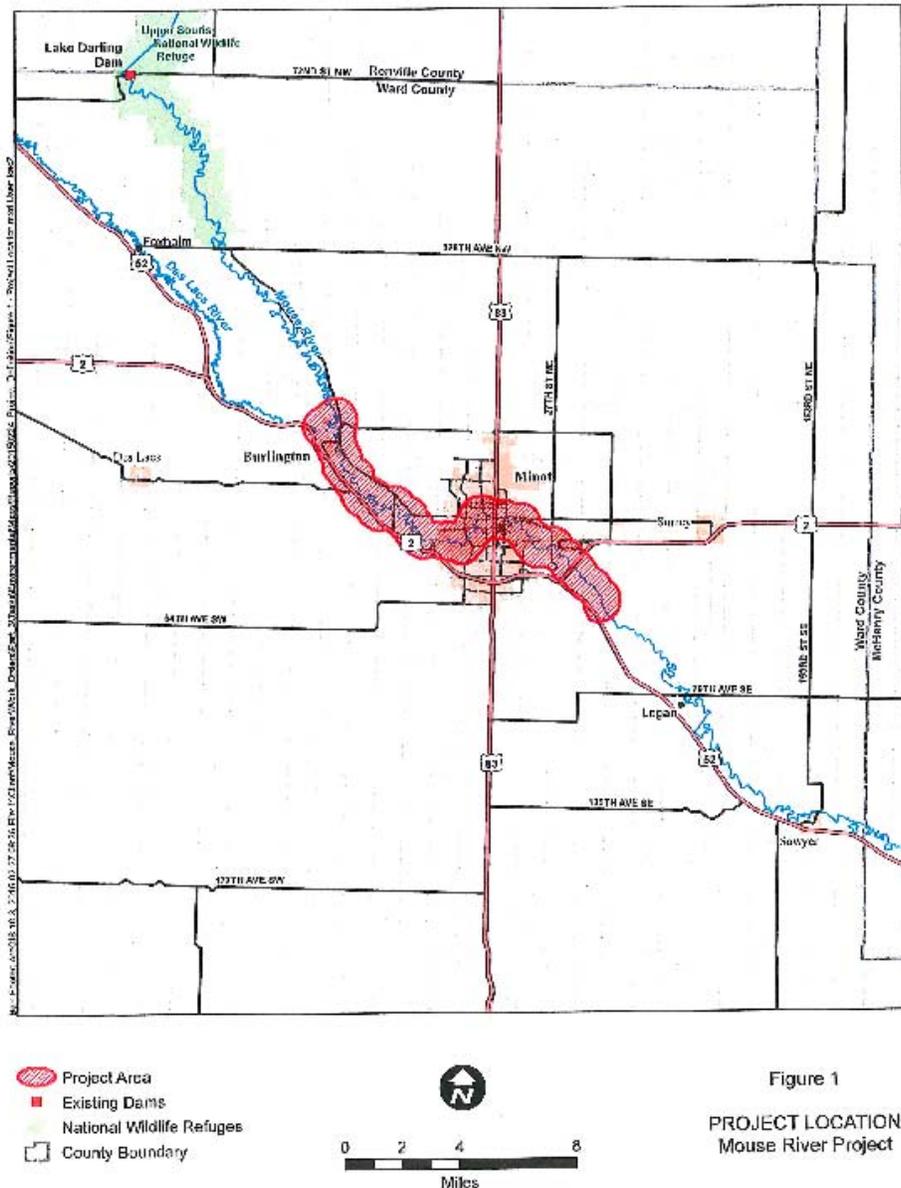


Figure 1
PROJECT LOCATION
Mouse River Project

Figure 2 – Section 408 Project Area

Phases 1, 2, and 3 of the proposed alteration all lie within the Minot city limits. Phases 2 and 3 are located downstream of U.S. Hwy 83 Bypass primarily along the left descending bank. However, there is one small segment of levee on the right bank just downstream of 16th Street. Phase 1 is located just downstream of U.S. Hwy 83 or Broadway that cuts through the middle of Minot along the left descending bank. See **Figure 5**

Authorization:

As noted previously, the proposed Mouse River Enhanced Flood Protection Project will alter a total of seven federal FRM projects (8 levee systems). These projects were originally constructed under two separate authorizations.

Local Flood Control Improvements on the Souris River at Minot, ND- was authorized by Section 201 of the Flood Control Act approved 27 October 1965 (Public Law 89-298) to be constructed substantially in accordance with the recommendations of the Chief of Engineers in House Document No. 286, 87th Congress, 2nd Session.

Flood Control Projects from Burlington, ND to Minot, ND - was authorized by the 1986 Water Resources Development Act, Public Law 99-662 and Section 105 of the fiscal year 1988 Continuing Appropriations Act, Public Law 100-202.

In accordance with 33 U.S.C 408, non-federal proposals to alter existing Corps of Engineers Civil work project will be evaluated by the Corps in accordance with Corps regulations and policy.

The existing affected federal FRM projects in the area include:

- City of Burlington, ND (Johnson's Addition)
- Brooks Addition
- Talbott's Nursery
- County Club Acres & Robinwood Estates
- Kings Court / Rostad's Addition
- Terracita Vallejo
- City of Minot, ND (Right & Left Bank systems)

Existing Federal Project Background:

The flood risk management project features in the reaches of the Souris River from the city of Burlington to upstream of the city of Minot were federally designed and constructed by the USACE in the 1990s. The non-federal sponsor for these six levee systems is the Souris River Joint Water Resource Board.

- **City of Burlington, ND (Johnson's Addition)**

The project consists of about 4,800 feet of levee, five sections of adjacent channel modifications over about 2,800 feet of river channel (including a cut-off channel about 400-feet long), an interior drainage system, a ponding area, a 2,000 gpm pumping station, and a sandbag/earthen closure structure. Completed in 1991, the project was designed for a flood flow of 5,000 cfs.

- **Brooks' Addition**

The project consists of about 4,600 feet of levee, five sections of adjacent channel modifications over about 3,200 feet of river channel, one 2,000 gpm pumping station, and a ponding area. The project was designed for a flood flow of 5,000 cfs.

- **Talbott's Nursery**

The project consists of about 2,600 feet of levee, three sections of adjacent channel modifications over about 1,500 feet of river channel, one 2,000 gpm pumping station, and a ponding area. The project was designed for a flood flow of 5,000 cfs.

- **Country Club Acres and Robinwood Estates**

The project consists of about 8,400 feet of levee, three sections of adjacent channel modifications over about 2,700 feet of river channel, one 2,000 gpm pumping station, and two connected ponding areas. The project was designed for a flood flow of 5,000 cfs.

- **King's Court and Rostad's Addition**

The project consists of about 4,100 feet of levee, about 4,000 feet of channel modifications adjacent to the levee, one 4,000 gpm pumping station, and a ponding area. The project was designed for a flood flow of 5,000 cfs.

- **Terracita Vallejo**

The project consists of about 900 feet of levee, channel modifications on about 600 feet of river channel, a ponding area, and a portable Crisafulli pump. An existing emergency levee, about 1,800- feet long, on the west side of the development was also left in place without any upgrades. The project was designed for a flood flow of 5,000 cfs.

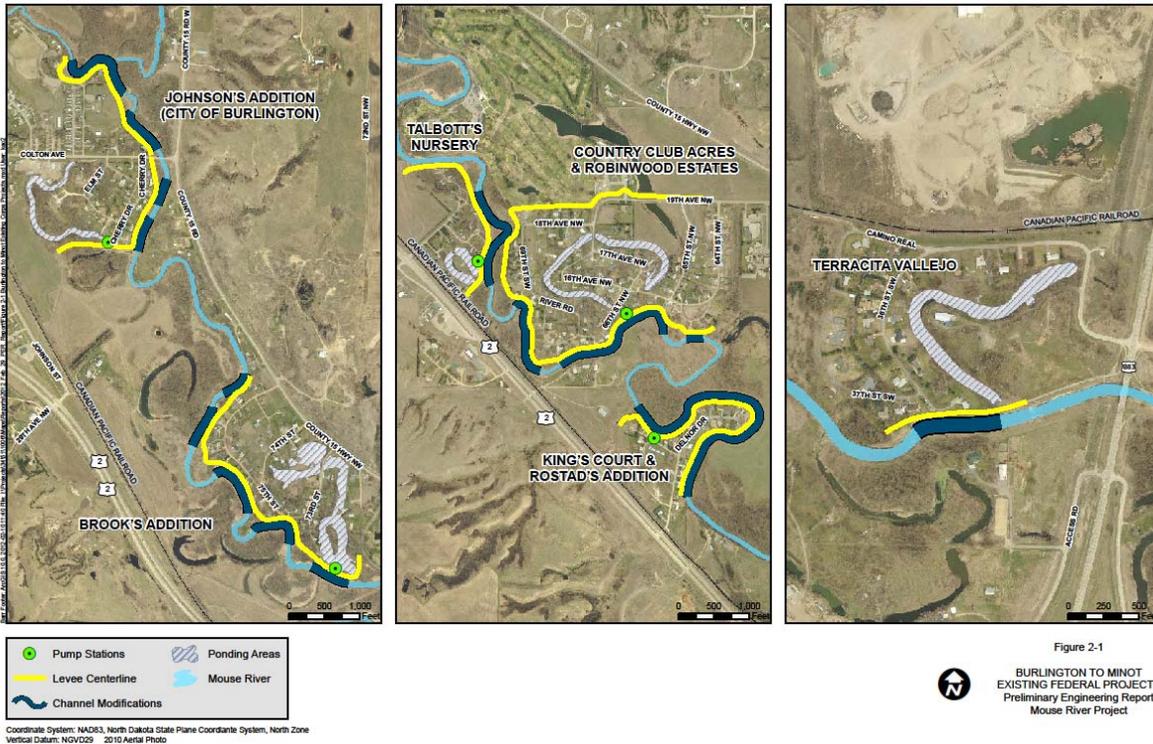


Figure 3 – Layout of the existing authorized Flood Risk Management Projects (Burlington to Minot Subdivisions)

- City of Minot

The project sponsor is the Ward County Water Resource District (WCWRD). The project features consist primarily of channel modifications, channel cutoffs, levees, and storm water pump stations and are part of an authorized federal project that extends from Burlington to Logan, which included flood control storage in the Burlington Dam (which was never constructed). The project features in Minot were constructed separate from and before any of the other components of the authorized project. The city of Minot project extends from the Highway 83 Bypass on the west (upstream) to the Highway 2 Bypass on the east (downstream). These project features are detailed in the *Operations and Maintenance Manual* for the project, prepared by the USACE (November 1981).

The project was designed for a flood flow of 5,000 cfs. This was estimated to be the 100-year frequency flood peak discharge with the implementation of upstream reservoir storage in the authorized plan. The city of Minot project features consist of the following elements:

- Channel excavation: Almost the entire river through Minot was modified; excavation was done on one side of the channel, providing a channel bottom width from 35 to 40

feet, with side slopes generally 1 vertical on 3 horizontal. The channel excavation extends from approximately Twenty-First Street SW on the west (upstream) to the Highway 2 Bypass on the east (downstream).

- Channel cutoffs: There are nine channel cutoffs in the city of Minot with channel bottoms from 35- to 40-feet wide. Several of the more prominent channel cutoffs are in the Roosevelt Park, Eastwood Park, and Oak Park areas.
- Channel control structures: Channel control structures are located within the cutoff channels to maintain a pool in the river or divert normal stream flows around the original channel loops that were cut off. Four of the control structures are comprised of reinforced concrete and are located in the cutoff channels at Roosevelt Park, Eighth Street SE, Ramstad Park and Oak Park.
- Levees: Approximately 40,000 linear feet of levees were constructed adjacent to the channel wherever natural ground provided less than 2 feet of freeboard above the 100-year water surface. In areas where levees were constructed, the top of levee was set at 3 feet above the design water surface. One significant reach of levee is located on the west side of Minot from about Twenty-First Street SW to the Highway 83 Bypass. Several other smaller and shorter sections of levee exist through the city.
- Pumping stations: There are six pumping stations located in Minot to handle the interior drainage due to storm sewer system modifications and/or channel cutoffs required by the channel modifications or the levees.
- Ponding areas: Seven areas have been acquired for use as temporary ponding areas.
- Flood control storage: the federal project includes flood control storage behind the Rafferty and Alameda dams in Saskatchewan, Canada.

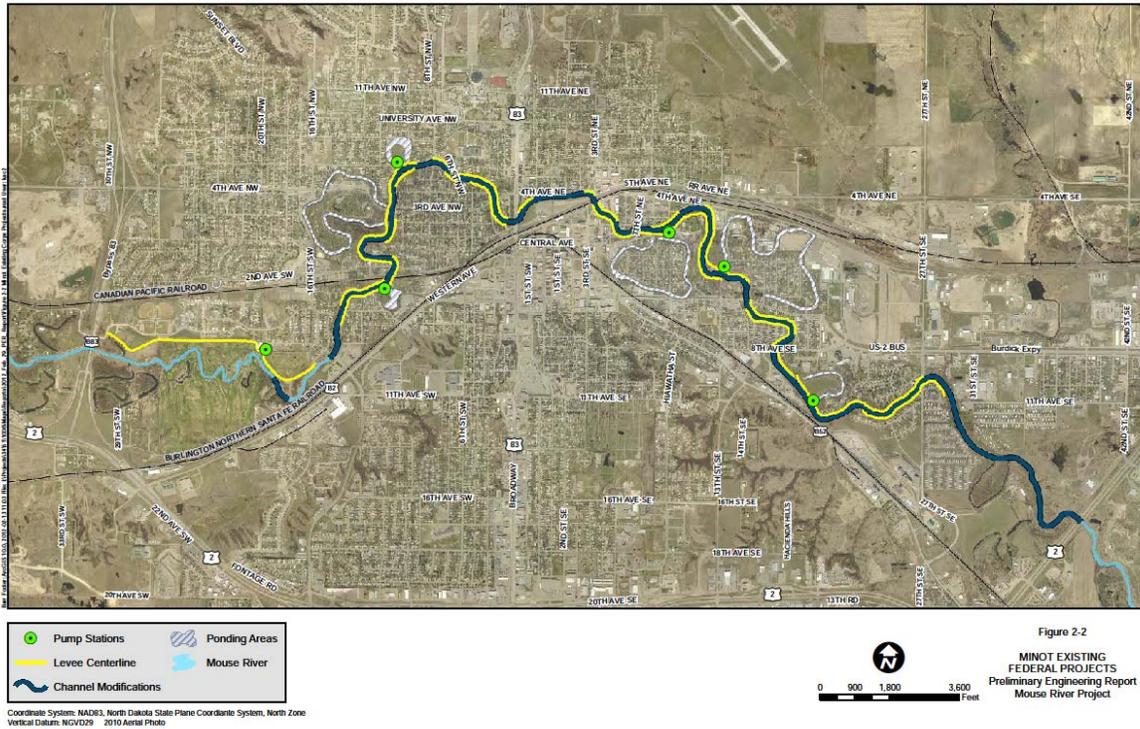


Figure 4 – City of Minot Flood Risk Management Project

Proposed Project Information:

Following the 2011 flood, local and state governments recognized the need to develop a plan that could provide direction during recovery and better protect the Mouse River community from similar future events. The SRJB issued a request to the NDSWC to retain an engineering team to develop a “Mouse River Enhanced Flood Protection Project,” including preliminary alignments for levees and floodwalls. The Preliminary Engineering Report (PER) provides a summary of the efforts undertaken to develop a preliminary alignment, as well as engineering, environmental, and cost considerations for plan implementation. The study developed a preliminary project alignment, including measures such as levees and floodwalls, and incorporated significant technical analysis and substantial stakeholder input.

The primary objective for the MREFPP is to develop a preliminary plan that can be used as a guiding document to help reduce the risk of damages from river flows comparable to those seen during the June 2011 flood of record.

In February of 2012 the PER was complete. Since the completion of the PER the State of North Dakota and the local communities have adopted the plan and efforts have moved forward to start design implementation of the MREFPP.

The preliminary alignment plan for the MREFPP associated with the scope of this Section 408 alteration request consists of:

- 17.5 Miles of new levees
- 2.8 mile of new floodwall (T-walls used for all preliminary designs)
- 1.4 miles of channel realignment
- 2 high flow bypasses
- 25 transportation closure structures
- 23 stormwater pump stations and ponding areas
- 3 bridge modifications
- 126 acres of overbank excavation

The project is being designed to pass the 2011 flood of record (approximately 27,400 cfs as measured at the Broadway Bridge in Minot). Because the majority of the existing systems in the basin were generally designed to pass 5,000 CFS the MREFPP Project will substantially alter the existing Federal projects and levee systems by greatly increasing the level of flood risk reduction and in many cases removing the existing levees and constructing substantially larger levees or floodwalls set back from the existing project Right-of-Ways.

See Appendix A for the preliminary MREFPP feature maps.

Due to the size of the proposed project and available funding avenues available to the SRJB, as proposed it is currently estimated that it will take 20 plus years to implement the project. As such the implementation of the project will be completed in phases or reaches. Currently the SRJB has started design of three reaches within the city of Minot. (See Figure 5)

- 4th Avenue Floodwall (Phase 1)
- Napa Valley (Phase 2)
- Forest Road (Phase 3)

Phases 2 and 3 have been grouped together for design and permitting processes. Phase 2 and 3 designs will be submitted for Section 408 approval prior to Phase 1. Elements of construction included in Phase 2 and 3 are as follows:

- New levee alignments on the north side of the Mouse River extending from approximately Highway 83 Bypass to the Canadian Pacific Railroad (Station 0+00A to Station 89+10A) and south of the Mouse River extending from the WTP to the future Maple Diversion (Station 0+00B to Station 16+40B)
- Gatewell control structure at Station 5+50A near Highway 83
- Levee ramps for access, maintenance, and inspections at various locations
- Perkett Ditch Pump Station and gatewell control structure at approximately Station 47+00A
- Stop log road closure at Sixteenth Street SW with floodwall sections at Station 64+82A

- Northwest Area Water Supply (NAWS) transmission line and watermain upgrades for crossings within the USACE right-of-way near Sixteenth Street SW
- Overbank excavation adjacent to the Mouse River channel from the Sixteenth Street SW Bridge to the future Maple Highflow Bypass
- Tie-back levee connecting the proposed and existing levees to maintain the level of risk management at Station 0+00D to Station 6+00D
- Bank erosion protection for the Mouse River channel and flood risk management features at various locations within the proposed project
- Watermain, force main, and storm sewer upgrades for pipe crossings under the levee within the USACE right-of-way at various locations
- Municipal infrastructure modifications and improvements including sanitary sewer, watermain, storm sewer, and street reconstruction
- Gatewell control structure within the existing levee near Station 0+00K to convey runoff to the Mouse River from the Wee Links Golf Course
- Tie-back levee to provide the Wee Links Golf Course with the existing level of flood risk management from Station 0+00C to Station 4+48C

Construction elements included in Phase 1 are:

- Approximately 550 feet of new levee, and 2254 feet of new floodwall.
- A stop-log removable closure through the floodwall for a proposed walking path and maintenance vehicle access.
- Overbank excavation adjacent to the Mouse River channel near the Broadway Bridge.
- Gatewell and pump station.
- Bank and slope stabilization at various locations within the proposed Project area.
- Municipal infrastructure modifications and improvements to accommodate the project, including sanitary sewer, watermain, storm sewer, and street reconstruction.

For Section 408 approval of the project, a system wide approach is being taken. In addition to the design of these three reaches of the project the SRJB has started the development of a Programmatic Environmental Impact Statement (EIS) and extensive hydrologic and hydraulic (H&H) modeling associated with the proposed project. The EIS and H&H analysis will include information and impacts included within the entire project scope (Upstream of Burlington ND to the downstream of Minot, ND). This system-wide approach for these two documents is critical to understanding how the system will work as a whole and the cumulative impacts of the project as a whole once complete. This system-wide approach will allow for the St. Paul District to assess and determine if the construction of certain phases or reaches of the project will be injurious to the public interest or injurious to the existing federal projects within the basin. A complete understanding of the interim and final impacts caused by the project as a whole are critical prior to the Section 408 permission of any phase or reach of the larger project.

The U.S. Army Corps Omaha District, regulatory office in Bismarck, North Dakota is also actively involved in the proposed project as a Section 404 permit will be required for the MREFP project. The Omaha District has Section 10 and Section 404 regulatory jurisdiction for the State of North Dakota. The Section 408 permission and Section 404 permit will be evaluated concurrently and information will be shared to inform each of the independent decisions.

Currently the total cost of the project within the scope area is approximately \$820 million and the estimated cost of the project just within the city of Minot is \$530 million (2011 dollars).

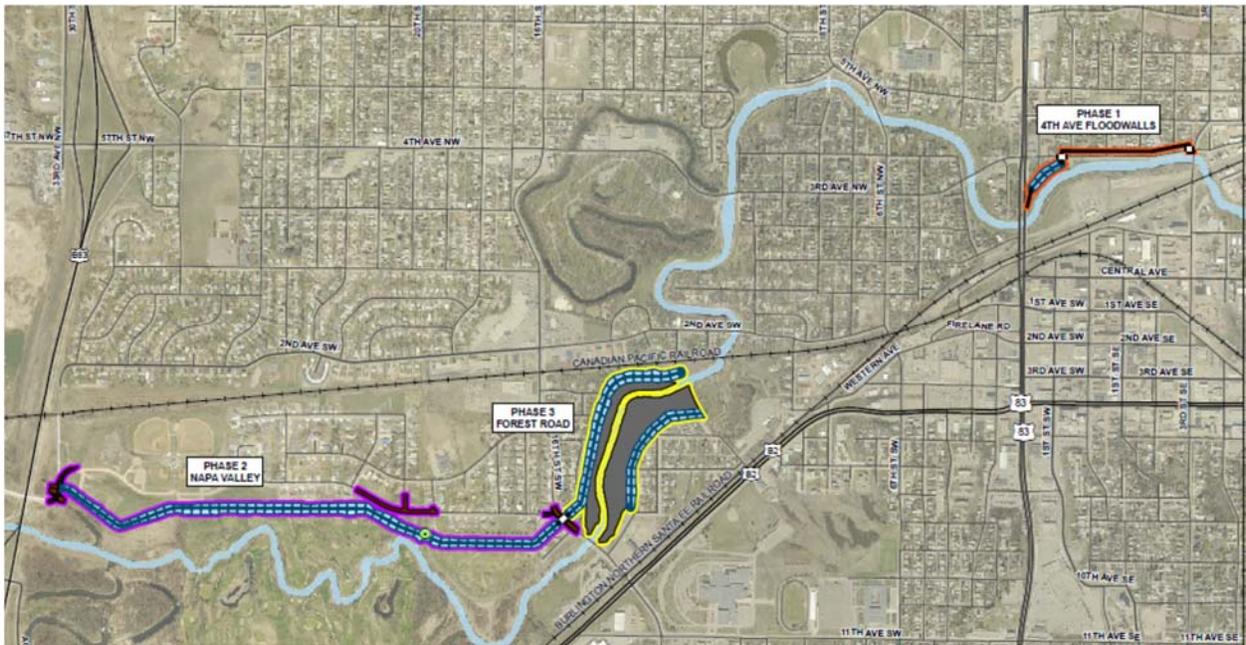


Figure 5 – Phase 1-3 Project Alterations

2. Review Requirements

a. Level of Review Required by the Requester

The requester is responsible for ensuring the quality of the information submitted to the St. Paul District as part of the Section 408 request. The requester’s design and review team main points of contact will be the following:

Table 1A: Requester Quality Control Team –BARR Team

Name	Organization	Discipline	Email/Phone
Jason Westbrook	Barr	Project Manager	jwestbrock@barr.com 701-255-5472
Scott Sobiech	Barr	Hydraulics	ssobiech@barr.com 952-832-2755
Joe Waln	Barr	Hydraulics	jwaln@barr.com 952-832-2984
Brandon Barnes	Barr	Interior Flood Control	bbarnes@barr.com 952-832-2737
Bill Kussmann	Barr	Geotechnical	Bkussman@barr.com 952-832-2797
Randy Duncan	Barr	Environmental	rduncan@barr.com 952-832-2705
Randy Duncan	Barr	Cultural	rduncan@barr.com 952-832-2705
Mark Kretschmer P.E.	Barr	Civil	Mkretschmer@barr.com 952-832-2940
Steve Eberle	Ackerman- Estvold	Utilities	Steve.eberle@ackerman-estvold.com 701-837-8737
Abbi Dorn	Ackerman- Estvold	Levee Safety	Abbi.dorn@ackerman-estvold.com 701-857-9122
Emory Shafter	Ackerman- Estvold	Real Estate	Emory.shafter@ackerman-estvold.com 701-837-8737
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Anne Phares	Barr	Mechanical	aphares@barr.com 952-832-2663
Mark Ziemer	Barr	Electrical	Mziemer@barr.com 952-832-2973
Matt Kumka	Barr	Landscape Architecture/ Recreation	Mkumka@barr.com 952-832-2649
Matt Metzger	Barr	Cost	Mmetzger@barr.com

			952-832-2830
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Table 1A: Requester Quality Control Team –Houston Team

Name	Organization	Discipline	Email/Phone
Jerry Bents	Houston Engineering, Inc.	Project Manager	jbents@houstoneng.com 701-237-5065
C. Gregg Thielman	Houston Engineering, Inc.	Hydraulics	cgthielman@houstoneng.com 701-237-5065
Greg Thompson	Houston Engineering, Inc.	Hydrology	gthompson@houstoneng.com 701-237-5065
Gabe Bladow	Houston Engineering, Inc.	Interior Flood Control	gbladow@houstoneng.com 701-237-5065
Charles Hubbard	Braun Intertec	Geotechnical	Chubbard@braunintertec.com 612-221-2501
Larry Kramka	Houston Engineering, Inc.	Environmental	lkramka@houstoneng.com 218-760-4997
Larry Kramka	Houston Engineering, Inc.	Cultural	lkramka@houstoneng.com 218-760-4997
Kristen Lotvedt	Houston Engineering, Inc.	Civil-Site	klotvedt@houstoneng.com 701-237-5065
Jeff Lansink	Houston Engineering, Inc.	Transportation	jlansink@houstoneng.com 701-237-5065
Craig Vaughn	SRF Consulting	Traffic Studies	cvaughn@srfconsulting.com 763.249.6774
Michael Love	Houston Engineering, Inc.	Levee Safety	mlove@houstoneng.com 701-237-5065
James Schlieman	Houston Engineering, Inc.	Real Estate	jschlieman@houstoneng.com 701-237-5065
Jeremy McLaughlin	Houston Engineering, Inc.	Structural	jmclaughlin@houstoneng.com 701-237-5065
TBD	MWH	Mechanical	jbents@houstoneng.com 701-237-5065
TBD	MWH	Electrical	jbents@houstoneng.com 701-237-5065
Joni Giese	SRF Consulting	Landscape Architecture /Recreation	jgiese@srfconsulting.com 651-333-4120
Cody Eilertson	Houston Engineering, Inc.	Cost	ceilertson@houstoneng.com 701-237-5065

The requester is responsible for technical and Quality Control of its submittals. Requester's Quality Control reviews will be managed in accordance with respective A-E's organization Quality Management Standards. The use of DrChecks for the Quality Control comments was not mandated although a synopsis of each internal requester quality control review that is performed will be provided to the Corps ATR team. In addition, a certification stating a quality control review was completed will be provided to the Corps.

The requester's review is required for the 60% and 90% design submittals. Quality control will also be monitored via local reviews, and Corps-vertical team conferences and reviews. The vertical team will be involved in the engineering and design review process and will be presented with information during the standard Corps checkpoints.

See Appendix C for the requester's quality assurance/quality control plan.

Per EC 1165-2-214 the requester's proposed alteration will require a Type II Independent External Peer Review (IEPR) Safety Assurance Review (SAR). A Type II IEPR SAR is required when the proposed project induces hazards which pose a significant threat to human life. This project will alter/raise levees and construct new floodwalls. The Chief of Engineering for the St. Paul District determined that the proposed project modifications posed a significant threat to human life.

EC 1165-2-214 states that IEPR Teams are to be comprised of independent, recognized experts from outside the USACE in the appropriate disciplines, representing a balance of expertise suitable for the review being conducted; and that the RMO, in this case the Risk Management Center (RMC) and the local district are responsible for establishing and contracting for the IEPR services. However, when a non-federal interest (such as a Project Sponsor) undertakes a study, design, or implementation of a federal project, or requests permission to alter a federal project, the non-federal interest is required to undertake, at its own expense, any IEPR that the government determines would have been required if the government were doing the work. The SRJB will contract with an additional A/E firm not involved in the project design to conduct the required IEPR. The SRJB is aware that the selection of IEPR review panel members must be based in the National Academy of Science (NAS) Policy which sets the standard for "independence" in the review process. The RMO and the local district retain responsibility for approving the composition and makeup of the IEPR team.

As the RMO the Risk Management Center (RMC) will determine if the proposed alteration is to be presented to either the Dam or Levee Senior Oversight Group (LSOG). Determination of whether or not a LSOG review is required is based on whether the benefits of the alteration are generally commensurate with the risks, whether the alteration potentially worsens or creates new failure modes or risk drivers

for the USACE project, and whether the alteration is exceptionally complex or high risk. The proposed increase in levee height throughout the project would potentially worsen existing or create new failure modes or risk drivers; as such this request would require LSOG review. The RMC has recommended this proposed Section 408 alteration be briefed to the LSOG. On 16 March, 2016 the LSOG was briefed on the proposed Section 408 alteration and the projects review plan requirements.

The IEPR undertaken by a non-federal Interest will be submitted as part of the approval request package for review by USACE.

The general purpose of the IEPR is to consider the adequacy, appropriateness, and acceptability of the design in assuring public health, safety, and welfare. The IEPR will be a larger-scale, holistic review that encompasses the breadth of the project from start of design to the finish of construction. The IEPR SAR reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health, safety, and welfare. A SAR is required for any project where potential hazards pose a significant threat to human life. This includes all projects involving levees or dams. The SRJB, in coordination with the Corps, will develop the charge questions for the IEPR. Specifically, the reviewers will be given a Draft Charge that includes the following:

- Reviews should identify, explain, and comment upon the assumptions presented by the designer that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods. A review panel should bring important issues to the attention of the local sponsor and the Corps. Review panels should be able to evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable. However, review panels should be instructed to not present a final judgment on whether a project should be constructed or whether a particular operations plan should be implemented, as the Chief of Engineers is ultimately responsible for this final decision.
- Peer reviews, no matter how useful, should not be expected to resolve fundamental disagreements and controversies. Reviewers should aim to draw distinctions between criticisms of the regulations and guidelines and criticisms of how well the designers conformed to the guidance. Reviews should focus on assumptions, data, methods, and models.
- Reviews will assist the designers in making decisions, but reviewers should not be asked to make decisions. Reviewers should avoid findings that become “directives” in that they call for modifications or additional studies or suggest new conclusions and recommendations. Reviewers engaged in the review processes should be selected based upon their independence and professional expertise and should not be “stakeholders”.

- Review panels should highlight areas of disagreement and controversies that may need resolution.

The review will consist of specific items as designated by the RMO and the ATR team. In general, the reviewers will be required to:

- Focus on unique features and changes from the assumptions made and conditions that formed the basis for the design during the decision document phase.
- Evaluate whether the interpretations of analysis and conclusions based on analysis are reasonable.
- Offer their opinions as to whether there are sufficient analyses upon which to base a recommendation.
- For the Engineering and Design (E&D) phase – focus on unique features and changes from the assumptions made and conditions that formed the basis for the design during the planning phase. Address the following questions:
 - Do the assumptions made during the decision document phase for hazards remain valid through the completion of design as additional knowledge is gained and the state-of-the-art evolves?
 - Do the project features adequately address redundancy, resiliency, or robustness with an emphasis on interfaces between structures, materials, members, and project phases?
 - Do the project features and/or components effectively work as a system?
- The SRJB will undertake IEPR reviews in the construction phase. The Corps construction staff will be making periodic quality assurance inspections during the construction of critical features such as the pump stations, floodwalls, closure structures, and modifications. The construction contractor and construction manager/designer roles in QC/QA will be reviewed as part of the construction documents.

b. Level of Review Required by the District

The review of this alteration request shall include a district-led Agency Technical Review (ATR), reference paragraph 7.c.(4) in EC 1165-2-216.

c. Decision-Level Determination

In accordance with EC 1165-2-216, approval of the Section 408 alteration request resides with the Director of Civil Works at HQUSACE. The proposed alteration meets

two of the seven criteria in EC 1165-2-216, indicating that HQUSACE review is required.

- The proposed alteration requires a Type II IEPR per EC 1165-2-214.
- The proposed alteration requires an Environmental Impact Statement (EIS) in which USACE is the lead agency.

d. District Review Purpose

The review of all work products will be in accordance with the guidelines established within this review plan. The purpose of this review is to ensure the proper application of established criteria, regulations, laws, codes, principles and professional practices.

For the purposes of Section 408, the ATR team will make the following determinations:

- 1) Impair the Usefulness of the Project Determination. The objective of this determination is to ensure that the proposed alteration will not limit the ability of the project to function as authorized and will not compromise or change any authorized project conditions, purposes or outputs.
- 2) Injurious to the Public Interest Determination. Proposed alterations will be reviewed to determine the probable impacts, including cumulative impacts, on the public interest. The decision whether to approve an alteration will be determined by the consideration of whether benefits are commensurate with risks.
- 3) Legal and Policy Compliance Determination. A determination will be made as to whether the proposed alteration meets all legal and policy requirements.
- 4) Verify Appropriate Decision Level. Verify whether or not HQUSACE review and decision is required. The team will verify that a Type II IEPR and EIS impact statement where the USACE acts as the lead agency are required.

3. District-led Agency Technical Review (ATR)

a. Team Members and Review Procedures

The District-led Agency Technical Review Team is comprised of reviewers with the appropriate independence and expertise to conduct a comprehensive review in a manner commensurate with the type of proposed alteration described in Section 1.b of

this review plan. District ATR reviewers have been selected from the Corps of Engineers Review Certification and Access Program (CERCAP) list.

The ATR will be performed by a designated ATR Team in coordination with the Risk Management Center. The ATR teams are comprised of senior USACE personnel within the St. Paul District and may be supplemented by outside experts as appropriate; this will ensure that a review team with appropriate independence and expertise is assembled and a cohesive and comprehensive review is accomplished. If it is determined the district is lacking the appropriate expertise, the district will supplement their staff through appropriate Communities of Practice, centers of expertise, or other offices to insure all aspects of the project are adequately reviewed.

The ATR team leader may be one of the specialists and it is possible that one member could cover more than one discipline. For this project, as a minimum, the ATR team should consist of members that have experience in the disciplines of geotechnical, hydraulics, structural, real estate, environmental, and civil-site. Other disciplines/functions may be added to the ATR team as necessary, in which case the added team member(s) will have the appropriate experience and educational requirements.

Specialized experience for each of the disciplines is summarized below:

ATR Lead: The ATR team lead is a senior professional with extensive experience in reviewing Section 408 alteration requests and conducting ATRs. The ATR lead has the necessary skills and experience to lead a team through the ATR process.

Hydraulic Engineering: Reviewer will ensure that the hydraulic analysis was properly completed and that the alternatives will achieve the desired flood stage in the benefitted area. Additionally, interior flood control products and analyses will be reviewed. The reviewer shall have experience designing flood control projects.

Hydrology: Reviewer will ensure that the hydrologic analysis was properly completed and that the alternatives will achieve the desired flood stage in the benefitted area. Additionally, interior flood control products and analyses will be reviewed. The reviewer shall have experience designing flood control projects.

Geotechnical Engineering: The Geotechnical reviewer will ensure that the designed project meets Corps standards, the design assumptions are reasonable, and the geotechnical analyses are complete. The reviewer shall have experience designing earthen levees intended to protect life and property from threat of elevated flood waters. The reviewer will be experienced in analysis and design of levees in the Souris Basin and Red River of the North watersheds.

Structural Engineering: The Structural reviewer will ensure that the designed project meets Corps standards for structural features, the design analysis are complete, and the estimated quantities are reasonable. The reviewer shall have experience designing flood walls and closures structures.

Civil Engineering: The Civil reviewer will ensure that the designed project meets Corps standards for civil-site features, utility features, and the design analyses are complete.

Levee Safety: The reviewer(s) will ensure that the designed project meets Corps standards for flood damage reduction levees and the design analyses are complete.

Environmental/NEPA/Cultural: The Environmental/cultural reviewer will be responsible for reviewing ecosystem restoration and mitigation plans and specs and ensuring the proper NEPA and cultural resource compliance activities were completed.

Real Estate: The Real Estate reviewer will ensure that all of the lands necessary for the project are accounted for and properly documented within the project real estate plan.

Mechanical Engineering: The Mechanical reviewer will ensure that the designed project meets Corps standards for mechanical features, the design analysis are complete. The reviewer shall have experience designing Corps pumping stations.

Electrical Engineering: The Electrical reviewer will ensure that the designed project meets Corps standards for electrical features and the design analyses are complete. The reviewer shall have experience reviewing and designing Corps pumping stations.

Policy Compliance/Legal Review: The Corps Project Manager and the District Levee Safety Officer will conduct the primary Section 408 policy reviews for the District. Policy requirements have been coordinated upfront with the SRJB and its consulting firms. District Counsel will review and, per the applicable guidance, any decision document forwarded by the district for vertical team review and approval will be accompanied by a legal sufficiency certification from District Counsel. MSC reviewers will conduct a quality assurance review of the district's policy and legal reviews and recommendations.

Table 1: ATR Team

Name	Organization	Discipline	Email/Phone
Nathan Wallerstedt, PE, PMP	CEMVP-PM-B	Project Manager/ ATR Lead	Nathan.h.wallerstedt@usace.army.mil 651-290-5477
Lisa Buchli, PE	CEMVP-EC-H	Hydraulics	Lisa.a.buchli@usace.army.mil 651-290- 5613
Mike Leshner	CEMVP-EC-H	Hydraulics	Mike.d.lesher@usace.army.mil 651-290- 5972
Aaron Buesing, PE	CEMVP-EC-H	Hydraulics	Aaron.w.buesing@usace.army.mil 651-290-5627
Channel Mueller, PE	CEMVP-EC-H	Hydrology	Channel.mueller@usace.army.mil 651-290- 5610
Luke Schmidt, PE	CEMVP-EC-G	Geotechnical	Luke.l.schmidt@usace.army.mil 651-290-5670
Derek Ingvalson	CEMVP-PD-P	Environmental	Derek.s.ingvalson@usace.army.mil 651-290-5252
Virginia Gnabasik	CEMVP-PD-P	Cultural	Virgina.r.gnabasik@usace.army.mil 651-290-5262
Christine Moss, PE	CEMVP-EC-D	Civil-Site	Christine.r.moss@usace.army.mil 651-290-5025
Eric Wittine, PE	CEMVP-EC-G	Levee Safety	Eric.a.wittine@usace.army.mil 651-290-5590
Rodney Peterson	CEMVP-RE-PA	Real Estate	Rodney.r.peterson@usace.army.mil 651-290- 5397
Tim Grundhoffer, PE	CEMVP-EC-D	Structural	Timothy.m.grundhoffer@usace.army.mil 651-290-5574
Tim Paulus, PE	CEMVP-EC-D	Mechanical	Timothy.m.paulus@usace.army.mil 651-290-5530
David Kollars, PE	CEMVP-EC-D	Electrical	David.h.kollars@usace.army.mil 651-290-5607
Jim Sentz, PE	CEMVP-EC-D	Cost	James.d.sentz@usace.army.mil 651-290-5625

The ATR team reviews the various work products and assures that all the parts fit together in a coherent whole. The ATR teams may be provided draft and intermediate versions of documents so that team can become familiar with reach/element documents and provide “critical” comments, but that the primary ATR is on final products at 60% and 90% design submittal. ATR is designed to be a relatively continuous process with reviews synchronized with the PDT’s production of products and supporting analyses. The purpose of the ATR is to:

- Review the non-federal designers’ deliverables for completeness
- Perform QA audits periodically to ensure that the DQC process is in place and is followed
- Ensure the quality and credibility of the engineering and design information

- Ensure that the appropriate problems and opportunities are addressed
- Confirm that appropriate solutions are considered
- Assure that reasonable cost, scheduling and associated risks are presented
- Confirm that the recommended solution is in accord with current policies and industry standards
- Confirm that the design can be implemented in accordance with environmental laws and statutes.

The ATR criteria are as follows:

- Products will be reviewed against published guidance, including Engineering Regulations, Engineering Circulars, Engineering Manuals, Engineering Technical Letters, Engineering Construction Bulletins, Policy Guidance Letters, implementation guidance, project guidance memoranda, and other formal guidance memoranda issued by HQUSACE. Any justified and approved waivers should have been obtained from HQUSACE for any deviations from USACE guidance;
- The project meets the customer's scope, intent and quality objectives as defined in the Section 214 Agreement scope of work (SOW);
- Concepts and project costs are valid;
- The non-federal sponsor is aware of its requirements and concurs with the proposed recommendations;
- The design is feasible and will be safe, functional, constructible, environmentally sustainable, within the federal interest;
- All relevant engineering and scientific disciplines have been effectively integrated;
- Appropriate computer models and methods of analysis were used and basic assumptions are valid and used for the intended purpose;
- The source, amount, and level of detail of the data used in the analysis are appropriate for the complexity of the project;
- The project complies with accepted practice within USACE;
- Content is sufficiently complete for the current phase of the project and provides an adequate basis for future development effort;
- Project documentation is appropriate and adequate for the project phase.

b. Completion and Certification of the ATR

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- (1) Identify the document(s) reviewed and the purpose of the review;
- (2) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- (3) Include the charge to the reviewers;
- (4) Describe the nature of their review and their findings and conclusions;
- (5) Identify and summarize each unresolved issue (if any); and
- (6) Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR lead will prepare a completion of ATR and Certification of ATR. It will certify that the issues raised by the ATR team have been resolved (or elevated to the vertical team). The completion and certification should be completed based on the work reviewed to date for the project.

Following ATR, the District Section 408 Coordinator will compile a Summary of Findings in accordance with Step 5 from EC 1165-2-216 (with an appendix of ATR Comments and Resolution) and obtain the endorsement of the District Levee Safety Program Manager, the District Levee Safety Officer, the District Counsel, and other District leadership before recommending to the District Commander that the proposed alteration be approved or denied. The summary of findings will also include a determination on the 4 items detailed out in section 2.d of this review plan and will address how the seven flood risk management projects/eight levee systems will be impacted both from a holistic standpoint of a completed MREFPP and with partial construction of phases that will be completed over the next 20 + years.

4. Execution Plan

a. Review Procedures

Due to the scale and timeframe, multiple Section 408 permission requests will be required as the final design for all phases are developed.

Section 408 Permission Approach for the MREFP Project

First Section 408 Review and Permission – Will consist of the following items to insure the overall proposed MREFPP is not injurious to the public interest and will not adversely impact the existing Federal projects within the area. This review will take a holistic system-wide approach to the project and the cumulative impacts associated with the project as a whole. At minimum the following will be reviewed.

- H&H Systems analysis per EC 1165-2-216. (overall project)
- Programmatic Environmental Impact Statement. (overall project)
- Project design guidelines that will be used for this phase and future phases.
- Detailed design calculations, plans and specifications, for the first three reaches of construction. It is anticipated that the third phase will be provided approximately 3-6 months after the first two phases are submitted.
- Validation that appropriate requester quality control and IEPR reviews were conducted.

Pending permission of the first overall MREFP Project Section 408 request, subsequent phases of the project will undergo final design both parallel and in future years as the SRJB is able to obtain funding. Generally these Section 408 reviews would take less effort than the initial 408 review as it should be more of a cross check to insure continued phases are consistent with the original 408 approval. Reviews would focus on the following.

- Is the new phase design consistent with original H&H systems analysis?
- Is the new phase design consistent with the original EIS? Will additional NEPA documentation be required?
- Review of detailed design calculations, plans and specifications, for the proposed reaches of construction.
- Validation that appropriate requester quality control and IEPR reviews were conducted.

Reviews will be conducted in a fashion which promotes dialogue regarding the quality and adequacy of the required documentation. The ATR team will review the documents provided. The products provided by the requestor will undergo an ATR at a 60% and 90% completion. Additional reviews may be done as needed throughout the project's design to insure all aspects have undergone adequate review.

The four key parts of a review comment will normally include:

- 1) The review concern – identify the deficiency or incorrect application of policy, guidance, or procedures.
- 2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed.
- 3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the district's ability to make a decision as to whether to approve or deny the Section 408 request.
- 4) The probable specific action needed to resolve the concern – identify the action(s) that the requester must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist. The ATR documentation must include the text of each ATR concern, a brief summary of the pertinent points in any discussion, including any vertical coordination, and the agreed upon resolution.

The management and sequencing of this review will be a complex task requiring many steps. The ATR team lead and business line contact(s) are responsible for ensuring processes in EC 1165-2-216 are met and ensure the proper coordination occurs among all the necessary district elements. General review sequencing for this request will be as follows:

- The St. Paul District publicized on the District website from September 18, 2014 to October 20, 2014 its intent to review this Section 408 request, and to accept local sponsor funds under a Section 214 agreement for expediting the review. No conflicts of interest, concern about the intent, or the proposal were raised after the intent to review was publicized.
- The requester will submit the entire Section 408 documentation package to the Corps, including the plans, hydraulic and hydrologic analyses, environmental compliance documentation (for this project an EIS), real estate documentation, geotechnical analyses, structural analyses, and the quality control report. The St. Paul District will conduct ATR on the provided documents, and will provide appropriate comments to the requester. The requester will modify the submittals in accordance with Corps ATR comments, and will resubmit them for backchecking. This process will be repeated until all Corps comments are satisfied.

- Following the final ATR review the Corps will prepare a Summary of Findings (SOF) based on the requester's submittals. The ATR team will provide an ATR

certification as part of the Summary of Findings document. The entire Summary of Findings will undergo District Quality Control.

- The District Review Team will prepare a briefing for the LSOG. This briefing can be completed concurrently with other review steps but needs to be completed prior to submission of the request to MVD.
- The District Counsel will be responsible for performing the legal and policy review in accordance with EC 1165-2-216. This review will be completed after the ATR is completed and the Levee Safety Officer has reviewed the alteration documents, but prior to the District Engineer's determination.
- The District Engineer will make a recommendation regarding the Section 408 request either denying the request or to send it forward for approval.
- Following the District Engineer's determination and endorsement the district ATR lead will provide the review package and SOF report, and DE transmittal letter to MVD District Support Team (DST) for review and concurrence with the district's review findings.
- MVD will review the provided documents, and will provide appropriate comments to the district. As part of the MVD review a MVD Dam and Levee Safety Production Center (DLSPC) member will also review the Section 408 package. The MVD DLSPC member will specifically be reviewing the design guidance being used and insuring it meets USACE criteria.
- The requester will modify the submittals in accordance with Corps comments, and will resubmit them for backchecking. This process will be repeated until all MVD comments are satisfactorily addressed.
- Following MVD endorsement, the Section 408 submittal package will be transmitted to the MVD-RIT at HQ USACE for review. HQUSACE will review the provided documents, and will provide appropriate comments to MVD and the St. Paul District. The requester will modify the submittals in accordance with Corps comments, and will resubmit them for backchecking. This process will be repeated until all HQUSACE comments are satisfactorily addressed.
- Following review by HQUSACE staff, the Director of Civil Work will make the final determination as to whether or not the proposed alteration should be approved or denied. A letter of permission will be sent to the St. Paul District indicating the Director of Civil Works final determination.

- Following the final determination the District Section 408 Coordinator will issue a formal letter (signed by the District Commander) to the requester either granting permission of the proposed alteration with or without conditions, or explaining why the Corps believes proposed alteration would be injurious to the public interest or would impair the usefulness of the project.

New alteration specific review plan(s) will be created for future phases of the MREFPP. This future review plan(s) will reference past approvals and construction effort on the overall MREFPP.

b. Completion and Certification of the IEPR

The SAR will be managed by HDR Inc., which meets the criteria set forth in EC 1165-2-214. Specific details of the SAR plan are outlined in Appendix B. Reviews will be in general accordance with the Water Resources Development Act (WRDA) 2007 (Public Law 110-114) Section 2035, and the procedures described in USACE, Civil Works Review Policy (Engineer Circular (EC) 1165-2-214, dated 15 December 2012). The IEPR will be conducted by subject matter experts with extensive experience in engineering issues associated with flood risk reduction. The subject matter experts will be charged with responding to specific technical questions as well as providing a broad technical evaluation of the overall project. The review panel shall focus on answering the general questions listed in Appendix B for each phase of the project.

The IEPR Team will prepare an Interim Project Review Report for each review conducted to include the peer review of the Design Phase (separate reports for reviews of Phase 1 package and a combined Phases 2 and 3 package) and during the construction phase of the project. The Interim Project Review Reports shall focus on answering the general questions in Appendix B and the review panel shall clearly address these questions in the review report. The Interim Project Review Reports will be submitted for Souris River Joint Board (SRJB) and USACE RMC approval within 28 calendar days after closeout of comments. At a minimum, each report will include an introduction, the composition of the review team, a summary of the review during design, any lessons learned, and appendices for conflict of interest disclosure forms, for comments to include any appendices for supporting analyses and assessments of the adequacy and acceptability of the methods, models, and analyses used. In addition, the reports shall contain appendices to include documentation of the expert reviews performed during the specific phase review. All comments in the report will be finalized by the panel prior to their release to SRJB for each review plan milestone. The requestor will prepare responses except that issue resolution will be a dual responsibility between the product provider and USACE, with USACE having the final authority. The comment responses will be provided to the RMC for concurrence. All comments shall be back-checked and closed by the time the reports are submitted for SRJB approval.

The final report will be provided to the RMO with responses and all other materials related to the review. After the MVD Commander’s approval, the St. Paul District will make the report and responses available to the public on the District’s website located at the following
(<http://www.mvp.usace.army.mil/Missions/CivilWorks/ProgramsProjectManagement/ReviewPlans.aspx>).

Note: The SRJB is currently working with the IEPR consultant to develop the scope of work for IEPR reviews during construction. Once this scope of work has been developed and reviewed it will be incorporated into the review plan.

c. Review Schedule

<u>Submittal</u>	<u>Phase 2/3</u>	<u>Phase 1</u>
Receive 60% Submittal	October 2015	February 2016
Receive 90% Submittal	February 2016	June 2016
Receive 100% Submittal	June 2016	November 2016
Submit Section 408 Package to MVDA	August 2016	January 2017*
Submit Section 408 Package to HQUSACE	November 2016	January 2017*
HQUSACE Section 408 Decision	February 2017	February 2017*

*indicates that Review and Approval will be conducted at the St. Paul District level assuming design plan is consistent with overall Section 408 Submittal Information provided for Phases 2/3.

The schedule provided above is approximate. The actual dates and timelines will be dictated by the non-federal sponsor and submittals will be provided once all required documents have been completed and undergone the requester quality control procedures.

The St. Paul District’s goal is to provide comments on ATR reviews back to the SRJB within 3-4 weeks of receiving a complete submittal package.

Appendix D provides an outline for the long term schedule of the project which includes future phases beyond phases 1-3 as outlined above. Additional Section 408 permissions will be required for future phases once detailed plans for each phase have

been developed. Due to the magnitude of the project and the need for phased construction, it is anticipated it will take 20 plus years to implement all proposed work.

c. Review Cost

The Corps and the Souris River Joint Water Resource Board signed a Section 214 Agreement in December of 2014. The cost of the Corps review and permission determination was estimated at \$358,000 for the purposes of this agreement. These funds have been transferred to the Corps. Any funds remaining after a section 408 permission decision has been made will be returned to the local sponsor.

A P2 project has been created to track Section 214 agreement costs associated with the project. The P2 project number is 450025.

The St. Paul District Inspection of Completed Works (ICW) funding may also be utilized to compete project reviews.

5. Review Plan Points of Contact

Name/Title	Organization	Email/Phone
District Section 408 Coordinator	CEMVP-PMB	nathan.h.wallerstedt@usace.army.mil 651-290-5477
District Levee Safety Program Manager	CEMVP-EC-D	eric.a.wittine@usace.army.mil 651-290-5590
District Levee Safety Officer	CEMVP-EC	michael.j.bart@usace.army.mil 651-290-5303
MVP District Support Team (DST)	CEMVD-DST	ben.c.robinson@usace.army.mil 601-634-5310
MVD Levee Safety Program Manager	CEMVD-RB-T	mellissa.k.mullen@uace.army.mil 901-544-0716
RMC Review Manager	CEIWR-RMC	john.d.clarkson@usace.army.mil 304-399-5217

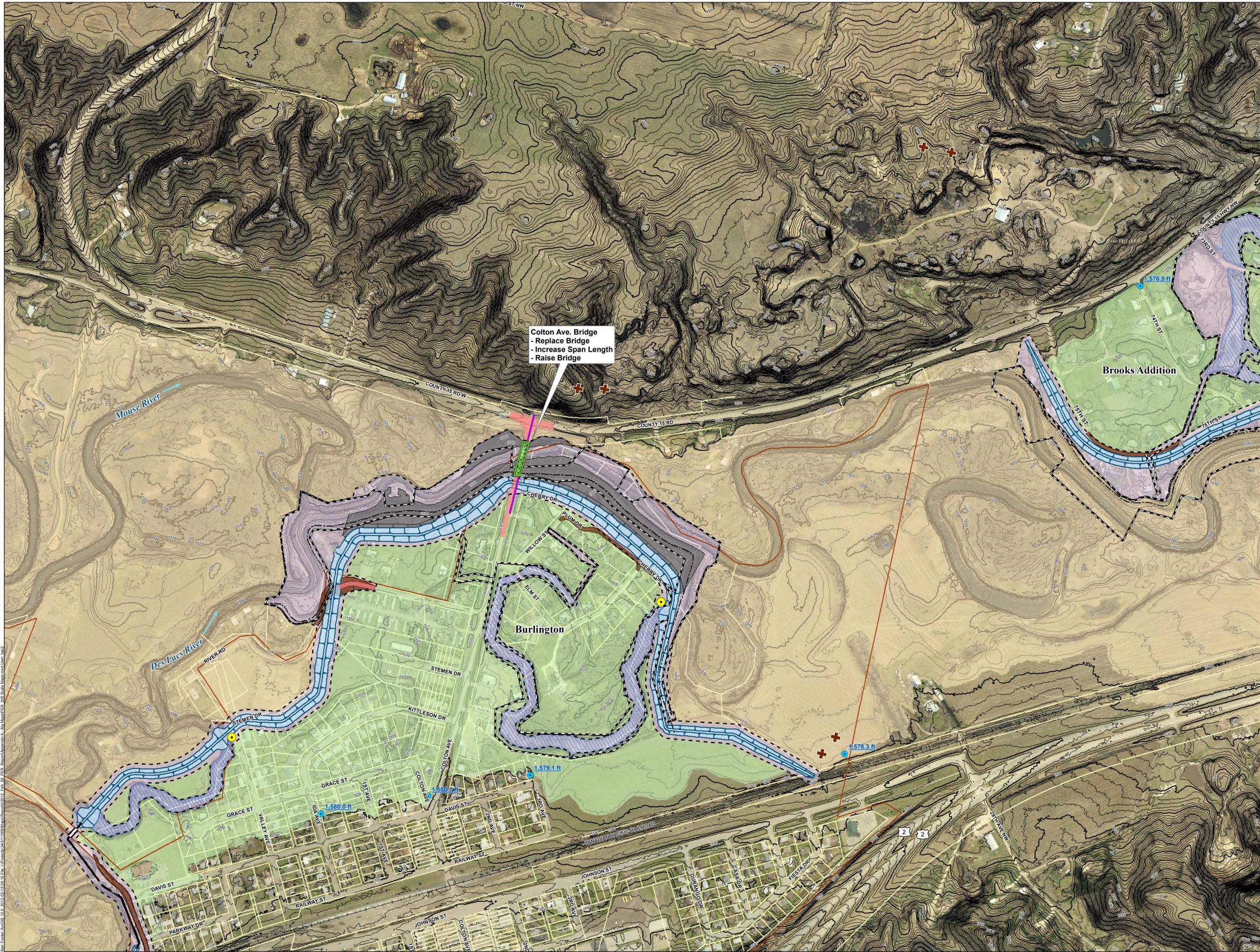
6. Public Participation of Review Plan

As required by EC 1165-2-214, the approved Review Plan will be posted on the District public

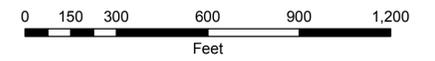
website(<http://www.mvp.usace.army.mil/Missions/CivilWorks/ProgramsProjectManagement/ReviewPlans.aspx>). The public will have 30 days to provide comments on the documents; after all comments have been submitted, the comments will be provided to the technical reviewers. This is not a formal comment period and there is no set timeframe for the opportunity for public comment. If and when comments are received, the PDT will consider them and decide if revisions to the review plan are necessary. This engagement will ensure that the peer review approach is responsive to the wide array of stakeholders and customers, both within and outside the federal government.

APPENDIX A

**PRELIMINARY MOUSE RIVER ENHANCED FLOOD PROTECTION
(MREFP) PROJECT PLANS (BURLINGTON THROUGH MINOT)**



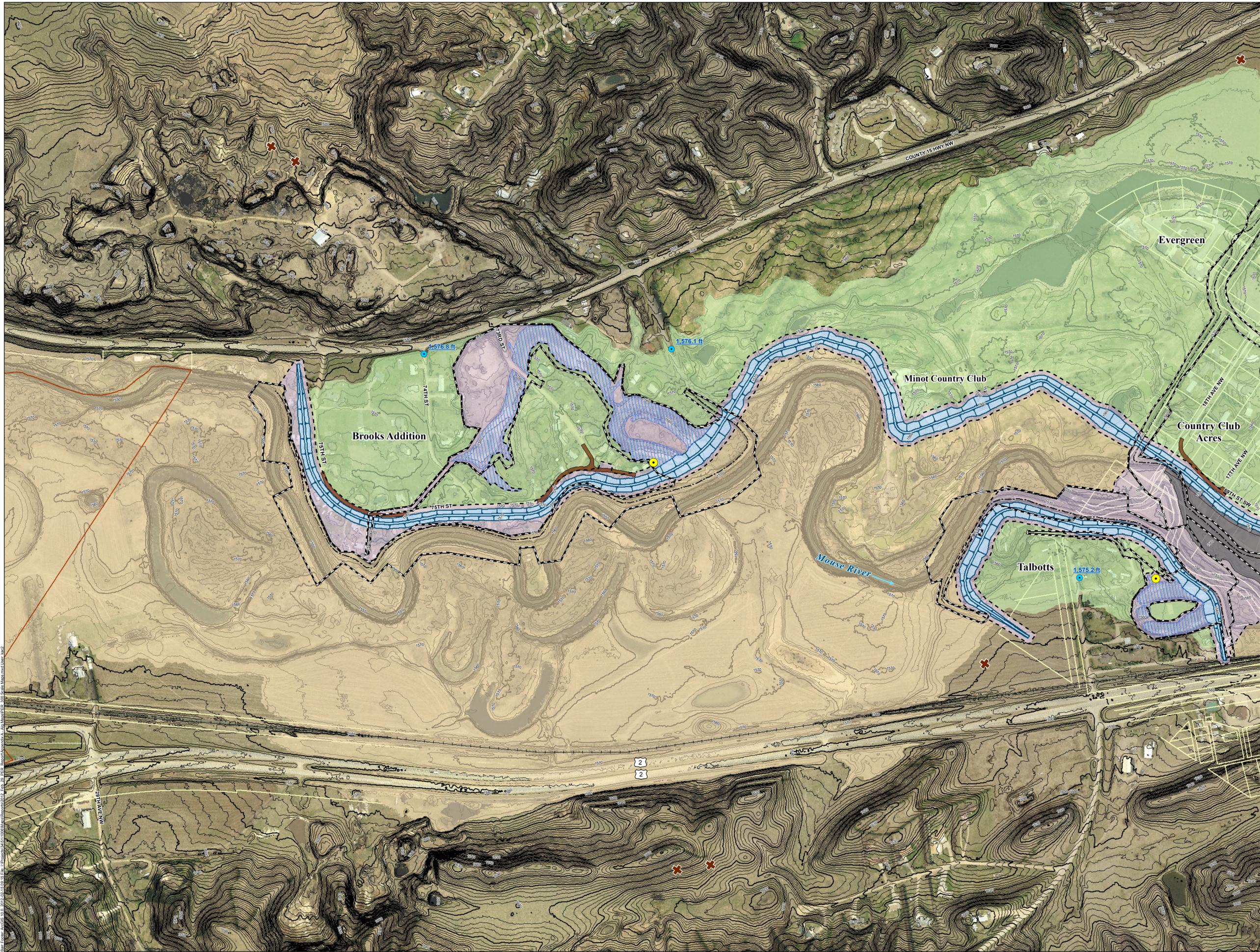
- Levee Footprint
- Floodwall Alignment
- Transportation Closure Structure (Only During Flooding Event)
- River Closure Structure
- Direction of Diverted Flow
- High Flow Diversion
- Road Realignments
- Overbank Excavation
- Interior Ponding Areas
- Road Raise
- Areas of Reduced Flood Risk
- Inundated in Design Flood (27,400 cfs)
- Project Limits (1)
- Bridge Modification
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- Critical Transportation Route (Road Remains Open During Flood Event)
- Potential Borrow Area
- Pump Station (Existing)
- Pump Station (New)
- High Water Marks
- USACE Permanent ROW (Existing)
- Property Parcel
- City Limit
- 10 Foot Contour
- 2 Foot Contour

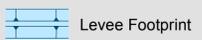
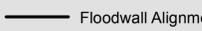
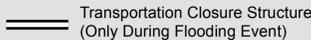
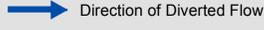
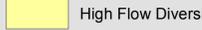
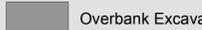
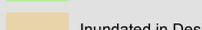
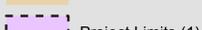
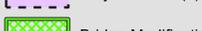
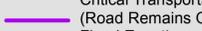
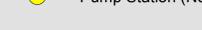
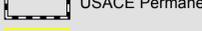
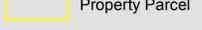


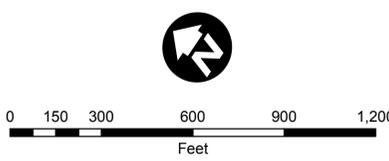
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 State Plane Coordinate System, North Zone
 Vertical Datum: NGVD29
 2010 Aerial Photo

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(1) Note: Project limits represent approximate right-of-way required for operation and maintenance of the preliminary flood risk reduction features. Features generally included within the project limits are levees, floodwalls, pump stations, pump station piping and gatewells, pump station ponding areas, high-flow diversions, channel realignments, overbank excavations, riprap/erosion control measures, boulder drop structures, transportation closure structures (including roadway and railroad closures), river closure structures, seepage control and collection systems, vegetation clear zones, and access for project inspection, operation and maintenance.



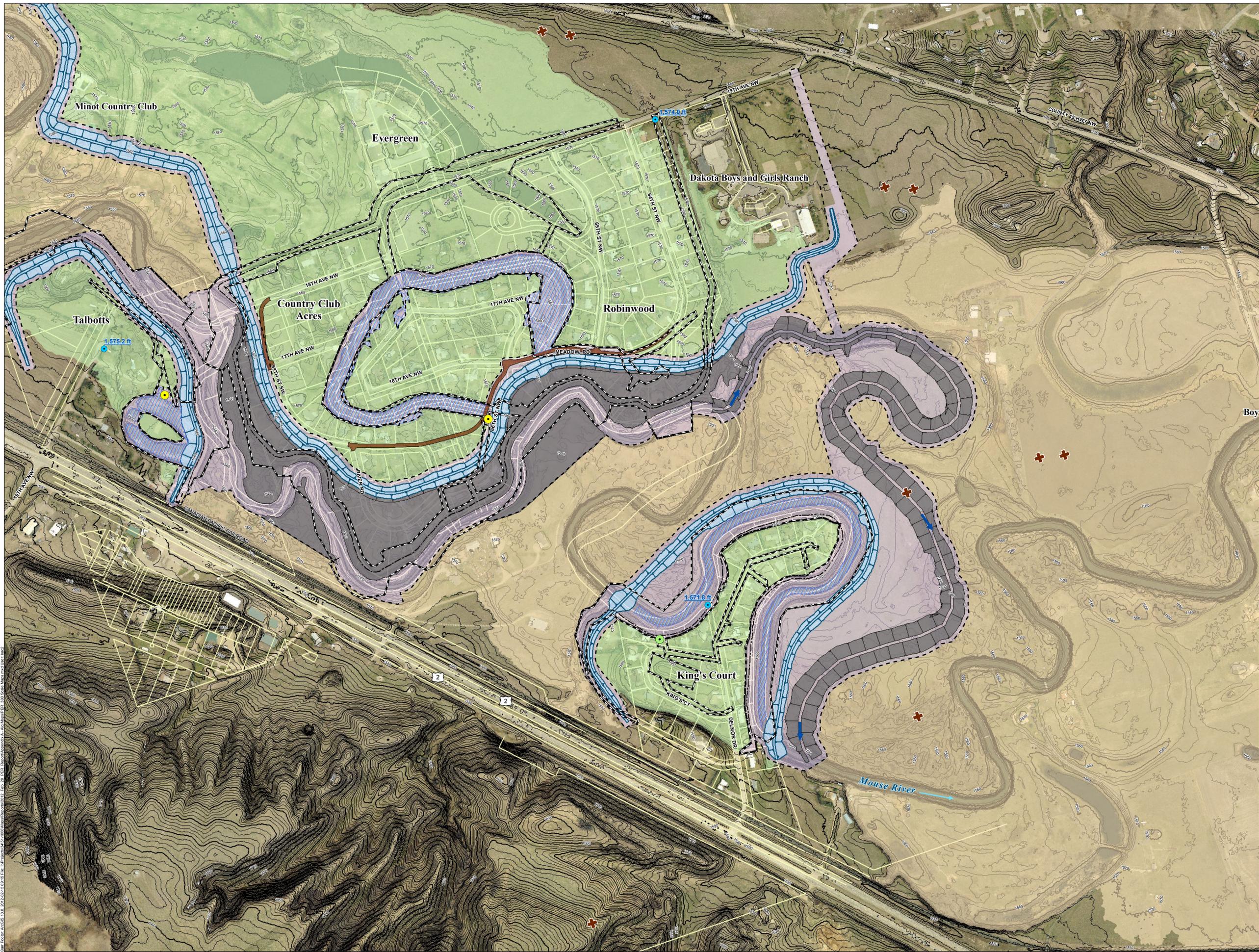
-  Levee Footprint
-  Floodwall Alignment
-  Transportation Closure Structure (Only During Flooding Event)
-  River Closure Structure
-  Direction of Diverted Flow
-  High Flow Diversion
-  Road Realignments
-  Overbank Excavation
-  Interior Ponding Areas
-  Road Raise
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-  Centerline of Existing Federal Project Feature
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-  Pump Station (New)
-  High Water Marks
-  USACE Permanent ROW (Existing)
-  Property Parcel
-  City Limit
-  10 Foot Contour
-  2 Foot Contour



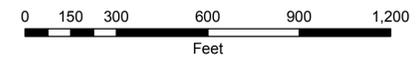
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 Vertical Datum: NGVD29
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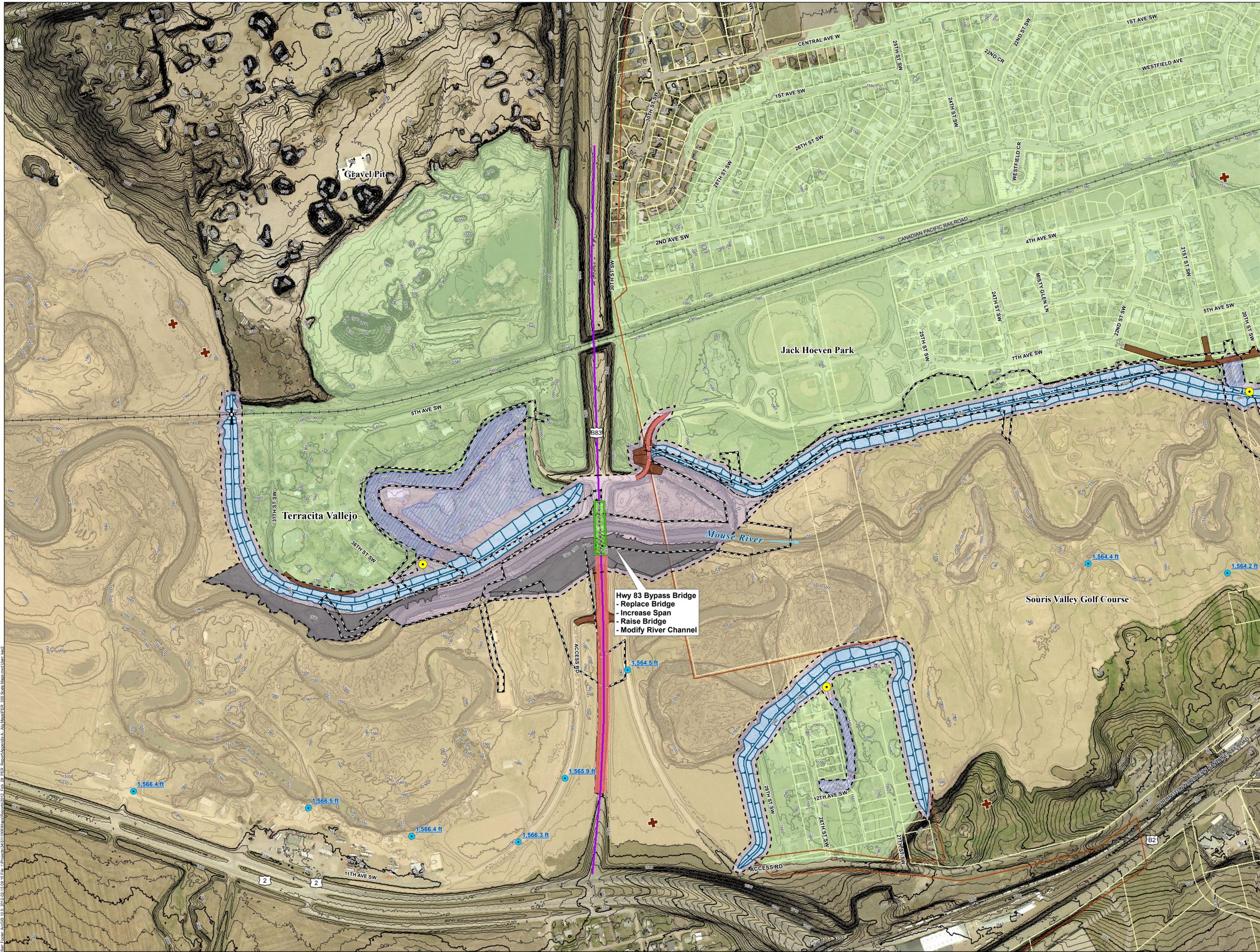
-  Levee Footprint
-  Floodwall Alignment
-  Transportation Closure Structure (Only During Flooding Event)
-  River Closure Structure
-  Direction of Diverted Flow
-  High Flow Diversion
-  Road Realignments
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-  Interior Ponding Areas
-  Road Raise
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-  Property Parcel
-  City Limit
-  10 Foot Contour
-  2 Foot Contour



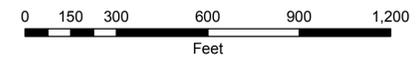
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 Vertical Datum: NGVD29
 2010 Aerial Photo

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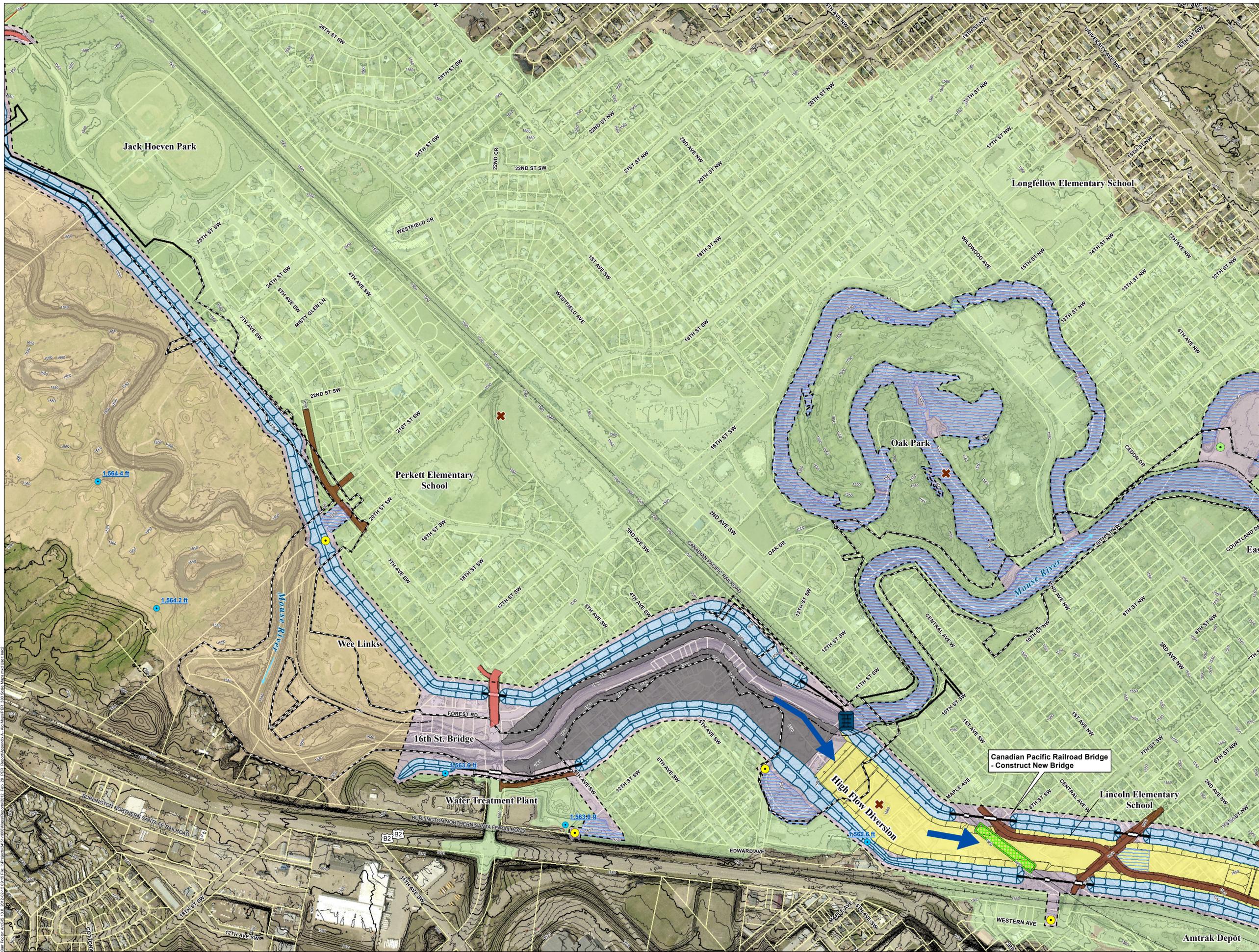
- Levee Footprint
- Floodwall Alignment
- Transportation Closure Structure (Only During Flooding Event)
- River Closure Structure
- Direction of Diverted Flow
- High Flow Diversion
- Road Realignments
- Overbank Excavation
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- Property Parcel
- City Limit
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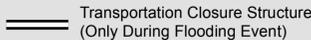
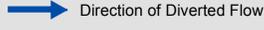
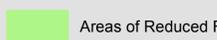
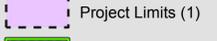
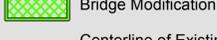
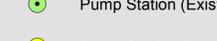


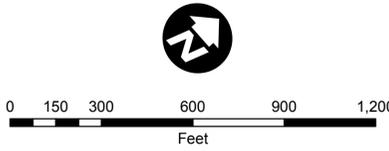
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 Vertical Datum: NGVD29
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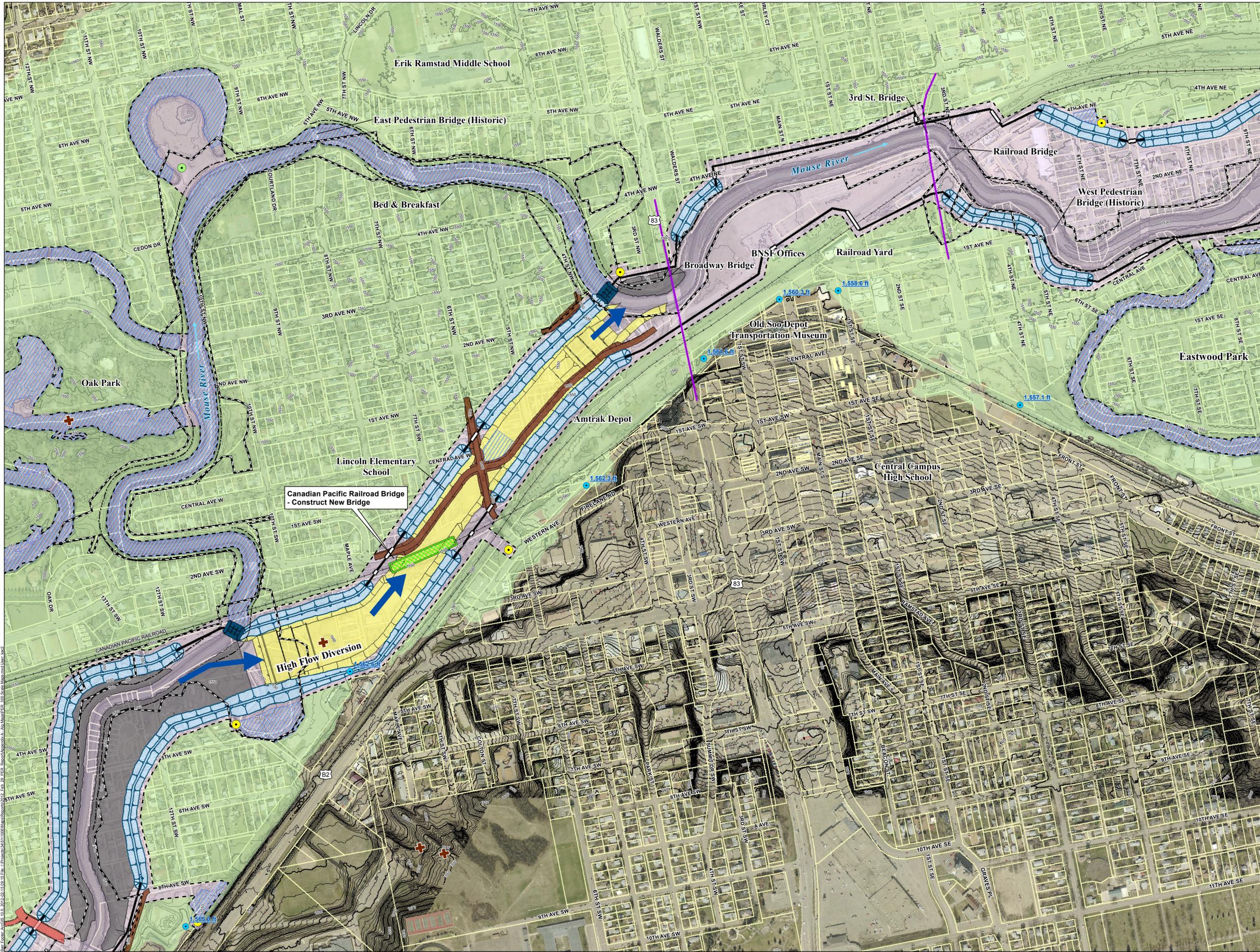
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-  Floodwall Alignment
-  Transportation Closure Structure (Only During Flooding Event)
-  River Closure Structure
-  Direction of Diverted Flow
-  High Flow Diversion
-  Road Realignments
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-  High Water Marks
-  USACE Permanent ROW (Existing)
-  Property Parcel
-  City Limit
-  10 Foot Contour
-  2 Foot Contour



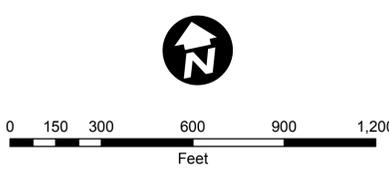
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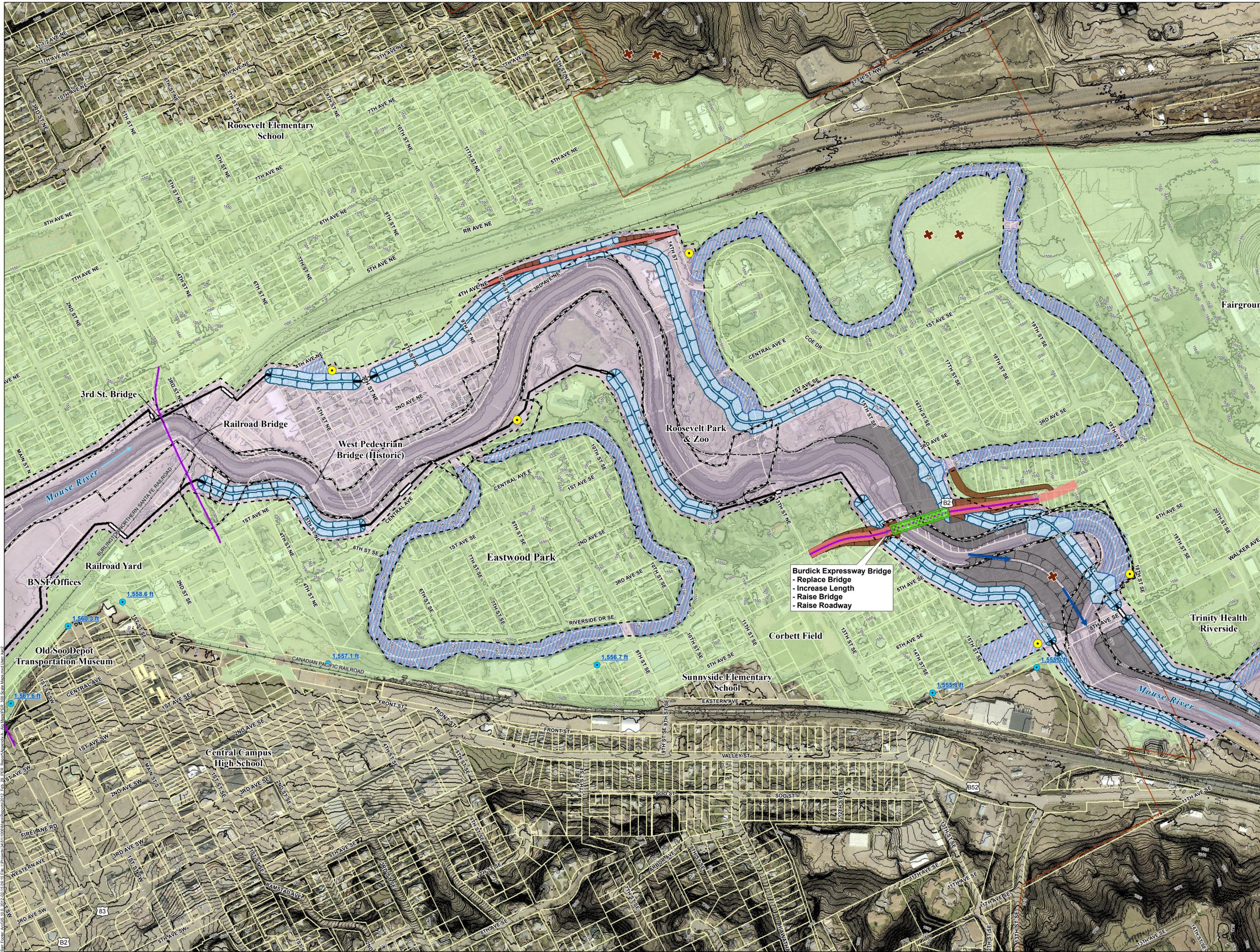
- Levee Footprint
- Floodwall Alignment
- Transportation Closure Structure (Only During Flooding Event)
- River Closure Structure
- Direction of Diverted Flow
- High Flow Diversion
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- Property Parcel
- City Limit
- 10 Foot Contour
- 2 Foot Contour

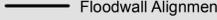
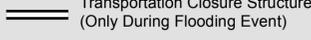
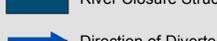
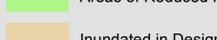
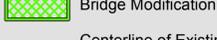
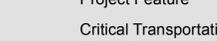
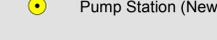
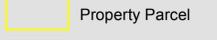
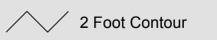


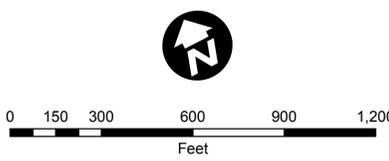
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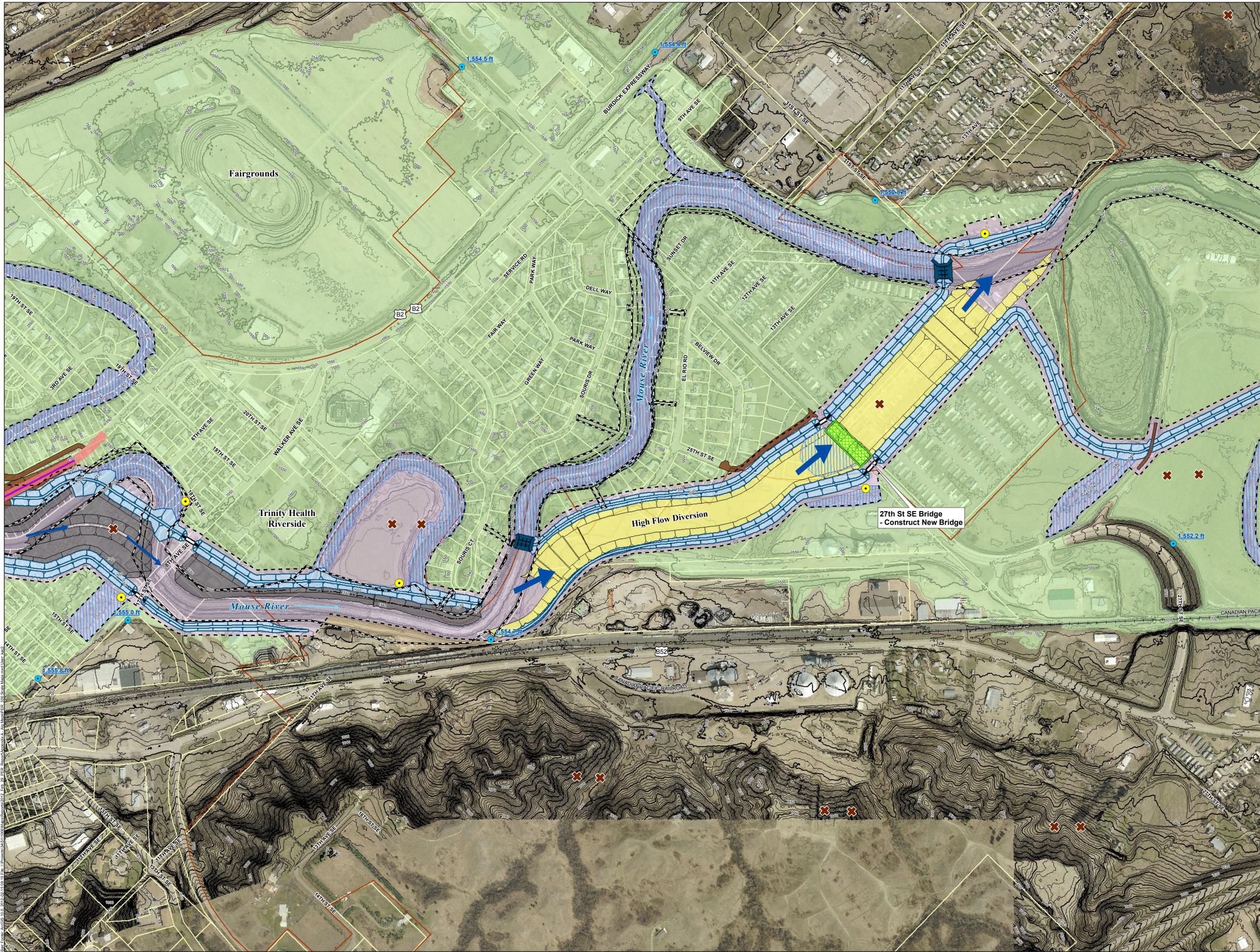
-  Levee Footprint
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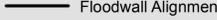
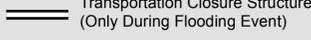
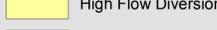
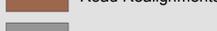
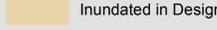
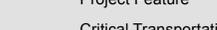
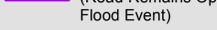
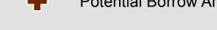
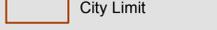
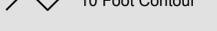


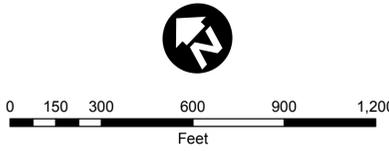
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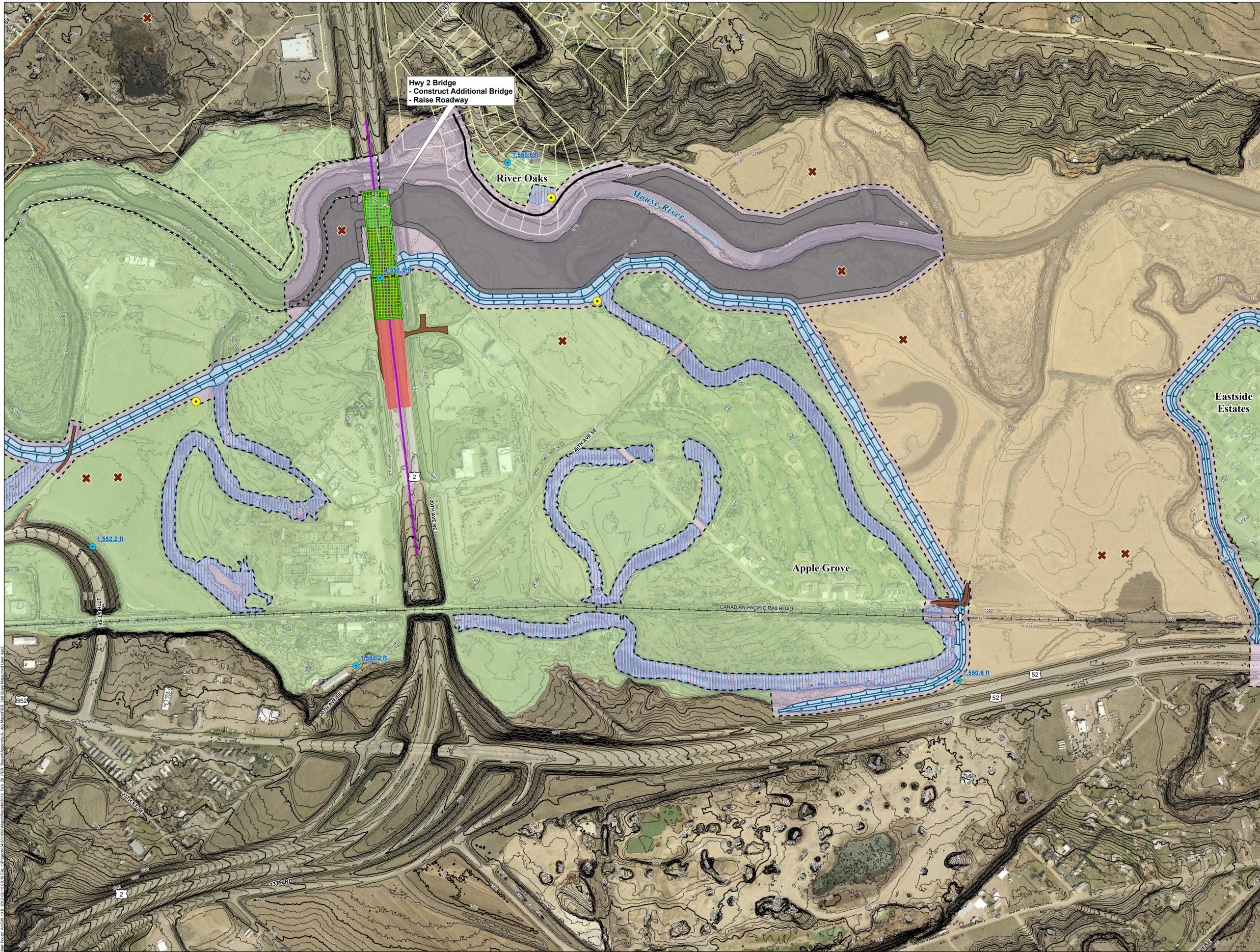
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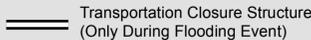
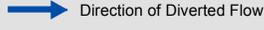
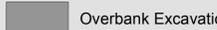
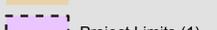
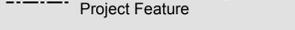
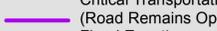
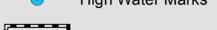
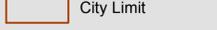


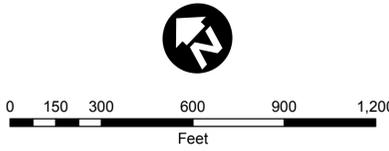
Coordinate System: NAD83, North Dakota State Plane Coordinate System, North Zone
 Vertical Datum: NGVD29
 2010 Aerial Photo

Preliminary Engineering Report
February 29, 2012
Mouse River Project
Map 12 of 28

(1) Note: Project limits represent approximate right-of-way required for operation and maintenance of the preliminary flood risk reduction features. Features generally included within the project limits are levees, floodwalls, pump stations, pump station piping and gatewells, pump station ponding areas, high-flow diversions, channel realignments, overbank excavations, riprap/erosion control measures, boulder drop structures, transportation closure structures (including roadway and railroad closures), river closure structures, seepage control and collection systems, vegetation clear zones, and access for project inspection, operation and maintenance.



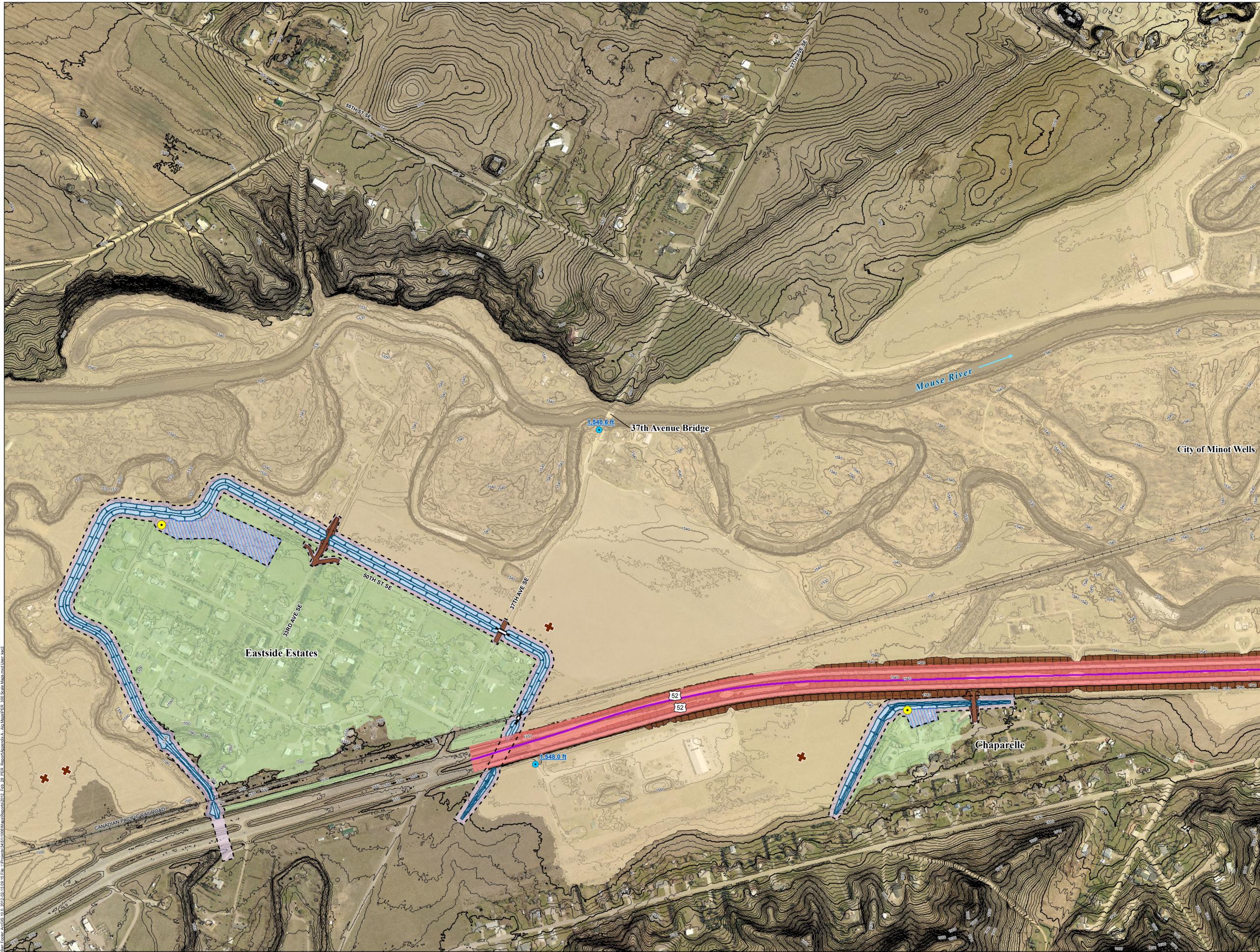
-  Levee Footprint
-  Floodwall Alignment
-  Transportation Closure Structure (Only During Flooding Event)
-  River Closure Structure
-  Direction of Diverted Flow
-  High Flow Diversion
-  Road Realignments
-  Overbank Excavation
-  Interior Ponding Areas
-  Road Raise
-  Areas of Reduced Flood Risk
-  Inundated in Design Flood (27,400 cfs)
-  Project Limits (1)
-  Bridge Modification
-  Centerline of Existing Federal Project Feature
-  Critical Transportation Route (Road Remains Open During Flood Event)
-  Potential Borrow Area
-  Pump Station (Existing)
-  Pump Station (New)
-  High Water Marks
-  USACE Permanent ROW (Existing)
-  Property Parcel
-  City Limit
-  10 Foot Contour
-  2 Foot Contour



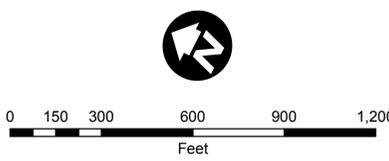
Coordinate System: NAD83, North Dakota State Plane Coordinate System, North Zone
 Vertical Datum: NGVD29
 2010 Aerial Photo

Preliminary Engineering Report
February 29, 2012
Mouse River Project
Map 13 of 28

(1) Note: Project limits represent approximate right-of-way required for operation and maintenance of the preliminary flood risk reduction features. Features generally included within the project limits are levees, floodwalls, pump stations, pump station piping and gatewells, pump station ponding areas, high-flow diversions, channel realignments, overbank excavations, riprap/erosion control measures, boulder drop structures, transportation closure structures (including roadway and railroad closures), river closure structures, seepage control and collection systems, vegetation clear zones, and access for project inspection, operation and maintenance.



- Levee Footprint
- Floodwall Alignment
- Transportation Closure Structure (Only During Flooding Event)
- River Closure Structure
- Direction of Diverted Flow
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- Areas of Reduced Flood Risk
- Inundated in Design Flood (27,400 cfs)
- Project Limits (1)
- Bridge Modification
- Centerline of Existing Federal Project Feature
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- Potential Borrow Area
- Pump Station (Existing)
- Pump Station (New)
- High Water Marks
- USACE Permanent ROW (Existing)
- Property Parcel
- City Limit
- 10 Foot Contour
- 2 Foot Contour



Coordinate System: NAD83, North Dakota State Plane Coordinate System, North Zone
 Vertical Datum: NGVD29
 2010 Aerial Photo

Preliminary Engineering Report
February 29, 2012
Mouse River Project
Map 14 of 28

(1) Note: Project limits represent approximate right-of-way required for operation and maintenance of the preliminary flood risk reduction features. Features generally included within the project limits are levees, floodwalls, pump stations, pump station piping and gatewells, pump station ponding areas, high-flow diversions, channel realignments, overbank excavations, riprap/erosion control measures, boulder drop structures, transportation closure structures (including roadway and railroad closures), river closure structures, seepage control and collection systems, vegetation clear zones, and access for project inspection, operation and maintenance.

APPENDIX B

Requestor Type II IEPR Review Plan

Task Order No. 01
Modified – April 27, 2016

TYPE II INDEPENDENT EXTERNAL PEER REVIEW (IEPR) / SAFETY ASSURANCE REVIEW (SAR)
Mouse River Enhanced Flood Protection Project, North Dakota

Applicable to Agreement Dated September 18, 2015

between

HDR
4503 Coleman St, Suite 105
Bismarck, ND, 58503

Souris River Joint Water Resources Board
PO Box 5005
Minot, ND 58702

Designated Representative:

Dennis Reep, Project Manager

Designated Representative:

David Ashley, Chairman

I. Scope Language

1. Background and Overview

The Souris River is officially called the Mouse River by the State of North Dakota, while it is recognized as the Souris River by the national and international communities. The Mouse River Basin encompasses a total of 23,600 square miles in the United States and Canada, about 9,000 square miles of which are in the United States. The river itself is about 700 miles long with 360 miles in the United States, all in North Dakota. A major tributary to the Mouse River, called the Des Lacs River, enters at Burlington, ND. The Mouse River has experienced severe flooding over the years, most often due to snowmelt runoff. Major flooding prior to the 2011 event occurred in 1882, 1904, 1969, 1975, 1976, and 1979.

In June, 2011 the Mouse River basin experienced catastrophic flooding as the result of significant snow pack and substantial rains throughout the basin and subsequent torrential rains in the upstream Canadian reaches. The flood resulted in a peak flow rate of approximately 27,400 cubic feet per second through the City of Minot. Damage occurred throughout the entire Mouse River basin. The 2011 flood impacted 4,700 commercial, public, and residential structures from Sherwood to Westhope and sustained building and content damage of \$690 million (USACE). There were significant additional costs of flood fighting efforts, infrastructure damage, agricultural damage, and rural transportation damages. An estimated 45,000 acres of pasture and crop land were damaged, in addition to numerous rural farmsteads and rural residences throughout the basin.

In response to the 2011 flood, and decades of smaller but frequently damaging floods, the SRJB requested the North Dakota State Water Commission (NDSWC) initiate a flood protection plan for the Mouse River basin. In September, 2011 the NDSWC commissioned the MREFPP, with the goal of reducing damages to urban and agricultural interests from future flooding. The comprehensive plan consists of the following components:

- MREFPP Preliminary Engineering Report (PER) for the reach of the Mouse River from Burlington to Velva and Mouse River Park. (February 2012)

- MREFPP – Rural Flood Risk Reduction Alternatives Evaluation. (Rural Alternatives Study) (May 2013)

The PER generally focused on structural flood protection of the urban areas including Burlington, Minot, Sawyer, and Velva. Each of these communities has an existing federally authorized flood protection system. Modification and expansion of the existing flood protection systems in these communities will require obtaining authorization from the USACE through a 408 approval process. The MREFPP recommends that protection be constructed to levels reached during the 2011 flood. For the Minot portion of the MREFPPP, the PER has established a design flow rate of 27,400 cubic feet per second with flood protection features having a minimum of three feet of freeboard.

Implementation of certain features of the MREFPP has already begun. Design of three critical phases of the project within the City of Minot started in 2014 with anticipated construction to begin in 2017. These three phases include levees, floodwalls, pump stations, and closure structures that will assist Minot in flood fighting in the interim while the remaining portions of the MREFPP are designed and implemented over the next 15 – 20 years. Additional funding was recently secured through the NDSWC to conduct environmental studies for the reach from Burlington to Velva and to conduct the required IEPR reviews. The initial phases of the Minot portion of MREFPP consist of:

- Phase 1: 4th Ave Floodwalls, Street Closure Structures and Utility Modifications
- Phase 2: North Napa Valley Levees, Street Extension and Utility Modifications
- Phase 3: North and South Forrest Road Levees, Street Closure Structures and Utility Modifications

Currently, the SRJB has obtained funding for the preliminary and final design engineering services for Phases 1, 2, and 3 from the NDSWC. The state has appropriated funds for construction of Phases 1, 2, and 3, and construction should commence in 2017.

All phases of the MREFPP are intended to be designed and constructed to USACE standards to qualify for inclusion in the Rehabilitation and Inspection Program (RIP), under Public Law 84-99.

The hydrology and hydraulics (H&H) models that form the basis of the project, as well as the structural measures in Phases 1, 2 and 3, are the focus of this Scope of Work (SOW). The measures include levees, floodwalls, closure structures, and pump stations, which will require property acquisition and significant underground utility relocation.

Federal permits/approvals and associated review under the National Environmental Policy Act (NEPA) pose significant challenges to moving the comprehensive MREFPP forward. The SRJB, in conjunction with the USACE, has pursued the reach of the Mouse River from upstream of Burlington to downstream of Minot as an initial environmental focus. It is a hydraulically independent from upstream and downstream reaches and includes project features that are authorized for design. Federal regulatory approvals will be required for portions of the project because of modification to the existing USACE civil works project. The most significant approvals will be the USACE Section 408 approval that is required when existing federal facilities are modified, and Section 404 permits that are required when fill is placed in the waters of the U.S. The SRJB has initiated these environmental analyses and documents to obtain the necessary permits for the reach described above. Meetings were recently held in the basin to gather input and concerns from the public. The environmental reviews are expected to be completed by the summer, 2016, paving the way for a 2017 construction start on the initial three phases of the project. Subsequent environmental assessments will be addressed in the future for other identified MREFPP features as needed.

The first three project phases will be designed and constructed under multiple contracts.

2. Project Description

Phase 1, also referred to as the 4th Avenue NE segment, is located on the north side of the river and extends from Mouse River just west of Broadway Bridge on the west; to existing Railroad R/W just east of 3rd Street NE on the east. This phase will also include the construction of the Broadway pump station and gatewell just west of the Broadway Bridge. Approximately 3,000 feet of floodwall will be installed which will require utility modifications and relocations. The final design (plans and specs) are anticipated to be completed in 2016, with construction anticipated to start in 2017 and be completed by 2019.

Phases 2 and 3 are being designed and implemented by one contract/consulting engineer and are part of the first contract to be designed and constructed.

Phase 2, the Napa Valley Levee, consists of approximately 5,800 feet of levee on the north (left) bank of the Mouse River from the Highway 83 Bypass to the 16th Street SW Closure Structure (also a part of this phase). Other features in Phase 2 include the construction of the Perckett Ditch Pump Station, modifications to the Wee Links and Souris Valley Golf Courses, roadway modifications, overbank excavation and utility modifications.

Phase 3, the Forest Road Levee, consists of 2,400 feet of levee on the north (left) bank of the Mouse River from its beginning at the 16th Street SW Closure Structure to near the beginning of the Maple Diversion (future phase). It also entails approximately 1,600 feet of levee on the south (right) bank of the Mouse River from its beginning near 8th Ave SW to the future Maple Diversion. Phase 3 includes overbank excavation on the south (right) side of the Mouse River as well as utility modifications, a tie-back levee and roadway modifications.

The final design (plans and specs) for Phases 2 and 3 are anticipated to be completed in 2016, with final construction anticipated to begin in 2017 and be completed by 2019.

3. Objective

The objective of this work is to assess, analyze, interpret, and evaluate design/engineering and construction criteria through a process known as Type II Independent External Peer Review (IEPR) Safety Assurance Review (SAR) for the Mouse River Enhanced Flood Protection Project, Minot, North Dakota. Reviews will be in general accordance with the Water Resources Development Act (WRDA) 2007 (Public Law 110-114) Section 2035, and the procedures described in USACE, Civil Works Review Policy (Engineer Circular (EC) 1165-2-214, dated 15 December 2012).

IEPR typically assesses the quality of data collection procedures, the robustness of the methods employed, the appropriateness of the methods used, the extent to which the conclusions follow from the analysis, and the strengths and limitations of the overall products.

The IEPR will be conducted by subject matter experts with extensive experience in engineering issues associated with flood risk reduction. The subject matter experts will be charged with responding to specific technical questions as well as providing a broad technical evaluation of the overall project. The review panel shall focus on answering the general questions listed in Appendix B for each phase of the project.

The IEPR panel of experts will not perform a detailed review of calculations but shall assess whether the data, models, and assumptions made to develop the design are adequate. The panel should evaluate whether the interpretations of analysis and conclusions based on data and analysis are reasonable. The review panel is granted the flexibility to bring important issues to the attention of decisions makers, however, the review panelists are instructed to not make a recommendation on whether a particular alternative should be implemented. Panelists may, however, offer their opinions as to whether there are sufficient analyses upon which to base a recommendation. Panelists should avoid findings that become “directives” in that they call for modifications or additional studies or suggest new conclusions or recommendations. The panel team shall be responsible for ensuring that all comments represent the group, be non-attributable to individuals, and where there is lack of consensus, note the non-concurrence and why.

Project Stakeholder representatives may attend panel meetings, but may not participate in the management or control of the group. Stakeholders must refrain from participating in the development of any reports or final work product of the group.

The review may reveal additional documentation that will be required for the IEPR. The IEPR Team will request additional documentation (if necessary).

For review of each specific project phase, it is anticipated that there will be a design review at 60% or greater milestone completion. IEPR teams are not expected to be knowledgeable of Army and administration policies, nor

are they expected to address such concerns. However, an IEPR team should be given the flexibility to bring important issues to the attention of decision makers.

4. References

The following references to USACE regulations shall be followed in conducting the IEPR. The most recent documents shall be used and are available at <http://www.publications.usace.army.mil/> The Project Stakeholders and IEPR Team shall recommend any additional references or criteria not listed for a determination of adding them to the Scope of Work.

General

- EC 1165-2-214, Water Resources Policies and Authorities - Civil Works Review 15 December 2012
- EM 385-1-1, Safety and Health Requirements, 15 September 2008
- ER 1110-1-12, Engineering and Design - Quality Management, 31 March 2011 (change 2)
- ER 1110-2-112, Required Visits to Construction Sites by Design Personnel, 15 April 1992
- ER 1110-2-1150, Engineering and Design - Engineering and Design for Civil Works Projects, 31 August 1999
-
- ER 1180-1-6, Contracts - Construction Quality Management, 30 September 1995
- Water Resources Development Act of 2007, Sections 2034 & 2035, Pub. L. 110-114. Privacy Act, 5 U.S.C. § 522a as amended

Environmental/Planning

- ER 1105-2-100, Guidance for Conducting Civil Works Planning Studies. CECW-P, 28 December 1990
- Council on Environmental Quality. 1978. Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act. 40 CFR Parts 1500-1508. Washington, DC: U.S. Government Printing Office (November 29, 1978).
- ER 200-2-2, Environmental Quality, Procedures for Implementing NEPA. CECWRE (now CECW-A), 4 March 1988.

Engineering Geology

- EM 1110-1-1804, Engineering and Design - Geotechnical Investigations, 01 January 2001
- ER 1110-1-1807, Engineering and Design - Procedures for Drilling in Earth Embankments, 01 March 2006
- EM 1110-1-2908, Engineering and Design - Rock Foundations, 30 November 1994
- EM 1110-2-2901, Engineering and Design - Tunnels and Shafts in Rock, 30 May 1997
- EM 1110-1-1802, Geophysical Exploration for Engineering and Environmental Investigations, 31 August 1995
- ER 1110-2-1806, Engineering and Design - Earthquake Design and Evaluation for Civil Works Projects, 31 July 1995

Geotechnical Engineering

- EM 1110-2-1901, Engineering and Design - Seepage Analysis and Control for Dams, 30 April 1993
- EM 1110-2-1902, Engineering and Design - Slope Stability, 31 October 2003
- EM 1110-2-1913, Engineering and Design - Design and Construction of Levees, 30 April 2000
- EM 1110-2-1914, Engineering and Design: Design, Construction and Maintenance of Relief Wells, 29 May 1992
- EM 1110-2-2300, Engineering and Design - General Design and Construction Considerations For Earth and Rock-Fill Dams, 30 July 2004
- EM 1110-2-2502, Engineering and Design - Retaining and Flood Walls, 29 September 1989
- EM 1110-2-2504, Engineering and Design - Design of Sheet Pile Walls, 31 March 1994
- EM 1110-2-2906, Engineering and Design - Design of Pile Foundations, 15 January 1991
- EM 1110-2-1908, Engineering and Design - Instrumentation of Embankment Dams and Levees, 30 June 1995

- ER 1110-2-103, Engineering and Design - Strong-Motion Instruments for Recording Earthquake Motions on Dams, 10 December 1981
- ER 1110-2-110, Engineering and Design - Instrumentation for Safety Evaluations of Civil Works Projects, 8 July 1985

Materials Engineering

- ER 1110-1-1901, Project Geotechnical and Concrete Materials Completion Report for Major USACE Project, 22 February 1999
- EM 1110-2-1906, Laboratory Soils Testing, 20 August 1986
- ER 1110-2-1911, Engineering and Design - Construction Control for Earth and Rock-Fill Dams, 30 September 1995
- EM 1110-2-2000, Engineering and Design - Standard Practice for Concrete for Civil Works Structures, 31 March 2001
- EM 1110-2-2301, Test Quarries and Test Fills, 30 September 1994
- EM 1110-2-2302, Engineering and Design - Construction with Large Stone, 24 October 1990

Structural Engineering

- EM 1110-2-2002, Evaluation and Repair of Concrete Structures, 30 June 1995
- EM 1110-2-2006, Engineering and Design - Roller-Compacted Concrete, 15 January 2000
- EM 1110-2-2100, Engineering and Design - Stability Analysis of Concrete Structures, 1 December 2005
- EM 1110-2-2102, Waterstops and Other Preformed Joint Materials for Civil Works Structures, 30 September 1995
- EM 1110-2-2104, Engineering and Design - Strength Design for Reinforced-Concrete Hydraulic Structures, 20 August 2003
- EM 1110-2-2105, Engineering and Design - Design of Hydraulic Steel Structures, 31 May 1994
- EM 1110-2-2200, Engineering and Design - Gravity Dam Design, 30 June 1995
- EM 1110-2-2201, Engineering and Design - Arch Dam Design, 31 May 1994
- EM 1110-2-2400, Engineering and Design - Structural Design and Evaluation of Outlet Works, 02 June 2003
- EM 1110-2-2502, Engineering and Design - Retaining and Flood Walls, 29 September 1989
- EM 1110-2-2504, Engineering and Design - Design of Sheet Pile Walls, 31 March 1994
- EM 1110-2-2701, Engineering and Design - Vertical Lift Gates, 30 November 1997
- EM 1110-2-2906, Engineering and Design - Design of Pile Foundations, 15 January 1991
- EM 1110-2-4300, Instrumentation for Concrete Structures, 30 November 1987
- EM 1110-2-6051, Engineering and Design - Time-History Dynamic Analysis of Concrete Hydraulic Structures, 22 December 2003
- EM 1110-2-6053, Engineering and Design - Earthquake Design and Evaluation of Concrete Hydraulic Structures, 01 May 2007
- EM 1110-2-6054, Inspection, Evaluation and Repair of Hydraulic Steel ER 1110-2-100, Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures, 15 February 1995
- ETL 1110-2-584 Hydraulic-Steel-Structures, 30 June 2014
- ETL 1110-2-575 Evaluation-of-I-Walls, 1 September 2011

Hydrologic and Hydraulic Engineering

- EM 1110-2-1602, Engineering and Design - Hydraulic Design of Reservoir Outlet Works, 15 October 1980
- EM 1110-2-1413, Hydrologic Analysis of Interior Areas, 1987.
- EM 1110-2-1603, Engineering and Design - Hydraulic Design of Spillways, 16 January 1990
- EM 1110-2-1619, Risk-Based Analysis for Flood Damage Reduction Studies, 1996
- EM 1110-2-2902, Engineering and Design - Conduits, Culverts, and Pipes, 31 March 1998
- EM 1110-2-3600, Engineering and Design - Management of Water Control Systems, 30 November 1987
- ER 1110-8-2 (FR), Inflow Design Floods for Dams and Reservoirs, 1 March 1991
- ER 1110-2-240, Water Control Management, 8 October 1998
- ER 1130-2-530, Flood Control Operations and Maintenance Policies, 30 October 1996
- ER 1110-2-8156, Preparation of Water Control Manuals, 31 August 1995

- ER 1100-2-8162, Incorporating Sea Level Change in Civil Works Projects, 31 December 2013
- ECB 2014-10, Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs and Projects, 2 May 2014
- ETL 1100-2-1, Procedures to Evaluate Sea Level Change: Impacts, Responses and Adaptations, 30 June 2014

Mechanical and Electrical Engineering

- EM 1110-2-3105, Mechanical and Electrical Design of Pumping Stations, 30 November 1999

Civil Engineering

- UFC 3-201-01 1 June 2013, Civil Engineering

5. Items Available for Review for each project phase (Phase 1, Phases 2&3)

- 60% Basis of Design Report
- 60% Construction Drawings
- 30% USACE review comments
- 90% Basis of Design Report
- 90% Construction Drawings
- 60% USACE Agency Technical Review (ATR) comments (available when completed)

6. Specific Tasks

The IEPR Team, experienced in the assessment, analysis, and evaluation for SAR of projects conducted through their established IEPR process of design, engineering, and construction peer reviews, shall perform general and specific tasks.

The IEPR Team shall perform reviews in accordance with milestones identified in this SOW. The IEPR Team may recommend to the Stakeholders additional or alternate milestones as a result of the review process.

Note that the IEPR is an extension (not a replacement) of an Agency Technical Review (ATR) (formerly Independent Technical Review) performed by USACE according to the requirements outlined in ER 1110-1-12, Engineering and Design Quality Management; however, the intent of the SAR is to complement an ATR and to avoid impacts to program schedules and cost. Where appropriate and reasonable, an ATR and SAR may be performed concurrently and in concert if it enhances the review process. The SAR is a strategic level review and every effort should be made to avoid having the SAR duplicate the ATR.

This task order does not include a review of the phases during construction. That required IEPR task will be accomplished under a separate task order in the future if and when construction begins.

The following tasks shall be performed independent of Stakeholder supervision, direction or control to fulfill independence criteria of an IEPR:

Task 1. Work Plan to Conduct the IEPR: The IEPR Team will prepare a draft and final work plan that provides the process for conducting the IEPR, including screening criteria for peer reviewers, selection of peer reviewers, schedule, charge to peer reviewers (revised as necessary with input from the Stakeholders to include in final IEPR work plan), communications protocols, meetings with Stakeholders quality control procedures, and compilation / documentation / dissemination of peer review comments. The IEPR Team will conduct the IEPR in accordance with this work plan to assure that all services are performed, evaluated, reviewed and provided in a manner that meets professional engineering quality standards. The IEPR Contractor will establish processes to maintain independence and individuality of each expert reviewer's respective discipline, comments, assessments, evaluations, and reports associated with design criteria and project components inherent and related to their respective professional design/engineering and construction discipline to ensure the integrity of the safety assurance review criteria.

This work plan shall include a Communications Plan. All communication to the SRJB and Stakeholders shall go through Dan Jonasson, City of Minot Public Works Director and member of the SRJB with courtesy copies to David Ashley, Chairman of the SRJB.

Also included in this task will be one conference call to discuss the SRJB comments to the draft work plan. If needed, the IEPR Team will coordinate with the SRJB Representative, via conference call, to ask questions about key events in the timeline leading up to the completion of the draft report and supporting documentation.

Task 2. Selection of IEPR Panel: The specified peer review will take the form of a panel of experts, and the members are limited to reviewing and commenting on the work being done by others. The peer review can work concurrent with on-going work, be interactive as needed, and provide real time over the shoulder input. Timely input on the appropriateness of hazard analyses, models and methods of analysis used, and the assumptions made is critical to maintaining project schedules.

The IEPR Team will identify an expert(s) for each discipline and level from the list below to serve on the IEPR panel. The experts will also be referenced as expert reviewers. Selection will be based on availability, technical credentials, and absence of perceived or actual conflict of interest (expert reviewers selected are preferred to fully support all required Type II IEPRs for all relevant project phases in order to ensure consistency for review).

At a minimum, one member is required, but the panel composition shall be a size appropriate for the size and complexity of the project. Composition of the panel can change depending on the need of the particular phase of review.

Selection of expert reviewers for IEPR efforts will adhere to the National Academy of Science (NAS) Policy on Committee Composition and Balance and Conflicts of Interest. Prior to submitting the IEPR panel for approval, the Contractor shall obtain a statement from each of the panel members indicating willingness to participate and the absence of a conflict of interest (COI). The Contractor will be required to submit the NAS COI form for all reviewers with the proposed list of panel members. The following website provides academy guidance for assessing composition and the appropriate forms (also available in Appendix C) for prospective panel members in General Scientific and Technical Studies: <http://www.nationalacademies.org/coi/index.html> . The contractor shall also develop criteria for determining if review panels are properly balanced, as defined by criteria in the contract, both in terms of professional expertise as well as in points of view on the project at hand. If necessary, the contractor shall remove and replace panel members during a review if a conflict arises. All potential reviewers carry professional and personal biases, and it is important that these biases be disclosed when reviewers are considered and selected. The contractor leading the review shall determine which biases, if any, will disqualify prospective reviewers.

The IEPR Team will provide the SRJB and USACE with the final independent external expert reviewer list, including their credentials and NAS forms, for approval. Expert reviewers will be industry leaders in their required field of review stated below and have experience in design and construction of projects similar in scope to the MREFPP. Expert reviewers shall be registered professionals in their discipline in the state of North Dakota. The expert reviewers must also have a college degree in their discipline. A graduate degree in engineering is preferable, but not required except as noted, as hands-on relevant engineering experience in the listed disciplines is more important. Expert reviewers included in the proposal for selection of the base contract shall be submitted first.

The panel members shall not have any financial or litigation association with the SRJB; the Design A/E; their engineering teams, subcontractors or construction contractors. Areas of conflict may include current employment by the Federal or State governments, participation in developing the subject project, a publicly documented statement advocating for or against the subject project, current or future interests in subject project or future benefits from the project, and paid or unpaid participation in litigation against the SRJB or Stakeholders.

The IEPR Team will provide brief biographies and detailed resumes (i.e. long form resumes) for the proposed IEPR panel members with the task order proposal. The detailed resume shall include relevant project experience similar in scale and scope to this project and address the specific expertise described below for each discipline. The IEPR Team shall consist of the following panel members:

1. **Project Manager** shall be a registered professional engineer in North Dakota with a minimum of 15 years project management experience. The Project Manager shall have extensive knowledge of Civil Works projects including design and construction of levees, floodwalls, pump stations, closure gates, and utility modifications similar to the MREFPP. The Project Manager will also have the necessary skills and experience to lead a virtual team through the IEPR process.

2. **Facilitator** shall be a registered professional engineer with experience in facilitating IEPR's for projects similar to the MREFPP.

3. **Hydrology and Hydraulic (H&H) Engineering panel member(s)** shall be a Level 3 reviewer and a registered professional engineer in North Dakota from an Architect-Engineer or consulting firm, a public agency, or academia with a minimum of 20 years of experience in hydraulics and hydrologic engineering, and have a minimum BS degree or higher in engineering. Active participation in related professional engineering and scientific societies is encouraged. The panel member shall have extensive experience in the application of HEC computer modeling programs, risk and uncertainty analysis, interior drainage considerations, hydraulic engineering with an emphasis on flood risk reduction projects, with extensive background in hydraulic theory and practice, and river geomorphology, and have experience sizing pump stations and other interior drainage features.

The H&H panel member(s) should be familiar with USACE application of risk and uncertainty analyses in flood risk management projects. The H&H panel member(s) shall have experience associated with flood risk management projects, and the analysis and design of hydraulic structures such as outlet works, spillways, and stilling basins, channels and levees, diversion channel design, and large river control structures. The H&H panel member(s) must have performed work in hydrologic analysis, floodplain analysis, hydraulic design of channels and levees using various channel and bank protection works, and river sedimentation. The H&H panel member(s) must demonstrate knowledge and experience with physical modeling and the application of data from physical model testing to the design of stilling basins and scour protection, and in the ability to coordinate, interpret, and explain testing results with other engineering disciplines, particularly structural engineers, geotechnical engineers, and geologists. In regard to hydrologic analysis, the H&H panel member(s) must demonstrate knowledge and experience with the routing of inflow hydrographs through flood control reservoirs utilizing multiple discharge devices, including gated sluiceways and gated spillways –and/or- modeling large river systems and possess a thorough understanding of the dynamics of open channel flow systems, floodplain hydraulics, and interior flood control systems. The H&H panel member(s) shall also have a familiarity with standard Corps hydrologic and hydraulic computer models (including but not limited to HEC-1, HEC-HMS, HEC-RAS, FLO-2D, and HEC-DSS) used in drawdown studies, dam break inundation studies, hydrologic modeling and analysis for levee safety investigations. The H&H panel member(s) shall have familiarity with preparing plans and specifications for USACE projects, knowledge of USACE design and construction procedures and policies, and USACE levee safety assurance policy and guidance. The H&H panel member(s) shall have experience in evaluating risk reduction measures for levee safety assurance projects.

4. **Civil Engineering** panel member(s) shall be a Level 3 reviewer and a registered professional civil engineer in North Dakota from an Architect-Engineer or consulting firm, a public agency, or academia with a minimum of 20 years of civil engineering experience and have a minimum BS degree or higher in engineering. Active participation in related professional engineering and scientific societies is encouraged. The Civil Engineering panel member(s) shall have experience in the design, layout, and construction of flood risk management structures including levees, floodwalls, road closure gates, and pump stations within a riverine environment. Experience in associated contracting procedures and total cost growth analysis is desired. The Civil Engineering panel member(s) shall have demonstrated knowledge in a variety of construction-related activities involving site layout, surveying, 3-dimensional modeling, construction techniques, grading, hydraulic structures, erosion control, interior drainage, earthwork, concrete placement, design of access roads, retaining walls design, and relocation of underground utilities. Practical knowledge of construction methods and techniques as it relates to structural portions of projects is required.

5. **Geotechnical Engineering** panel member(s) shall be a Level 3 reviewer and a registered professional engineer in North Dakota from an Architect-Engineer or consulting firm, a public agency, or academia with a minimum of 20 years of experience in the geotechnical design of levees, and foundations for floodwalls, pump stations, and gated structures within a riverine environment, experience in subsurface investigations; field & laboratory testing and the determination of in-situ material properties; soil compaction and earthwork construction; soil mechanics; seepage

and piping; slope stability evaluations; bearing capacity and settlement; dewatering and excavation in an active stream channels, and scour protection design. A minimum MS degree or higher in geotechnical engineering is required. Active participation in related professional societies is encouraged. The Geotechnical panel member(s) should be a recognized expert in levee design and analysis. Geotechnical panel member(s) shall have at least 20 years or more experience in the general field of geotechnical engineering; experience in: subsurface investigations; field & laboratory testing and the determination of in-situ material properties; soil compaction and earthwork construction; soil mechanics; seepage and piping; landslide and slope stability evaluations; bearing capacity and settlement; liquefaction analyses and analysis of earthquake-induced embankment/structural deformation; dewatering and excavation in an active stream channels; design and construction of foundations on alluvial soils; foundation inspection and assessment; foundation grouting and other foundation treatment methods including construction of foundation seepage barriers; the determination and evaluation of dynamic site-specific response spectra analysis and the evaluation of soil-structure interaction; the design, installation and assessment of instrumentation; the design and installation of geosynthetics and geomembranes; erosion protection design; levee and stream bank protection including soil cement, grouted riprap and stone protection, sheet piling, and retaining wall design; drilling and blasting, and underground tunnel design; preparing plans and specifications for USACE projects, and knowledge of USACE design and construction procedures and policies. The Geotechnical panel member(s) shall have knowledge and experience in the forensic investigation of seepage, settlement, stability, and deformation problems associated with embankments constructed on alluvial soils, and other soft ground geological formations. The Geotechnical panel member(s) shall have experience in evaluating risk reduction measures for dam and levee safety assurance projects.

6. Structural Engineering panel member(s) shall be a Level 3 reviewer and a registered professional engineer in North Dakota from an Architect-Engineer or consulting firm, a public agency, or academia with a minimum of 20 years of demonstrated experience, and have a minimum BS degree or higher in engineering on flood risk reduction projects. The Structural Engineering panel member(s) shall have extensive experience in the design and construction of hydraulic structures for large and complex civil works projects including flood walls, road closure gates, and pump stations within a riverine environment. The Structural engineering panel member(s) should be a recognized expert in stability analysis and structural design of flood risk management gate structures, the determination and evaluation of dynamic site-specific response spectra analysis, and the evaluation of soil-structure interaction; and the design and construction of T-wall and L-wall floodwall design. The Structural Engineering panel member(s) should be proficient in performing stability analysis using limit equilibrium analysis; design and construction of deep sheet pile walls; design and installation of pile foundations; and concrete design. The Structural panel member(s) shall have familiarity with preparing plans and specifications for USACE projects, knowledge of USACE design and construction procedures and policies, and USACE dam safety assurance policy and guidance. The Structural panel member(s) shall have experience in evaluating risk reduction measures for dam and/or levee safety assurance projects.

In addition, at least one of the expert reviewers shall have recent and relevant experience on multi-million dollar projects verifying the constructability of the proposed designs and then verifying that these projects were being constructed per the Plans and Specifications.

The panel responsibilities shall include, but not limited to, the following:

- a. Conduct the review for the subject project in a timely manner in accordance with the study and Review Plan schedule;
- b. Follow the “Charge”, but when deemed appropriate by the team lead, request other products relevant to the project and the purpose of the review;
- c. Receive from the SRJB any public written and oral comments provided on the project;
- d. Provide timely written and oral comments throughout the development of the project, as requested;
- e. Assure the review avoids replicating an ATR and focuses on the questions in the “Charge”, but the panel can recommend additional questions for consideration. The SAR panel may recommend to the RMO additional or alternate questions;

- f. Offer any lessons learned to improve the review process;
- g. Submit reports in accordance with the review plan milestones;
- h. The facilitator shall be responsible for insuring that comments represent the group, be non-attributable to individuals, and where there is lack of consensus, note the non-concurrence and why.

Task 3. Peer Review Critical Items List (CIL): The IEPR Team shall prepare an IEPR critical items list that shall include all project components which are critical to the project mission. The criticality of each item shall be evaluated/reviewed and discussed along with possible failure scenarios. Procedures for evaluating/reviewing the critical items in the design; construction; and Operations & Maintenance phases shall be addressed. The onsite staff required for each phase and for each item requiring review shall be discussed. The critical item list will be a final list that should be the best effort given the information available at the start of the IEPR process. As the task progresses, the final list may be modified and the IEPR Team will prepare a revised final list.

Task 4. Orientation Briefing: In coordination with SRJB and Stakeholders, the IEPR Team will participate in an orientation briefing conducted by the SRJB between selected members of the Stakeholders and all of the IEPR Team. The purpose of this first meeting will be to familiarize the IEPR Team members with the project specifics and objectives of the review. This briefing should also provide an opportunity for the IEPR Team to ask clarifying questions of the Stakeholders to assist in the development of final panel comments. Briefing materials will be provided by the SRJB/Stakeholders one (1) week prior to the briefing. The briefing will take place at via conference call for a portion of the panel and via a concurrent site visit for remaining panel members. Selected members of the IEPR team to attend in person are the Project Manager, Facilitator, 1 H&H person, and Civil Engineer.

Task 5. Progress Communications: Monthly e-mail updates of progress and status shall be sent to SRJB Representative by the IEPR PM. The monthly e-mail updates will include progress conducted during the previous month's period, planned progress for the next month, and any problems encountered. Up to two conference call discussions and updates may be required to maintain and convey progress and to collect/exchange critical information by all parties pertinent to the respective subject matter.

Task 6. IEPR of Design Phases:

Design Phases - This task will be performed for the two Project Design Phase packages (Phase 1 package and a combined Phases 2 and 3 package). The design review for each phase package will occur at the 60% or greater (up to 90%) completion of the Design Documentation Report, Plans and Specifications. The design review of each of the two Project Design Phase packages will occur concurrently even if the individual design packages are tracking on different schedules. The SRJB will provide these documents to the IEPR Team electronically for distribution to the peer reviewers.

Processes shall be consistently utilized by the Contractor to maintain independence and individuality of each expert reviewer's respective discipline, comments, assessment, and reports of design/engineering/construction components pertinent to the expert reviewers' respective discipline to ensure the integrity of the safety assurance review criteria. Expert reviewers shall analyze and assess various components identified, but not limited to, as critical items list (further described in appendices) and interrelated components that affect or may affect the critical items list. The IEPR panel shall evaluate/review the Design Phase documents in accordance with the General Charge Guidance (Appendix B) and provide their comments in tabular form to the SRJB.

Task 7. Prepare Project Review Reports: This task will be performed for the Peer Review each of the Project Design Phases packages (Phase 1 package and a combined Phases 2 and 3 package). The IEPR Team will prepare an Interim Project Review Report for each review conducted to include the peer review of the Design Phase (separate reports for reviews of Phase 1 package and a combined Phases 2 and 3 package). The Interim Project Review Reports shall focus on answering the general questions in Appendix B and the review panel shall clearly address these questions in the review report. The Interim Project Review Reports shall be submitted for SRJB and USACE approval within 28 calendar days after closeout of comments. At a minimum, each report will include an introduction, the composition of the review team, a summary of the review during design, any lessons learned, and appendices for conflict of interest disclosure forms, for comments to include any appendices for supporting analyses

and assessments of the adequacy and acceptability of the methods, models, and analyses used. In addition, the reports shall contain appendices to include documentation of the expert reviews performed under Task 6 and all comments. All comments in the report will be finalized by the panel prior to their release to SRJB for each review plan milestone and all comments shall be back-checked and closed by the time the reports are submitted for SRJB approval.

7. Deliverables

The IEPR Team will provide one (1) hard copy and one (1) electronic copy of: the work plan (Task 1), IEPR panel selections (Task 2), IEPR review comments in tabular format (Task 6) and all Review Reports (Task 7) to the SRJB. Electronic submittals shall contain all electronic files on DVD, CD, or other appropriate electronic media. The briefings for the expert reviewers will be furnished in Microsoft PowerPoint or Adobe PDF formats. Reports generated by the IEPR Team will not be released for publication or dissemination without the SRJB Representative's written approval.

See Appendix A for table of Deliverables and Milestones by task.

II. Maximum Compensation and Assumptions ("Service Assumptions") Upon Which Maximum is Based

Client shall pay for Services set forth in Section I as follows:

1. An amount equal to the cumulative hours charged to the Project by each class of personnel times Standard Hourly Rates for each applicable billing class for all services performed on the Project, plus Reimbursable Expenses and subcontractors' charges not to exceed the total maximum compensation of this Task Order.
2. The Standard Hourly Rates charged constitute full and complete compensation for services, including labor costs, overhead and profit; the Standard Hourly Rates do not include Reimbursable Expenses or subcontractors' charges.
3. Standard Hourly Rates and Reimbursable Expenses Schedule are included in our agreement with the SRJB.
4. The total maximum compensation for services described in this Task Order shall not exceed \$303,005.80 without prior written approval. A breakdown of the costs is shown in the table below:

Task No.	Task Title	Cost
1	Work Plan	\$3,140.00
2	Selection of the IEPR Panel	\$2,917.50
3	Peer Review Critical Items List	\$5,580.00
4	Orientation Briefing	\$23,090.00
5	Progress Communications	\$5,460.00
6	IEPR of Design Phases 1, 2, and 3	\$223,807.50
7	Project Review Reports	\$30,910.00
	Travel and other reimbursable expenses	\$8,100.80

5. The Standard Hourly Rates and Reimbursable Expenses Schedule will be adjusted annually as of January 1 to reflect equitable changes in the compensation payable.

III. Schedule and Assumptions upon Which Schedule is Based

The work described herein will be dependent on the timing of submittals from the SRJB and its Contractors. An anticipated schedule and task duration is set forth in Appendix A.

ACCEPTED AND AGREED TO:

HDR Engineering

SOURIS RIVER JOINT BOARD

By: _____

By: _____

Title: _____

Title: _____

Date: _____

Date: _____

APPENDIX A. IEPR Reporting and Milestone Schedule

IEPR Schedule of Deliverables for MREFPP with assumed NTP of January 18, 2016

The schedule will be adjusted based on the actual Notice to Proceed. All dates subject to change.

Revised schedule on February 29, 2016 to reflect interim events and decisions:.

Task #	Deliverable (D) or Milestone (M)	Action/Activity	Responsible Party	Calendar Days after NTP (revised)	Original Due Date	Revised/Adj. Due Date	Completion Date	Comments
0	M	NTP	SRJB		1/18/2016			
1	D	Work Plan (14d after NTP)	HDR	21	2/8/2016		2/10/2016	Draft Delivered on Feb 10, 2016
2	D	Submit List of IEPR Panel w/ NAS COI-Resumes-Bios (7 days after NTP)	HDR	21	2/8/2016		2/10/2016	Delivered on Feb 10, 2016
2	M	Approval of the IEPR Panel (46 days after NTP)	SRJB	46	3/4/2016			
3	D	Peer Review Critical Items List (22 days after Orientation Briefing)	HDR	46	3/4/2016			
4	M	Orientation Briefing	SRJB/HDR	24	2/11/2016		2/11/2016	Completed on Feb 11, 2016
5	M	Progress Communications	HDR	N/A	N/A			
		<i>Design Review Phases 1-3</i>						
6	M	SRJB Delivers Design Pkg (66 days after NTP)	SRJB	66	2/11/2016	3/24/2016		Phase 1 60% and Phases 2-3 90%
6	M	IEPR of Design Pkg Complete (56 days after design provided)	HDR	122	4/7/2016	5/19/2016		
6	D	IEPR Comments submitted to SRJB (7 days after review complete)	HDR	129	4/14/2016	5/26/2016		
6	M	SRJB Evaluates IEPR Comments (14 days after comments submitted)	SRJB	143	4/28/2016	6/9/2016		
6	M	Comment Review Conference Call (7 days after evals)	SRJB/HDR	150	5/3/2016	6/16/2016		
6	D	IEPR Comments Backchecked / Closed (7 days after conf call)	HDR	157	5/8/2016	6/23/2016		
7	D	IEPR Report of Design Pkg (14 days after comments closed)	HDR	175	5/22/2016	7/11/2016		

APPENDIX B. General Charge Guidance

For a Type II - IEPR, the design and construction phases, the review should focus on unique features and changes from the assumptions made and conditions that formed the basis for the concept design. The expert reviewers shall address each of the following evaluation factors for each of the questions in each of the paragraphs below:

- Is the direction of the project appropriate?
- Has SRJB or Stakeholders overlooked any critical items?
- Does the panel have any other observations to add?

A. For the Design Phase Review of the MREFPP, the IEPR should focus on unique features and changes from the assumptions made and conditions that formed the basis for the design. The IEPR shall address the following questions:

1. Are the models used to assess hazards appropriate?
2. Are the assumptions made for hazards appropriate?
3. Is the quality of the surveys, investigations, and engineering for the design in accordance with ER 1110-2-1150 sufficient to support the models and assumptions made for determining the hazards?
4. Does the analysis adequately address the uncertainty given the consequences associated with the potential for loss of life for this type of project?
5. Do the design assumptions made during the decision document phase for hazards remain valid through the completion of design as additional knowledge is gained and the state-of-the-art evolves?
6. Is the design flow profile and other hydraulic profiles necessary for the design of the flood risk reduction project based on appropriate H&H modeling and assumptions, such that there is good confidence in which flood risk reduction evaluations are based off of?
7. Is the design criteria being used and any other design parameter decisions made as part of the design process for these first 3 phases apply well for future phases of design and construction for the flood risk reduction project? Future review panels will need to compare the guidance provided with new phases to future phases of the project.
8. Do the project features adequately address redundancy, resiliency, or robustness with an emphasis on interfaces between structures, materials, members, and project phases?
 - (1) Redundancy. Redundancy is the duplication of critical components of a system with the intention of increasing reliability of the system, usually in the case of a backup or failsafe. The use of multiple lines of defense that are linked to potential failure modes. The most vulnerable failure modes need the greatest redundancy.
 - (2) Resilience. Resiliency is the ability to avoid, minimize, withstand, and recover from the effects of adversity, whether natural or manmade, under all circumstances of use. The use of enhancements to improve the ability of the system to sustain loads greater than the design load to achieve gradual failure modes over some duration rather than sudden failure modes.
 - (3) Robustness. Robustness is the ability of a system to continue to operate correctly across a wide range of operational conditions (the wider the range of conditions, the more robust the system), with minimal damage, alteration, or loss of functionality, and to fail gracefully outside of that range. The use of more conservative assumptions to increase capacity to compensate for greater degrees of uncertainty and risk.

9. Was adequate consideration given to the construction sequencing of features and/or components and do the project features and/or components effectively work as a system?

National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

**BACKGROUND INFORMATION
AND
CONFIDENTIAL CONFLICT OF INTEREST DISCLOSURE**
For General Scientific and Technical Studies and Assistance

NAME: _____ TELEPHONE: _____

ADDRESS: _____

EMAIL ADDRESS: _____

CURRENT EMPLOYER: _____

NAS/NAE/IOM/NRC COMMITTEE: _____

There are two parts to this form, Part I Background Information, and Part II Confidential Conflict of Interest Disclosure. Complete both parts, **sign** and **date** this form on the last page, and return the form to the responsible staff officer for *The National Academies* project and committee activity to which this form applies. **Retain a copy for your records.**

PART I BACKGROUND INFORMATION

INSTRUCTIONS

Please provide the information requested below regarding **relevant** organizational affiliations, government service, public statements and positions, research support, and additional information (if any). Information is "relevant" if it is related to -- and might reasonably be of interest to others concerning -- your knowledge, experience, and personal perspectives regarding the subject matter and issues to be addressed by the committee activity for which this form is being prepared. If some or all of the requested information is contained in your curriculum vitae, you may if you prefer simply attach your CV to this form, supplemented by additional responses or comments below as necessary.

I. ORGANIZATIONAL AFFILIATIONS. Report your relevant business relationships (as an employee, owner, officer, director, consultant, etc.) and your relevant remunerated or volunteer non-business relationships (e.g., professional organizations, trade associations, public interest or civic groups, etc.).

II. GOVERNMENT SERVICE. Report your relevant service (full-time or part-time) with federal, state, or local government in the United States (including elected or appointed positions, employment, advisory board memberships, military service, etc.).

III. RESEARCH SUPPORT. Report relevant information regarding both public and private sources of research support (other than your present employer), including sources of funding, equipment, facilities, etc.

IV. PUBLIC STATEMENTS AND POSITIONS. List your relevant articles, testimony, speeches, etc., by date, title, and publication (if any) in which they appeared, or provide relevant representative examples if numerous. Provide a brief description of relevant positions of any organizations or groups with which you are closely identified or associated.

V. ADDITIONAL INFORMATION. If there are relevant aspects of your background or present circumstances not addressed above that might reasonably be construed by others as affecting your judgment in matters within the assigned task of the committee or panel on which you have been invited to serve, and therefore might constitute an actual or potential source of bias, please describe them briefly.

PART II CONFIDENTIAL CONFLICT OF INTEREST DISCLOSURE

INSTRUCTIONS

It is essential that the work of committees of the institution used in the development of reports not be compromised by any significant conflict of interest. For this purpose, **the term "conflict of interest" means any financial or other interest which conflicts with the service of the individual because it (1) could significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization.** Except for those situations in which the institution determines that a conflict of interest is unavoidable and promptly and publicly discloses the conflict of interest, no individual can be appointed to serve (or continue to serve) on a committee of the institution used in the development of reports if the individual has a conflict of interest that is relevant to the functions to be performed.

The term "conflict of interest" means something more than individual bias. There must be an *interest*, ordinarily financial, that could be directly affected by the work of the committee.

Conflict of interest requirements are *objective* and *prophylactic*. They are not an assessment of one's actual behavior or character, one's ability to act objectively despite the conflicting interest, or one's relative insensitivity to particular dollar amounts of specific assets because of one's personal wealth. Conflict of interest requirements are objective standards designed to eliminate certain specific, potentially compromising situations from arising, and thereby to protect the individual, the other members of the committee, the institution, and the public interest. The individual, the committee, and the institution should not be placed in a situation where others could reasonably question, and perhaps discount or dismiss, the work of the committee simply because of the existence of conflicting interests.

The term "conflict of interest" applies only to *current interests*. It does not apply to past interests that have expired, no longer exist, and cannot reasonably affect current behavior. Nor does it apply to possible interests that may arise in the future but do not currently exist, because such future interests are inherently speculative and uncertain. For example, a pending formal or informal application for a particular job is a current interest, but the mere possibility that one might apply for such a job in the future is not a current interest.

The term "conflict of interest" applies not only to the personal interests of the individual but also to the *interests of others* with whom the individual has substantial common financial interests if these interests are relevant to the functions to be performed. Thus, in assessing an individual's potential conflicts of interest, consideration must be given not only to the interests of the individual but also to the interests of the individual's spouse and minor children, the individual's employer, the individual's business partners, and others with whom the individual has substantial common financial interests. Consideration must also be given to the interests of those for whom one is acting in a fiduciary or similar capacity (e.g., being an officer or director of a corporation, whether profit or nonprofit, or serving as a trustee).

Much of the work of this institution involves scientific and technical studies and assistance for sponsors across a broad range of activities. Such activities may include, for example: defining research needs, priorities, opportunities and agendas; assessing technology development issues and opportunities; addressing questions of human health promotion and assessment; providing scientific and technical assistance and supporting services for government agency program development; assessing the state of scientific or technical knowledge on particular subjects and in particular fields; providing international and foreign country science and technology assessments, studies and assistance. Such activities frequently address scientific, technical, and policy issues that are sufficiently broad in scope that they do not implicate specific financial interests or conflict of interest concerns.

However, where such activities address more specific issues having significant financial implications -- e.g., funding telescope A versus telescope B, government development or evaluation of a specific proprietary technology, promotion or endorsement of a specific form of medical treatment or medical device, connecting foreign research facilities to specific commercial interests, making recommendations to sponsors regarding specific contract or grant awards, etc. -- careful consideration must be given to possible conflict of interest issues with respect to the appointment of members of committees that will be used by the institution in the development of reports to be provided by the institution to sponsoring agencies.

The overriding objective of the conflict of interest inquiry in each case is to identify whether there are interests – primarily financial in nature – that conflict with the committee service of the individual because they could impair the individual's objectivity or could create an unfair competitive advantage for any person or organization. The fundamental question in each case is does the individual, or others with whom the individual has substantial common financial interests, have identifiable interests that could be directly affected by the outcome of the project activities of the committee on which the individual has been invited to serve? For projects involving advice regarding awards of contracts, grants, fellowships, etc., this institution is also guided by the principle that an individual should not participate in any decision regarding the award of a contract or grant or any other substantial economic benefit to the individual or to others with whom the individual has substantial common financial interests or a substantial personal or professional relationship.

The application of these concepts to specific scientific and technical studies and assistance projects must necessarily be addressed in each case on the basis of the particular facts and circumstances involved. The questions set forth below are designed to elicit information from you concerning possible conflicts of interest that are relevant to the functions to be performed by the particular committee on which you have been invited to serve.

1. FINANCIAL INTERESTS. (a) Taking into account stocks, bonds, and other financial instruments and investments including partnerships (but excluding broadly diversified mutual funds and any investment or financial interests valued at less than \$10,000), do you or, to the best of your knowledge others with whom you have substantial common financial interests, have financial investments that could be affected, either directly or by a direct effect on the business enterprise or activities underlying the investments, by the outcome of the project activities of the committee on which you have been invited to serve?

(b) Taking into account real estate and other tangible property interests, as well as intellectual property (patents, copyrights, etc.) interests, do you or, to the best of your knowledge others with whom you have substantial common financial interests, have property interests that could be directly affected by the outcome of the project activities of the committee on which you have been invited to serve?

(c) Could your employment or self-employment (or the employment or self-employment of your spouse), or the financial interests of your employer or clients (or the financial interests of your spouse's employer or clients) be directly affected by the outcome of the project activities of the committee on which you have been invited to serve?

(d) Taking into account research funding and other research support (e.g., equipment, facilities, industry partnerships, research assistants and other research personnel, etc.), could your current research funding and support (or that of your close research colleagues and collaborators) be directly affected by the outcome of the project activities of the committee on which you have been invited to serve?

(e) Could your service on the committee on which you have been invited to serve create a specific financial or commercial competitive advantage for you or others with whom you have substantial common financial interests?

If the answer to all of the above questions under FINANCIAL INTERESTS is either "no" or "not applicable," check here _____ (NO).

If the answer to any of the above questions under FINANCIAL INTERESTS is "yes," check here _____ (YES), and briefly describe the circumstances on the last page of this form.

2. OTHER INTERESTS. (a) Is the central purpose of the project for which this disclosure form is being prepared a critical review and evaluation of your own work or that of your employer?

(b) Do you have any existing professional obligations (e.g., as an officer of a scientific or engineering society) that effectively require you to publicly defend a previously established position on an issue that is relevant to the functions to be performed in this committee activity?

(c) To the best of your knowledge, will your participation in this committee activity enable you to obtain access to a competitor's or potential competitor's confidential proprietary information?

(d) If you are or have ever been a U.S. Government employee (either civilian or military), to the best of your knowledge are there any federal conflict of interest restrictions that may be applicable to your service in connection with this committee activity?

(e) If you are a U.S. Government employee, are you currently employed by a federal agency that is sponsoring this project? If you are not a U.S. Government employee, are you an employee of any other sponsor (e.g., a private foundation) of this project?

(f) If the committee activity for which this form is being prepared involves reviews of specific applications and proposals for contract, grant, fellowship, etc. awards to be made by sponsors, do you or others with whom you have substantial common financial interests, or a familial or substantial professional relationship, have an interest in receiving or being considered for awards that are currently the subject of the review being conducted by this committee?

(g) If the committee activity for which this form is being prepared involves developing requests for proposals, work statements, and/or specifications, etc., are you interested in seeking an award under the program for which the committee on which you have been invited to serve is developing the request for proposals, work statement, and/or specifications -- or, are you employed in any capacity by, or do you have a financial interest in or other economic relationship with, any person or organization that to the best of your knowledge is interested in seeking an award under this program?

If the answer to all of the above questions under OTHER INTERESTS is either "no" or "not applicable," check here _____ (NO).

If the answer to any of the above questions under OTHER INTERESTS is "yes," check here _____ (YES), and briefly describe the circumstances on the last page of this form.

EXPLANATION OF "YES" RESPONSES:

During your period of service in connection with the activity for which this form is being completed, any changes in the information reported, or any new information, which needs to be reported, should be reported promptly by written or electronic communication to the responsible staff officer.

YOUR SIGNATURE

DATE

Reviewed by: _____
Executive Director

Date

APPENDIX C

Requestor Quality Assurance/Quality Control Plan

Quality Assurance and Quality Control Plan

Mouse River Enhanced Flood Protection Project Phases 2 & 3 Design and Permitting

Client: Souris River Joint Board

***Version 1.0
January 28, 2015***

Quality Assurance and Quality Control Plan

Mouse River Enhanced Flood Protection Project Phases 2 & 3 Design & Permitting

Client: Souris River Joint Board

***Version 1.0
January 28, 2015***



234 West Century Avenue
Bismarck, ND 58503
Phone: (701) 255-5460
Fax: (701) 222-6371

**Quality Assurance and Quality Control Plan
Mouse River Enhanced Flood Protection Project
Phases 2 & 3 Design and Permitting**

**Version 1.0
January 28, 2015**

This Quality Assurance and Quality Control Plan has been reviewed and approved by the following project team members:

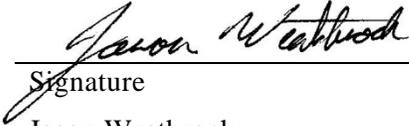
Principal in Charge	 _____ Signature	<u>01/28/15</u> Date
	Jason Westbrook Vice President Barr Engineering Company	
Project Manager	 _____ Signature	<u>01/28/15</u> Date
	Scott Sobiech Vice President Barr Engineering Company	
Quality Management Representative	 _____ Signature	<u>01/28/15</u> Date
	Miguel Wong Senior Water Resources Engineer Barr Engineering Company	

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Executive Summary

This Quality Assurance/Quality Control Plan (QA/QC Plan, or Plan) contains the quality requirements for work conducted as part of the Mouse River Enhanced Flood Protection project, Phases 2 & 3 Design and Permitting (Project).

This QA/QC Plan addresses specific elements of the Project quality system in the following sections:

- **Quality Approach and Philosophy** – Defines quality expectations.
- **Plan Limitations and Review** – Defines what is included in this Plan. This section also contains the process for reviewing and updating the Plan.
- **Project Team Structure** – Describes responsibility and authority for the Project staff, including project quality management. This section also discusses the relationship with the consulting partners and expectations for Project quality management.
- **Regulatory Framework – Project Requirements** – Describes the various regulatory programs and technical standards and protocols that define Project requirements.
- **Stakeholder Inputs** – Establishes the process for identifying stakeholder inputs that direct and impact Project execution.
- **Quality Assurance and Quality Control** – Describes processes for quality assurance planning, and quality control execution.

This QA/QC Plan includes steps for planning, reviewing, verifying and validating Project quality.

Quality assurance will be led by the Project Management Team and Quality Management

Representative, who will identify the Project tasks that need QC review, the level of review, associated responsibilities, and the tracking of QC completion. It is worthwhile indicating here that detailed review of all deliverables to the Client will be by the Project Management Team, not by the QA/QC Review Team. Furthermore, the general approach will be “**one doer rep**” **working with “one reviewer”** to reduce the chance of conflicting directions about the path forward.

Quality control review will be accomplished via the following three levels:

- **Peer** review will be conducted by Project technical staff. Peer review will be used for a check of data, calculations, report text, estimates, etc. Peer reviews will be the deepest and most thorough reviews.
- **Task Lead** review will typically be conducted by Task Leads or someone designated by them. Task Lead review will include work products that have previously gone through Peer review. Task Lead review will be prompted by task and/or deliverable and will be used to review important Project components and/or “big ticket” tasks. Depending on the findings at this level of review, additional detailed scrutiny (on top of the Peer reviews already completed) may be recommended and implemented.
- **QA/QC Review Team** review will be conducted by the Senior Reviewer assigned to the relevant task. This level of review may or may not include work products that have previously gone through Peer review and Task Lead review. The purpose of this review will

be primarily to offer advice on the big picture (methodology, assumptions, implications, etc.), hence it is not necessarily tied to deliverables. However, early input (at the beginning of the task, when the approach is being defined) as well as at critical milestones (e.g., when key decisions have been made, or when draft results and main findings are available) will be encouraged.

QC review forms will be available for each level of review and will provide pertinent assumptions and background information to the individual or team conducting the QC review.

Reviews will be coordinated through **frequent communication between the “doers” and the “reviewers”**, so **expectations are made clear and both groups are informed about the way in which comments and suggestions from the reviewers were incorporated (or not) in the deliverables**. The QMR and Project Management Team will be copied in these communications and invited (as optional attendees) to review coordination meetings.

The Project quality assurance system includes both routine inspection and checks of data and design, and Project quality reviews at regular intervals. Consulting partners’ performance and compliance with this QA/QC Plan will be monitored and reviewed. **Quality issues will be addressed as they are discovered.**

1.0 Quality Approach and Philosophy

The objective of this QA/QC Plan is to establish processes and systems for use by the Project team to plan and execute work that consistently meets the quality expectations of the Souris River Joint Board (Client) first, and other stakeholders (especially the City of Minot, the North Dakota State Water Commission, and the U.S. Army Corps of Engineers) when appropriate. Quality expectations are defined as:

- Deliverables that satisfy defined Project scope and effectively communicate their intended meaning.
- Technical work that is free from significant errors and meets the requirements of the defined standards and guidelines.
- Project work that is completed in an efficient manner and meets schedule commitments.
- Project work that is completed within the approved budget per the original contract, or within budget adjustments made for out-of-scope work.

Barr Engineering's (Barr) commitment to quality management includes identifying key Project management and leadership roles, defining these roles in the quality process, and following documented requirements for producing quality deliverables. **Every Project team member, including staff from our consulting partners, has a role in and responsibility for Project quality.**

Every Project team member, including staff from our consulting partners, has a role in and responsibility for Project quality.

Our quality management goal is to provide a product that meets the Souris River Joint Board's requirements (as documented in the Contract for Engineering Services and Work Orders for the Project) as well as established and applicable requirements and guidelines from the U.S. Army Corps of Engineers (USACE), Federal Emergency Management Agency (FEMA), North Dakota Department of Transportation (NDDOT), other applicable federal and state agencies, and industry standards based on regulatory requirements and technical applicability. Quality management system elements will be developed with the end in mind so that the value of these elements is consistent with the end product.

Quality management systems should not be unduly burdensome, but may require additional steps or systems that staff may not be used to. **This QA/QC Plan represents an "investment" in quality that will pay dividends by reducing mistakes and re-work that have a cost in time and dollars, and may impact our reputation.** Specific quality management system elements are further described in the remaining sections of this QA/QC Plan.

2.0 Plan Limitations and Review

This QA/QC Plan is focused on establishing quality systems for technical work and Project deliverables. It is not a Project management plan; therefore, it does not address staffing, management, or budget systems. It is also not a safety plan.

While all Project staff has a role in implementing portions of this QA/QC Plan, the Quality Management Representative (QMR) is responsible for overseeing the day-to-day implementation of this QA/QC Plan (refer to Section 3.2.3.2). The Principal in Charge will provide support to the QMR. The QMR will review the Plan periodically throughout the implementation phase of the Project. Project team members may direct suggestions for QA/QC Plan improvement or change in scope to the QMR. The QA/QC Plan may be updated on an as-needed basis to ensure that Project planning and execution consistently meets quality expectations. It may also be augmented to accommodate changes in Project scope and/or deliverables.

3.0 Project Team Structure

Team structure is built to facilitate teamwork and cooperation, and to provide a framework for coordination, reviews, communication, and completing the work.

3.1 Project Team

The Project team is comprised of experienced staff with regional experience in flood risk reduction planning, design, public interaction, flood recovery, environmental review, and permitting. Our team includes Barr Engineering, Ackerman-Estvold, and Moore Engineering. Barr will lead the overall effort from Barr's Bismarck office, with local presence from Ackerman-Estvold's Minot office.

- **Barr Engineering** is the prime consultant, and will provide Project management, leadership for engineering, environmental and permitting work, and support for community involvement. Each consulting partner has a primary Barr point of contact (Barr POC) and a primary point of contact (POC) within their organization. Each consulting partner also has a mutually agreed upon scope, schedule, and budget within a subcontract agreement with Barr. The following consulting partners will work under the direction of Barr.
- **Ackerman-Estvold** is a civil engineering firm in Minot with in-depth experience and knowledge of the Mouse River communities affected by the 2011 flood. Ackerman-Estvold's role will be local coordination, SWIF development, survey and coordination of site investigations, property research and legal descriptions of property to be acquired (if needed), public communications lead, and design of public infrastructure elements. The Barr POC is Jason Westbrook and the Ackerman-Estvold POC is Ryan Ackerman.
- **Moore Engineering** is a civil engineering, surveying, and water resources engineering firm in West Fargo. Moore Engineering's role will be to provide support for hydraulic modeling. The Barr POC is Scott Sobiech and the Moore Engineering POC is Stuart Dobberpuhl.

Informal communication lines will be encouraged between Barr and consulting partner staff; however, all formal direction and communication will be between the Barr POC and the consulting partner POC. The consulting partner POCs will be responsible for ensuring the quality of Project deliverables produced by their staff. The Barr POCs will fill the role of Task Lead for their respective consulting partner (refer to Section 3.2.1.3).

3.2 Responsibility and Authority

Barr has established expectations for the Project team that include commitment, professionalism, technical correctness, records management, deliverable quality, communication, and organization. The following sections describe the responsibilities and authorities for Project staffing implementing this QA/QC Plan.

3.2.1 Project Management Team

The Project Management Team consists of the Principal in Charge (Jason Westbrook), the Project Manager (Scott Sobiech) and the Ackerman-Estvold POC (Ryan Ackerman). The Project Management Team is supported by the Task Leads and the QMR. The Project Management Team works to review work products and see that the QA/QC Plan and quality systems are being appropriately and effectively implemented.

- The **Principal in Charge** holds overall responsibility for holding the Project team accountable for Project quality, be the primary point of contact with the Client, and also be the primary face and voice of the Project team to the stakeholders and public.
- The **Project Manager** provides primary direction to the Task Leads, technical staff and support staff.
- The **Task Leads** provide technical direction to technical and support staff and quality assurance reviews at the task level.
- The **Quality Management Representative (QMR)** is responsible for oversight over the day-to-day implementation of this QA/QC Plan.

Barr has established expectations for the (entire) Project team that include commitment, professionalism, technical correctness, records management, deliverable quality, communication, and organization.

The following sections describe in more detail the QA/QC responsibility and authority of the Principal in Charge, and the Project Manager.

The responsibility and authority for the Task Leads are described in Section 3.2.1.3. The responsibility and authority of the QMR (and of the QA/QC Review Team) are described in Section 0.

3.2.1.1 Principal in Charge — Jason Westbrook

The Principal in Charge is responsible for overseeing and reviewing the development and execution of the overall contract. The Principal in Charge is the Client's primary contact with the Project team. The Principal in Charge has overall responsibility for all work under this contract.

The Principal in Charge has the following responsibilities:

- Oversees contract negotiations and development with Client, including overall contract terms and review of negotiations of Project scope, schedule, and budgets; signs Client contracts.
- Reviews and approves all subcontractor and Client invoices.
- Routinely monitors Client satisfaction for work.
- Resolves significant contractual or quality issues or disputes between Barr and the Client.

- Oversees consulting partners plan negotiations and development, including scope, schedule, and budget, approves consulting partners and subcontractors, reviews and signs subcontract agreements.
- Recruits adequate resources for Project team.
- Oversees management, administration, and technical aspects of work products.
- Provides strategy direction for Project development.
- Notifies Client of necessary scope, schedule, or budget modifications.

The Principal in Charge has authority to:

- Represent Barr in contract matters.
- Communicate directly with the Client.
- Direct the Project team and QA/QC Review Team.

3.2.1.2 Project Manager — Scott Sobiech

The Project Manager will closely track the Project scope, schedule, and budget progress. The Project Manager is responsible for Project direction. The Project Manager is responsible for maintaining Project staff communications, developing Project staffing, and defining and obtaining Project resources. The Project Manager will also serve as the Engineering Lead, and as such will provide technical leadership, including direction of Task Leads, technical staff and support services.

The Project Manager has the following responsibilities:

- Has direct involvement in day-to-day administration, budgeting, budget tracking and performance, team coordination, scheduling, and other managerial tasks.
- Identifies resources necessary for completion of the Project work.
- Matches Project scope needs with staff skills and experience.
- Develops and maintains Project team communication and morale.
- Provides overall direction of different aspects of the Project development, including lead and direction on Project technical work.
- Has primary responsibility for Project scope, budget and schedule compliance.
- Maintains regular communication with Principal in Charge on scope, schedule, and budget.
- Coordinates activities with other Project lead staff, in particular Task Leads.
- Reviews subcontractor and Client invoices.
- Identifies out-of-scope work and directs staff to align work with scope.
- Notifies Principal in Charge of necessary scope, schedule, or budget modifications.
- Follows quality system procedures.

The Project Manager has authority to:

- Direct Project staff, consulting partners and subcontractors on Project matters.
- Make technical decisions related to Project work.
- Direct Task Leads, technical staff and support staff.
- Notify Principal in Charge of quality issues.

3.2.1.3 Task Leads

Task Leads work together with the Project Manager to lead major Project tasks, coordinate work between tasks, monitor progress and continuity of tasks, and maintain general team communication.

Task Leads get their direction from the Project Manager. Task Leads oversee the implementation of quality system and quality review procedures, and provide their own quality review of technical work as well as coordinate reviews across tasks. The Task Leads are expected to assume most of the workload for Task Lead reviews. The following Task Leads have been identified for this Project:

- Task Lead for **Environmental Review (NEPA)** will be Randy Duncan.
- Task Lead for **Systemwide Improvement Framework** will be Abbi Dorn.
- Task Lead for **Hydrology and Hydraulics** will be Joe Waln.
- Task Lead for **Interior Drainage Existing Conditions Modeling** will be Brandon Barnes.
- Task Lead for **Permitting and Mitigation Planning** will be Randy Duncan.
- Task Lead for **33 USC 408 Approval Process** will be Scott Sobiech.
- Task Lead for **Project Design Guidelines** will be Adèle Braun.
- Task Leads for the subtasks (or disciplines) included in **Project Design** will be:
 - For **Geotechnical** will be Bill Kussmann.
 - For **Civil** will be Mark Kretschmer.
 - For **Interior Drainage With-Project** will be Brandon Barnes.
 - For **Electrical** will be Mark Ziemer.
 - For **Mechanical** will be Anne Phares.
 - For **Structural** will be Mustafa Igdelioglu.
 - For **Recreational** will be Brad Lindaman.
 - For **Cost Estimation** will be Matt Metzger.

Task Leads have the following responsibilities:

- Lead and direct Project technical work within the scope of their task assignment.
- Manage work efforts to see that work is completed within schedule and budget, is technically correct, and meets the Project scope of work.
- Coordinate activities with other Task Leads.
- Identify out-of-scope work and provide direction to staff to align work with scope and notify Project Manager of necessary scope modification.
- Verify that all technical work has been checked by Peer Review and provide Task Lead reviews.
- Verify that critical technical work and all deliverables to Client have received an independent review by the QA/QC Review Team.
- Meet schedule and budget commitments to Project Manager, and other technical staff.
- Provide monthly progress reports for invoicing.
- Review timesheet comments on a weekly basis to make sure time is appropriately charged.
- Identify resources needed to complete project within scope, schedule, and budget.
- Complete monthly workload projections.
- Follow quality system procedures.

Task Leads have authority to:

- Make technical decisions related to Project work.
- Direct technical and support staff.
- Notify Project Manager of quality issues.

3.2.2 Other Project Staff

3.2.2.1 Technical Staff

Technical staff completes Project tasks under the direction of the Task Leads. Technical staff will have prior experience or training in the general areas of the work expected of them or in closely related areas of work.

Technical staff has the following responsibilities:

- Manage work for completion of technical aspects of Project work.
- Use sound engineering judgment and generally accepted procedures.
- Document assumptions, source data, calculations, etc.
- Check all or their work for technical correctness and completeness.
- Obtain Peer Review of all work.
- Meet schedule and budget commitments to Task Lead.
- Notify Task Lead of technical and administrative issues.
- Follow quality system procedures.

Technical staff has authority to:

- Direct support staff for completion of related tasks.
- Notify the Task Lead of quality issues.

3.2.2.2 Support Services

Support services will provide services to the technical and Project Management Team. These services include word processing, drafting, CADD, GIS, surveying, field investigations, sampling, and data processing.

Support services have the following responsibilities:

- Complete assigned tasks.
- Check all work for completeness and correctness.
- Obtain Peer Review of all work.
- Meet schedule commitments.
- Notify Task Lead or Project Manager of issues.
- Follow quality system procedures.

Support services team members have authority to:

- Identify work products that do not meet Project scope of work or quality requirements.

- Correct work products that do not meet Project scope of work or quality requirements.
- Notify the appropriate technical staff of quality issues.

3.2.3 QA/QC Preparation and Review Teams

3.2.3.1 QA/QC Review Team

The QA/QC Review Team is responsible for providing high level, early review as identified during Quality Assurance planning (refer to Section 6.1), with the general expectation that the purpose of such review will be primarily to offer advice on the big picture (does the deliverable adequately explain the objectives of the job, how has been approached, what are the main findings, and what are the potential larger implications?) rather than detailed scrutiny of deliverables. As outlined in Section 6.2, Project Quality Control, **three levels of review will be implemented for the Project: Peer Review, Task Lead Review, and when warranted, review by the QA/QC Review Team.**

The QA/QC Review Team includes the following members:

- Miguel Wong (QMR)
- Senior Reviewer for **Environmental Review (NEPA)** will be Jeff Lee.
- Senior Reviewer for **Systemwide Improvement Framework** will be Nathan Campeau.
- Senior Reviewer for **Hydrology and Hydraulics** will be Art Kalmes.
- Senior Reviewer for **Interior Drainage Existing Conditions Modeling** will be Omid Mohseni
- Senior Reviewer for **Permitting and Mitigation Planning** will be Jeff Lee.
- Senior Reviewer for **33 USC 408 Approval Process** will be Jeff Lee.
- Senior Reviewer for **Project Design Guidelines** will be Bill Forsmark.
- Senior Reviewers for the subtasks (or disciplines) included in **Project Design and Permitting** will be:
 - For **Geotechnical** will be Aaron Grosser.
 - For **Civil** will be Art Kalmes.
 - For **Interior Drainage With-Project** will be Brian LeMon.
 - For **Electrical** will be Sheldon Sorensen.
 - For **Mechanical** will be Brian LeMon.
 - For **Structural** will be Tor Hansen.
 - For **Recreational** will be Garret Gill
 - For **Cost Estimation** will be Al Gebhard.

The QAQC Review Team will primarily offer advice on the big picture ... rather than focusing on detailed scrutiny of deliverables.

Other QA/QC Review Team members may be added for specific relevant aspects of the work as determined by the QMR.

3.2.3.2 Quality Management Representative – Miguel Wong

The Quality Management Representative (QMR) is an independent staff member familiar with quality management. The role of the QMR is to oversee quality assurance planning for Project tasks, act as a consultant for quality matters during the execution of work, lead an independent review of critical technical work and all deliverables to Client by the QA/QC Review Team, and lead the process to see that the work meets Project scope and quality standards. The QMR works in conjunction with the Project Management Team to review the execution of the QA/QC Plan, and ensures that independent reviews are completed prior to Client submittals.

The QMR has the following responsibilities:

- Oversees development of the QA/QC Plan.
- Oversees Project review of deliverables for completeness, scope of work, and schedule compliance.
- Ensures that Peer Reviews and Task Lead Reviews are completed as required.
- Convenes regular quality review meetings to facilitate Project review by QA/QC Review Team prior to Client submittals.
- Maintains records of quality review meetings.
- Inform the Principal in Charge and Project Manager of quality practices and quality concerns.

The QMR has authority to:

- Advise the Project Manager and Task Leads on quality issues.

4.0 Regulatory Framework – Project Requirements

The Client's ultimate objective is a project to reduce the risk of flooding in the Project area from a flood of the magnitude of the 2011 Mouse River flood. The Project must reduce the risk of flood damage, but also must be acceptable to the stakeholders.

The first stage of work (Part 1) focused on development of a preliminary alignment for flood risk reduction for the Mouse River between Burlington and Velva and for Mouse River Park. These communities represent the most populated areas along the river. The second stage of work (Part 2) was focused on the evaluation of potential flood risk reduction for rural areas. This current stage of work is focused on the design of levees in west Minot and associated permitting and environmental compliance documentation.

4.1 Regulatory

A variety of federal and state regulatory programs will directly or indirectly impact the Project. The requirements of the identified regulatory agencies will dictate the standards and procedures necessary for this Project.

This section of the QA/QC Plan does not identify a comprehensive list of regulatory issues or criteria that will affect the Project. However, it sets the stage for identification and implementation of regulatory programs that will need to be considered or implemented.

In order to qualify for the FEMA national flood insurance program, it will be necessary to get FEMA certification for the Project. If the Project will be enrolled as a federal flood risk reduction project, it will need to be reviewed and accepted by the USACE. The Project will be subject to Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. 408, referred to as Section 408), which regulates the alteration of Federal project levees. In addition, Section 404 of the Clean Water Act (33 U.S.C. 1344) that establishes a program to regulate the discharge of dredged or fill material into waters of the United States will apply to the Project as well. As such, the Project will require an Environmental document (EA or EIS) that adheres to the National Environmental Policy Act (NEPA), as directed by the U.S. Environmental Protection Agency (EPA).

In order to proceed with construction, it will also be necessary to obtain local, state and federal permits.

4.2 Technical Standards / Specifications

During the course of Project execution, additional requirements may be identified for work. These requirements may be referenced in technical standards, test methods, industry guidelines or other protocols (e.g., ASTM). In the event that technical standards or other specifications are applicable to the work, they will be referenced in Section 4.2 in future updates to this QA/QC Plan.

5.0 Stakeholder Inputs

The Souris River Joint Board is the Client for this Project, and is the only party with the authority to direct the Project team. However, there are a variety of other stakeholders who will be affected by the Project, and/or who will have influence on the Project work and decisions.

Stakeholder input will be offered through a steering committee, stakeholder meetings, and public meetings. Where stakeholder input is at odds with the established Project scope, the Project Management Team will work with the Client to get clarification on Project direction.

6.0 Project Quality Assurance and Quality Control

Quality Assurance is the application of planned, systemic quality activities that is focused on the processes needed to achieve a quality Project. Quality Assurance directs the “big picture” and encompasses all of the activities the Project team must complete to meet the Project objectives. Quality Assurance defines the standards, policies, procedures and guidance to be followed in order to meet the Client’s requirements (as well as Barr’s requirements and the Professional Standard of Care). As a result, quality assurance activities may vary from project to project.

Quality Control is focused on the outcomes from specific Project tasks. It ensures that the defined standards for specific tasks within a project are consistently followed step-by-step. Quality Control typically involves the testing and/or checking of products and/or services.

6.1 Project Quality Assurance

The scope of work and work breakdown included in the Contract for Engineering Services and Work Orders for the Project will guide Project assurance planning by identifying the various Project tasks and subtasks that require quality assurance activities.

The Project Management Team and QMR will review and evaluate pertinent information related to Project quality at regular intervals. These quality assurance reviews will typically take place on a monthly basis, or more frequently as needed. The following information will be evaluated to identify any trends or quality system problems:

- 1) Scope and schedule.
- 2) Report from the QMR regarding overall quality performance.
- 3) Consulting partner performance/compliance with requirements.
- 4) Resource availability.

Appropriate follow-up actions will be defined for identified issues and may include one or more of the following:

- 1) Reassigning staff.
- 2) Rework of Project.
- 3) Changing processes.

Records resulting from Quality Assurance Review meetings will be retained in the Project files.

6.2 Project Quality Control

As noted previously, quality control ensures that the defined standards for specific tasks within a project are consistently followed. Where applicable, it includes quality control checks of data, computations, drawings, report text, design verification and validation, materials received, and deliverables.

Project quality control will generally be accomplished via three levels of review:

- 1) **Peer** review will be conducted by Project technical staff. Peer review will be used for a check of data, calculations, report text, estimates, etc. Peer reviews will be the deepest and most thorough reviews.
- 2) **Task Lead** review will typically be conducted by Task Leads or someone designated by them. Task Lead review will include work products that have previously gone through Peer review. Task Lead review will be prompted by task and/or deliverable and will be used to review important Project components and/or “big ticket” tasks. Depending on the findings at this level of review, additional detailed scrutiny (on top of the Peer reviews already completed) may be recommended and implemented.
- 3) **QA/QC Review Team** review will be conducted by the Senior Reviewer assigned to the relevant task (see Section 3.2.3.1). This level of review may or may not include work products that have previously gone through Peer review and Task Lead review. As indicated above, the purpose of this review will be primarily to offer advice on the big picture (methodology, assumptions, implications, etc.), hence it is not necessarily tied to deliverables. However, early input (at the beginning of the task, when the approach is being defined) as well as at critical milestones (e.g., when key decisions have been made, or when draft results and main findings are available) will be encouraged.

It is worthwhile indicating here that detailed review of all deliverables to the Client will be by the Project Management Team, not by the QA/QC Review Team. Furthermore, the general approach will be “one doer rep” working with “one reviewer” to reduce the chance of conflicting directions about the path forward.

Reviews will be coordinated through frequent communication between the “doers” and the “reviewers”, so expectations are made clear and both groups are informed about the way in which

comments and suggestions from the reviewers were incorporated (or not) in the deliverables. The QMR and Project Management Team will be copied in these communications and invited (as optional attendees) to review coordination meetings.

Forms for these three levels of review will be maintained electronically in the Barr QAQC Implementation folder (<P:\Mpls\34 ND\51\34511010 Mouse River Phases 2 & 3 Prmt\ProjRiskMgmt\QAQC Plan\QAQC Implementation>).

In some cases, an Independent Technical Review (ITR) may also be incorporated after the Task Lead review. The need for and scope of an ITR will be determined by the QMR in coordination with the Project Management Team. An ITR may be conducted by staff from within the consulting team, or may be conducted by parties from outside the consulting team, depending on the nature of the technical work and the magnitude of the issues or implications of the product.

Peer Review Form

Work Product Title: _____
Work Product Owner: _____
Date Review Requested: _____
Reviewer: _____
Date Review Complete: _____
Date Comments Addressed: _____

Description of the work to be reviewed (Work Product Owner)

#	Comment (Reviewer)	Response / Resolution (Work Product Owner)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Review Closeout Comments

Peer Reviewer

Signature

Printed name

Date

Work Product Owner

Signature

Printed name

Date

Task Lead Review Form

Work Product Title: _____
Work Product Owner: _____
Date Review Requested: _____
Peer Review Complete? (date): _____
Reviewer: _____
Date Review Complete: _____
Date Comments Addressed: _____

Description of the work to be reviewed (Work Product Owner)

#	Comment (Reviewer)	Response / Resolution (Work Product Owner)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Review Closeout Comments

Task Lead Reviewer

Signature

Printed name

Date

Work Product Owner

Signature

Printed name

Date

QA/QC Review Team Form

Work Product Title: _____
Work Product Owner: _____
Date Review Requested: _____
Task Lead Review Complete? (date): _____
Reviewer: _____
Date Review Complete: _____
Date Comments Addressed: _____

Description of the work to be reviewed (Work Product Owner)

#	Comment (Reviewer)	Response / Resolution (Work Product Owner)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Review Closeout Comments

QA/QC Review Team

Signature

Printed name

Date

Work Product Owner

Signature

Printed name

Date



Quality Management Plan

Mouse River Enhanced Flood Protection Project – Phase 1 (4th Ave NE)
Prepared for the Souris River Joint Water Resource Board

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Appendix A

Quality Assurance Process Form

Appendix B

30% Quality Check Process Forms

60% Quality Check Process Forms

90% Quality Check Process Forms

100% Quality Check Process Forms

Appendix C

30% Independent Technical Review Forms

60% Independent Technical Review Forms

90% Independent Technical Review Forms

1 Purpose, Intent, and Philosophy

1.1 Purpose and Intent

This QMP applies to the design and permitting tasks of Phase 1 of the Mouse River Enhanced Flood Protection Project (MREFPP) in Minot (also referred to as the 4th Avenue NE segment), which is generally located on the north side of the river and extends from Broadway on the west to 6th Street NE on the east. Phase 1 of the MREFPP is being designed in conjunction with Phases 2 and 3 – the Napa Valley segment, and the Forest Road Segment.

This QMP defines the parameters and provides the framework for achieving our goal of meeting our clients' needs by efficiently providing deliverables that:

- Meet all project requirements defined in the scope of services, including those related to cost and schedule.
- Are technically accurate, free from significant errors.
- Effectively communicate their intended meaning.
- Are professional in appearance and tone.

In addition to the above considerations, this plan has been developed with project team members in mind. While following it will require conscious effort, its processes have been kept as simple and straightforward as possible so as not to be overly burdensome.

1.2 Philosophy

Quality is a priority of critical importance and will be advocated for by everyone at Houston Engineering, Inc. (HEI) from the top down and the bottom up. A testament to this commitment is that each employee is evaluated on how well he/she ensures quality as part of his/her annual performance review.

Quality is controlled (QC) by thoroughly checking and reviewing the work products. Quality is assured (QA) by adequately defining the quality parameters to be followed on the project and ensuring that they are implemented.

Quality is achieved by multiple factors, among them are:

- Adequate planning, communications, coordination, supervision, and technical direction.
- Providing adequate time in the schedule for thorough checking and reviews.
- Proper definition of job requirements and procedures.
- Using appropriately skilled personnel.
- Individuals performing their work functions carefully.

If these factors aren't considered from the outset of each project, implementing the processes outlined in this QMP may become unduly burdensome to the reviewers, causing the processes to break down and quality to suffer, which in turn, often results in frustration, delays, brand damage, and high costs to project stakeholders. Therefore, it's critically important to invest in achieving quality.

2 Using this Quality Management Plan

This QMP applies to technical work products such as reports, studies, permits, surveys, property descriptions, engineering models, calculations, plans, and/or specifications.

The processes described herein are scalable, and are intended to be applied to projects of all sizes in one form or another as determined by the Quality Manager (defined in the Project Team Section).

3 Project Team

The project team is made up of HEI as the prime consultant, with Braun Intertec, SRF, MWH, and Preferred Controls as subconsultants. Each subconsultant will be responsible for ensuring the quality of project deliverables produced by its staff.

3.1 Roles and Responsibilities

Well-defined and well-communicated roles and responsibilities enhance quality through all phases of a project by reducing the chance for overlap or omission of work tasks and/or quality checking/reviews.

Each member of the project team is responsible for keeping organized, complete records in the project file.

3.1.1 Project Management Team

The Project Management Team is made up of the Principal in Charge and the Project Manager, oftentimes the same person.

3.1.2 Principal in Charge

The Principal in Charge is responsible for overseeing and reviewing the development and execution of the overall contract with the Client. He/she is the Client's primary contact and has overall responsibility for all work under the contract.

The Principal in Charge has the authority to:

- Represent HEI in contract matters.
- Communicate directly with the Client.
- Direct the project team.

The Principal in Charge has the following responsibilities:

- Oversees contract negotiations and contract development with the Client including review of overall contract terms and negotiations of project scope, schedule, and budget.
- Reviews and approves all subconsultant and Client invoices.
- Routinely monitors Client satisfaction for work.
- Resolves significant contractual or quality issues/disputes between HEI and the Client.
- Oversees contract negotiations and contract development with consulting partners and subconsultants including quality, scope, schedule, and budget.
- Defines the project team and recruits adequate resources for them to execute the work.
- Oversees management, administration, and technical aspects of work products.
- Provides strategy direction for project development.
- Notifies Client of necessary scope, schedule, and/or budget modifications.

3.1.3 Project Manager

The Project Manager will direct all project activities throughout its lifecycle while closely tracking its scope, schedule, and budget. He/she is ultimately responsible for ensuring a successful project.

The Project Manager has the authority to:

- Direct project staff, consulting partners, and subconsultants on project matters.
- Make technical decisions related to project work.
- Communicate directly with the Client.

The Project Manager has the following responsibilities:

- Communicates the project schedule and any required QMP revisions to the Quality Manager throughout the project.
- Follows, and directs project team in compliance with, the requirements of the QMP.
- Promptly notifies the Principal in Charge of quality issues.
- Manages the project through direct, day-to-day involvement with administration, budgeting, performance tracking, coordination, scheduling, and other managerial tasks.
- Identifies resources necessary for completion of the work.
- Matches project scope needs with staff skills and experience.
- Develops and maintains project team communication and morale.
- Provides overall direction to the project team on all aspects of project development that are not listed as responsibilities of the Principal in Charge.
- Ensures compliance with project scope, schedule, and budget.
- Communicates project scope, schedule, and budget status to Principal in Charge regularly (no less frequently than monthly).
- Reviews subconsultant and Client invoices.
- Identifies out-of-scope work and directs project team to align work with scope.
- Promptly notifies Principal in Charge of necessary scope, schedule, and/or budget modifications.

3.1.4 Project Engineer

Typically only present on larger projects or when the Principal in Charge and Project Manager roles are filled by the same person, the Project Engineer assists the Project Manager, exercising only the authority and carrying out only the responsibilities that are delegated to him/her by the Project Manager.

The Project Engineer has the authority to:

- Direct project staff, consulting partners, and subconsultants on project matters.
- Make technical decisions related to project work.

The Project Engineer has the following responsibilities:

- Promptly notifies the Project Manager of quality issues.
- Follows, and directs project team in compliance with, the requirements of the QMP.
- Identifies resources necessary for completion of the work.
- Matches project scope needs with staff skills and experience.

3.1.5 Task Lead

Having the authority to direct technical and support staff (also referred to as the Task Lead's "team"), each Task Lead is charged with completing an identified project task, typically by discipline, on time and within budget.

Each Task Lead gets direction from, and reports progress to, the Project Manager.

Task Leads are the first level of quality control, informally checking the work produced by their team members, providing the associated feedback, and ensuring his/her comments get addressed in the work product.

Task Leads have the following responsibilities:

- Lead and direct the technical work within the scope of their task assignment.
- Coordinate their activities with other Task Leads.
- Be knowledgeable of the schedule and budget constraints associated with their task assignment and manage their team's work efforts to ensure that work is completed within those constraints.
- Be knowledgeable of the project scope, identify out-of-scope work, provide direction to their team to align work with scope, and notify the Project Manager of necessary scope modifications in a timely manner.
- Facilitate review(s) of technical information by an independent peer reviewer as defined herein or by the Quality Manager.
- Follow quality processes defined in this QMP or by the Quality Manager.

3.1.6 Quality Manager

The Quality Manager is typically a staff member who is familiar with quality management and is also independent of the project. On small projects, the Quality Manager can also be the Project Manager.

He/she is responsible for overseeing development of the project QMP, ensuring that it is implemented, and overseeing any necessary revisions to it during the project. The Quality Manager also serves as a consultant to the project team for quality matters, advising them on quality issues and the proper execution and documentation of the QA/QC processes.

3.2 Project Team Members

Principal in Charge	Jerry Bents
Project Manager	Jerry Bents
Project Engineer	Kristen Lotvedt
Quality Manager	Cody Eilertson

Task Leads and Reviewers

	<u>Discipline</u>	<u>Organization</u>	<u>Task Lead</u>	<u>Reviewer</u>
	Project Manager	Houston Engineering	Jerry Bents	Cody Eilertson, Quality Manager
1	Hydraulics	Houston Engineering	Lisa Odens	C. Gregg Thielman
2	Hydrology	Houston Engineering	Lisa Odens	Greg Thompson
3	Interior Flood Control	Houston Engineering	Gabe Bladow	Nancy Stowe
4	Geotechnical	Braun Intertec	Charles Hubbard	Braun Intertec
5	Environmental	Houston Engineering	Larry Kramka	Jeff Lutz
6	Cultural	Houston Engineering	Larry Kramka	Jeff Lutz
7	Civil-Site	Houston Engineering	Kristen Lotvedt	Cody Eilertson
8	Transportation	Houston Engineering	Adam Ruud	Jeff Lansink
9	Traffic Studies	SRF Consulting	Craig Vaughn	SRF Consulting
10	Levee Safety	Houston Engineering	Jerry Bents	Michael Love
11	Real Estate	Houston Engineering	James Schlieman	Jim Hennessey
12	Structural	Houston Engineering	Luke Beckermann	Jeremy McLaughlin
13	Mechanical	MWH	TBD	MWH
14	Electrical	MWH	TBD	MWH
15	Landscape Architecture/ Recreation	SRF Consulting	Joni Giese	SRF Consulting
16	Cost	Houston Engineering	Kristen Lotvedt	Cody Eilertson

4 Processes for Ensuring Quality

Quality is controlled (QC) by thoroughly checking and reviewing the work products. Quality is assured (QA) by adequately defining the quality parameters to be followed on the project and ensuring that they are implemented.

4.1 Quality Assurance Process

The following components make up QA:

- Development of the QMP and communicating its requirements to the project team.
- Periodically verifying that QC activities are being completed.
- Monitoring the status of and trends related to the project scope and schedule.
- Periodically evaluating the adequacy of project resources.

The Quality Manager will develop the QMP with input from the Project Manager who has the most knowledge of the project requirements. The Project Manager will then convene a project team meeting where the requirements of the QMP will be explained. Each team member will be provided with a copy of the QMP at the meeting by the Quality Manager. Notes from the quality meeting will be kept in the project files.

The Project Manager, using the schedule and list of deliverables defined in the project scope as a guide, will complete the **Quality Assurance Process Form** (see Appendix) which defines and tracks the QC processes that will be used on the project. He/she will then work with the project team to ensure the defined quality processes are being followed. The Project Manager will update the form as the project progresses, keeping track of when each quality check and/or technical review was completed.

Through effective communication among project team members, the Project Manager along with the Principal in Charge will be aware of any scope, schedule, and resource issues as they arise. The Quality Manager will periodically (no less often than monthly) inquire into these topics to help ensure any problems or issues are addressed early on.

4.2 Quality Control Processes

The processes to be employed include Independent Technical Reviews and Quality Control Checking.

4.2.1 Independent Technical Reviews

Each Independent Technical Review (ITR) is performed by a peer knowledgeable in the discipline or subject of the work product who is not otherwise involved in the project. These reviews are intended for specific project elements of a technical, complex, or unique nature.

ITR's will be completed **using the Independent Technical Review Form** (see Appendix) when the project is 30%, 60%, and 90% developed for each Task defined in the Project Team Members section below.

4.2.2 Quality Checking

Quality Checking is a general but thorough review of the entire deliverable package by a knowledgeable peer, and involves the processes of checking, back-checking, and verifying as defined on the **Quality Check Process Form** (see Appendix). Quality Checking will be completed when the project is 30%, 60%, 90%, and 100% developed.



HoustonEngineering Inc.

APPENDIX A

Quality Assurance Process Form

Quality Assurance Process Form

Project Information			
HEI Project Number:	8313-010	Client Project Number:	3529.001
Project Name:	Mouse River Enhanced Flood Protection Project - Phase 1 Design and Permitting (4th Ave NE)		
Client Name:	Souris River Joint Board		
Project Manager:	Jerry Bents	Project Engineer:	Kristen Lotvedt

Quality Checking (required)					
	Deliverable(s) to be Checked	Review		Scheduled Checking	Date
		Stage	Due Date	Length	Initiation Date
<u>1</u>	Plans	30%	10/22/15	14 days	10/8/15
<u>1a</u>	Basis of Design Report	30%	10/22/15	14 days	10/8/15
<u>2</u>	Plans, Specifications, & Report	60%	2/24/16	31 days	1/24/16
<u>3</u>	Plans, Specifications, & Report	90%	6/29/16	40 days	5/20/16
<u>4</u>	Plans, Specifications, & Report	100%	11/2/16	32 days	10/1/16
<u>5</u>					

Technical Reviews (to be used at the discretion of the PM)						
	Component(s) to be Reviewed	Review		Scheduled Review	Date	
		Stage	Due Date	Length	Initiation Date	Completed
<u>1</u>	Hydraulics - Design Report and Plans	30%	10/15/15	5 days	10/10/15	N/A - 30%
<u>2</u>	Hydrology - Design Report and Plans	30%	10/15/15	5 days	10/10/15	N/A - 30%
<u>3</u>	Interior Flood Control - Design Report and Plans	30%	10/15/15	5 days	10/10/15	
<u>4</u>	Geotechnical - Design Report and Plans	30%	10/15/15	5 days	10/10/15	Braun 30%
<u>5</u>	Environmental - Design Report and Plans	30%	10/15/15	5 days	10/10/15	
<u>6</u>	Cultural - Design Report and Plans	30%	10/15/15	5 days	10/10/15	
<u>7</u>	Civil-Site - Design Report and Plans	30%	10/15/15	5 days	10/10/15	
<u>8</u>	Transportation - Design Report and Plans	30%	10/15/15	5 days	10/10/15	
<u>9</u>	Traffic Studies - Design Report and Plans	30%	10/15/15	5 days	10/10/15	SRF 30%
<u>10</u>	Levee Safety - Design Report and Plans	30%	10/15/15	5 days	10/10/15	
<u>11</u>	Real Estate - Design Report and Plans	30%	10/15/15	5 days	10/10/15	N/A - 30%
<u>12</u>	Structural - Design Report and Plans	30%	10/15/15	5 days	10/10/15	
<u>13</u>	Mechanical - Design Report and Plans	30%	10/15/15	5 days	10/10/15	N/A - 30%
<u>14</u>	Electrical - Design Report and Plans	30%	10/15/15	5 days	10/10/15	N/A - 30%
<u>15</u>	Landscape Arch./Recreation - Design Report and Plans	30%	10/15/15	5 days	10/10/15	N/A - 30%
<u>16</u>	Cost - Design Report and Plans	30%	10/15/15	5 days	10/10/15	
<u>17</u>	Hydraulics - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>18</u>	Hydrology - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>19</u>	Interior Flood Control - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>20</u>	Geotechnical - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>21</u>	Environmental - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>22</u>	Cultural - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>23</u>	Civil-Site - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>24</u>	Transportation - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>25</u>	Traffic Studies - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>26</u>	Levee Safety - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>27</u>	Real Estate - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>28</u>	Structural - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>29</u>	Mechanical - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>30</u>	Electrical - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>31</u>	Landscape Arch./Recreation - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>32</u>	Cost - Design Report and Plans	60%	2/10/16	7 days	2/3/16	
<u>33</u>	Hydraulics - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>34</u>	Hydrology - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>35</u>	Interior Flood Control - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>36</u>	Geotechnical - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>37</u>	Environmental - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>38</u>	Cultural - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>39</u>	Civil-Site - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>40</u>	Transportation - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>41</u>	Traffic Studies - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>42</u>	Levee Safety - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>43</u>	Real Estate - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>44</u>	Structural - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>45</u>	Mechanical - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>46</u>	Electrical - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>47</u>	Landscape Arch./Recreation - Design Report and Plans	90%	6/15/16	7 days	6/8/16	
<u>48</u>	Cost - Design Report and Plans	90%	6/15/16	7 days	6/8/16	

100% Complete: Package of Deliverables is Reviewed by the PM for Content

PM - Check this box when Quality Assurance Process is complete

Date:



HoustonEngineering Inc.

APPENDIX B

Quality Check Process Forms

Quality Check Process Form

Deliverable(s) to be Checked: *Plans*

Stage: 30%

Project Information

Project Info.	HEI Project Number: <u>8313-010</u>	Client Project Number: <u>3529.001</u>	Project Info.
	Project Name: <u>Mouse River Enhanced Flood Protection Project - Phase 1 Design and Permitting (4th Ave NE)</u>		
	Client Name: <u>Souris River Joint Board</u>		
	Project Manager: <u>Jerry Bents</u>	Project Engineer: <u>Kristen Lotvedt</u>	

Quality Checking Initiated on:

Role	Name	Due Date	Date Reviewed - By
1 Originator	<u>Kristen Lotvedt</u>	<u>10/8/15</u>	<u>N/A</u>
2 Checker	<u>Cody Eilertson</u>	<u>10/13/15</u>	
3 Back-Checker	<u>Jerry Bents</u>	<u>10/15/15</u>	
4 Corrector	<u>Kristen Lotvedt</u>	<u>10/20/15</u>	
5 Verifier	<u>Jerry Bents</u>	<u>10/22/15</u>	
6 Verifier - Client Comments	<u>Kristen Lotvedt</u>	<u>N/A</u>	
Due Date:		10/22/15	

Definitions

0	Quality Checking	The process of Checking / Back-Checking / Verifying as per below. This is a general but thorough review of the entire deliverable package by knowledgeable peer(s).
1	Originator	Creates the Check Print (original document). Depending on the project, there may be multiple originators.
2	Checker	Someone other than the Originator who is familiar with the type of project. Recommended to be someone other than the Signer/Certifier. Performs an independent peer review of the Check Print. Makes comments on the Check Print in <u>RED</u> ink.
3	Back-Checker	This is the Signer/Certifier in all cases. Addresses all red comments/revisions on Check Print in <u>BLUE</u> ink. Adds additional comments. Signifies agreement with each comment with a check mark. Signifies disagreement with a comment by crossing it out.
4	Corrector	Person who physically makes the agreed-to corrections. Usually the Originator (or a CAD Technician, Admin Assistant, other). Marks each correction on Check Print in <u>YELLOW</u> highlighter as it's made. Circles in <u>PINK</u> highlighter any revisions that'll be made for the next submittal.
5	Verifier	Person who compares the new document with the Check Print to confirm that the agreed-to corrections have been incorporated without error. Usual the Back-Checker.
6	Verifier - Client Comments	Person who compares the new document with all comments from the client to ensure they have been addressed.



Quality Check Process Form

Deliverable(s) to be Checked: *Basis of Design Report*

Stage: 30%

Project Information

Project Info.	HEI Project Number: <u>8313-010</u>	Client Project Number: <u>3529.001</u>	Project Info.
	Project Name: <u>Mouse River Enhanced Flood Protection Project - Phase 1 Design and Permitting (4th Ave NE)</u>		
	Client Name: <u>Souris River Joint Board</u>		
	Project Manager: <u>Jerry Bents</u>	Project Engineer: <u>Kristen Lotvedt</u>	

Quality Checking Initiated on:

Role	Name	Due Date	Date Reviewed - By
1 Originator	<u>Dan Korf</u>	<u>10/8/15</u>	<u>N/A</u>
2 Checker	<u>Jerry Bents</u>	<u>10/13/15</u>	
3 Back-Checker	<u>None</u>	<u>10/15/15</u>	<u>N/A</u>
4 Corrector	<u>Dan Korf</u>	<u>10/20/15</u>	
5 Verifier	<u>Jerry Bents</u>	<u>10/22/15</u>	
6 Verifier - Client Comments	<u>Kristen Lotvedt</u>	<u>N/A</u>	
Due Date:		10/22/15	

Definitions

0	Quality Checking	The process of Checking / Back-Checking / Verifying as per below. This is a general but thorough review of the entire deliverable package by knowledgeable peer(s).
1	Originator	Creates the Check Print (original document). Depending on the project, there may be multiple originators.
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3	Back-Checker	This is the Signer/Certifier in all cases. Addresses all red comments/revisions on Check Print in <u>BLUE</u> ink. Adds additional comments. Signifies agreement with each comment with a check mark. Signifies disagreement with a comment by crossing it out.
4	Corrector	Person who physically makes the agreed-to corrections. Usually the Originator (or a CAD Technician, Admin Assistant, other). Marks each correction on Check Print in <u>YELLOW</u> highlighter as it's made. Circles in <u>PINK</u> highlighter any revisions that'll be made for the next submittal.
5	Verifier	Person who compares the new document with the Check Print to confirm that the agreed-to corrections have been incorporated without error. Usual the Back-Checker.
6	Verifier - Client Comments	Person who compares the new document with all comments from the client to ensure they have been addressed.



Quality Check Process Form

Deliverable(s) to be Checked: *Plans, Specifications, & Report*

Stage: 60%

Project Information

Project Info.	HEI Project Number: <u>8313-010</u>	Client Project Number: <u>3529.001</u>	Project Info.
	Project Name: <u>Mouse River Enhanced Flood Protection Project - Phase 1 Design and Permitting (4th Ave NE)</u>		
	Client Name: <u>Souris River Joint Board</u>		
	Project Manager: <u>Jerry Bents</u>	Project Engineer: <u>Kristen Lotvedt</u>	

Quality Checking Initiated on:

	Role	Name	Due Date	Date Reviewed - By
Quality Checking	1 Originator	<u>Kristen Lotvedt</u>	<u>1/24/16</u>	<u>N/A</u>
	2 Checker	<u>Cody Eilertson</u>	<u>2/1/16</u>	
	3 Back-Checker	<u>Jerry Bents</u>	<u>2/4/16</u>	
	4 Corrector	<u>Kristen Lotvedt</u>	<u>2/18/16</u>	
	5 Verifier (include "Pink" comments from 30% review)	<u>Jerry Bents</u>	<u>2/21/16</u>	
	6 Verifier - Client Comments (from 30% review)	<u>Kristen Lotvedt</u>	<u>2/24/16</u>	
Due Date:			2/24/16	

Definitions

Definitions	0 Quality Checking	The process of Checking / Back-Checking / Verifying as per below. This is a general but thorough review of the entire deliverable package by knowledgeable peer(s).
	1 Originator	Creates the Check Print (original document). Depending on the project, there may be multiple originators.
	2 Checker	Someone other than the Originator who is familiar with the type of project. Recommended to be someone other than the Signer/Certifier. Performs an independent peer review of the Check Print. Makes comments on the Check Print in <u>RED</u> ink.
	3 Back-Checker	This is the Signer/Certifier in all cases. Addresses all red comments/revisions on Check Print in <u>BLUE</u> ink. Adds additional comments. Signifies agreement with each comment with a check mark. Signifies disagreement with a comment by crossing it out.
	4 Corrector	Person who physically makes the agreed-to corrections. Usually the Originator (or a CAD Technician, Admin Assistant, other). Marks each correction on Check Print in <u>YELLOW</u> highlighter as it's made. Circles in <u>PINK</u> highlighter any revisions that'll be made for the next submittal.
	5 Verifier	Person who compares the new document with the Check Print to confirm that the agreed-to corrections have been incorporated without error. Usual the Back-Checker.
	6 Verifier - Client Comments	Person who compares the new document with all comments from the client to ensure they have been addressed.



Quality Check Process Form

Deliverable(s) to be Checked: *Plans, Specifications, & Report*

Stage: 90%

Project Information

Project Info.	HEI Project Number: <u>8313-010</u>	Client Project Number: <u>3529.001</u>	Project Info.
	Project Name: <u>Mouse River Enhanced Flood Protection Project - Phase 1 Design and Permitting (4th Ave NE)</u>		
	Client Name: <u>Souris River Joint Board</u>		
	Project Manager: <u>Jerry Bents</u>	Project Engineer: <u>Kristen Lotvedt</u>	

Quality Checking Initiated on:

	Role	Name	Due Date	Date Reviewed - By
Quality Checking	1 Originator	<u>Kristen Lotvedt</u>	<u>5/20/16</u>	<u>N/A</u>
	2 Checker	<u>Cody Eilertson</u>	<u>5/27/16</u>	
	3 Back-Checker	<u>Jerry Bents</u>	<u>5/30/16</u>	
	4 Corrector	<u>Kristen Lotvedt</u>	<u>6/15/16</u>	
	5 Verifier (include "Pink" comments from 60% review)	<u>Jerry Bents</u>	<u>6/18/16</u>	
	6 Verifier - Client Comments (from 60% review)	<u>Kristen Lotvedt</u>	<u>6/20/16</u>	
Due Date:			6/29/16	

Definitions

	0 Quality Checking	The process of Checking / Back-Checking / Verifying as per below. This is a general but thorough review of the entire deliverable package by knowledgeable peer(s).
Definitions	1 Originator	Creates the Check Print (original document). Depending on the project, there may be multiple originators.
	2 Checker	Someone other than the Originator who is familiar with the type of project. Recommended to be someone other than the Signer/Certifier. Performs an independent peer review of the Check Print. Makes comments on the Check Print in <u>RED</u> ink.
	3 Back-Checker	This is the Signer/Certifier in all cases. Addresses all red comments/revisions on Check Print in <u>BLUE</u> ink. Adds additional comments. Signifies agreement with each comment with a check mark. Signifies disagreement with a comment by crossing it out.
	4 Corrector	Person who physically makes the agreed-to corrections. Usually the Originator (or a CAD Technician, Admin Assistant, other). Marks each correction on Check Print in <u>YELLOW</u> highlighter as it's made. Circles in <u>PINK</u> highlighter any revisions that'll be made for the next submittal.
	5 Verifier	Person who compares the new document with the Check Print to confirm that the agreed-to corrections have been incorporated without error. Usual the Back-Checker.
	6 Verifier - Client Comments	Person who compares the new document with all comments from the client to ensure they have been addressed.



Quality Check Process Form

Deliverable(s) to be Checked: *Plans, Specifications, & Report*

Stage: 100%

Project Information

Project Info.	HEI Project Number: <u>8313-010</u>	Client Project Number: <u>3529.001</u>	Project Info.
	Project Name: <u>Mouse River Enhanced Flood Protection Project - Phase 1 Design and Permitting (4th Ave NE)</u>		
	Client Name: <u>Souris River Joint Board</u>		
	Project Manager: <u>Jerry Bents</u>	Project Engineer: <u>Kristen Lotvedt</u>	

Quality Checking Initiated on:

Role	Name	Due Date	Date Reviewed - By
1 Originator	<u>Kristen Lotvedt</u>	<u>10/1/16</u>	<u>N/A</u>
2 Checker	<u>Cody Eilertson</u>	<u>10/8/16</u>	
3 Back-Checker	<u>Jerry Bents</u>	<u>10/11/16</u>	
4 Corrector	<u>Kristen Lotvedt</u>	<u>10/25/16</u>	
5 Verifier (include "Pink" comments from 90% review)	<u>Jerry Bents</u>	<u>10/30/16</u>	
6 Verifier - Client Comments (from 90% review)	<u>Kristen Lotvedt</u>	<u>11/1/16</u>	
Due Date:		11/2/16	

Definitions

0	Quality Checking	The process of Checking / Back-Checking / Verifying as per below. This is a general but thorough review of the entire deliverable package by knowledgeable peer(s).
1	Originator	Creates the Check Print (original document). Depending on the project, there may be multiple originators.
2	Checker	Someone other than the Originator who is familiar with the type of project. Recommended to be someone other than the Signer/Certifier. Performs an independent peer review of the Check Print. Makes comments on the Check Print in <u>RED</u> ink.
3	Back-Checker	This is the Signer/Certifier in all cases. Addresses all red comments/revisions on Check Print in <u>BLUE</u> ink. Adds additional comments. Signifies agreement with each comment with a check mark. Signifies disagreement with a comment by crossing it out.
4	Corrector	Person who physically makes the agreed-to corrections. Usually the Originator (or a CAD Technician, Admin Assistant, other). Marks each correction on Check Print in <u>YELLOW</u> highlighter as it's made. Circles in <u>PINK</u> highlighter any revisions that'll be made for the next submittal.
5	Verifier	Person who compares the new document with the Check Print to confirm that the agreed-to corrections have been incorporated without error. Usual the Back-Checker.
6	Verifier - Client Comments	Person who compares the new document with all comments from the client to ensure they have been addressed.





HoustonEngineering Inc.

APPENDIX C

Independent Technical Review Forms

Independent Technical Review Form

Project Information

Project Info.

Project Info.

HEI Project Number: 8313-010 **Client Project Number:** 3529.001
Project Name: Mouse River Enhanced Flood Protection Project - Phase 1 Design and Permitting (4th Ave NE)
Client Name: Souris River Joint Board
Project Manager: Jerry Bents **Task Lead:** Kristen Lotvedt

This Independent Technical Review Initiated on: **30%** **ITR No. 7**

Technical Review

Technical Review

Component(s) to be Reviewed	Name of Reviewer	Due Date	Date Reviewed - By
7 Civil-Site - Design Report and Plans	Cody Eilertson	10/15/15	

Synopsis of Review and Required Revisions (Reviewer) **Response to / Resolution of Synopsis (Task Lead)**

Use cells in this column (including this one) to type a synopsis of your review. This should be a summary of the review comments, not a list of all redline comments.

Use cells in this column (including this one) to note how items identified in the synopsis are addressed.

Location of scanned redlines: *Paste the filepath in this cell*

Independent Technical Review Form

Project Information

Project Info.

Project Info.

HEI Project Number: 8313-010 **Client Project Number:** 3529.001
Project Name: Mouse River Enhanced Flood Protection Project - Phase 1 Design and Permitting (4th Ave NE)
Client Name: Souris River Joint Board
Project Manager: Jerry Bents **Task Lead:** Jerry Bents

This Independent Technical Review Initiated on: **30%** **ITR No. 10**

Technical Review

Technical Review

Component(s) to be Reviewed	Name of Reviewer	Due Date	Date Reviewed - By
10 Levee Safety - Design Report and Plans	Michael Love	10/15/15	

Synopsis of Review and Required Revisions (Reviewer) **Response to / Resolution of Synopsis (Task Lead)**

Use cells in this column (including this one) to type a synopsis of your review. This should be a summary of the review comments, not a list of all redline comments.

Use cells in this column (including this one) to note how items identified in the synopsis are addressed.

Location of scanned redlines: *Paste the filepath in this cell*

Independent Technical Review Form

Project Information

Project Info.

Project Info.

HEI Project Number: 8313-010 **Client Project Number:** 3529.001
Project Name: Mouse River Enhanced Flood Protection Project - Phase 1 Design and Permitting (4th Ave NE)
Client Name: Souris River Joint Board
Project Manager: Jerry Bents **Task Lead:** TBD

This Independent Technical Review Initiated on: **30%** **ITR No. 13**

Technical Review

Technical Review

Component(s) to be Reviewed	Name of Reviewer	Due Date	Date Reviewed - By
13 Mechanical - Design Report and Plans	MWH	10/15/15	

Synopsis of Review and Required Revisions (Reviewer)	Response to / Resolution of Synopsis (Task Lead)
<i>Not applicable at 30% since no details of Mechanical design is included.</i>	<i>No change is needed</i>

Location of scanned redlines: *Paste the filepath in this cell*

Independent Technical Review Form

Project Information

Project Info.

Project Info.

HEI Project Number: 8313-010 **Client Project Number:** 3529.001
Project Name: Mouse River Enhanced Flood Protection Project - Phase 1 Design and Permitting (4th Ave NE)
Client Name: Souris River Joint Board
Project Manager: Jerry Bents **Task Lead:** Michael Love

This Independent Technical Review Initiated on: **60%** **ITR No. 26**

Technical Review

Technical Review

Component(s) to be Reviewed	Name of Reviewer	Due Date	Date Reviewed - By
26 Levee Safety - Design Report and Plans	Jerry Bents	2/10/16	

Synopsis of Review and Required Revisions (Reviewer) **Response to / Resolution of Synopsis (Task Lead)**

Use cells in this column (including this one) to type a synopsis of your review. This should be a summary of the review comments, not a list of all redline comments.

Use cells in this column (including this one) to note how items identified in the synopsis are addressed.

Location of scanned redlines: *Paste the filepath in this cell*

Appendix D

MREFP Project Preliminary Implementation Schedule (All Phases)

PRELIMINARY IMPLEMENTATION STRATEGY - REVISED 9/5/14

Reach	Subproject (Segment) Description	Projected Time Frame (Fiscal Year)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	
Burlington to Minot	Lands and Easements	2014-2023	█	█	█	█	█	█	█	█	█	█												
Burlington to Minot	Rural Acquisition / Relocation / Ring Dikes	2015-2023		█	█	█	█	█	█	█	█	█												
Minot	4th Avenue NE Floodwalls	2014-2017	█	█	█	█																		
Minot	CP Rail Bridge	2016-2021			█	█	█	█	█	█														
Minot	Hwy 83 Bypass Bridge	2019-2022						█	█	█	█													
Minot	Hwy 2 Bypass Bridge	2019-2022						█	█	█	█													
Minot	Maple Diversion	2018-2022					█	█	█	█	█													
Minot	Forest Road	2014-2017	█	█	█	█																		
Minot	Napa Valley	2014-2017	█	█	█	█																		
Minot	Burdick Expressway Bridge	2021-2023								█	█	█												
Minot	Rodeo Road	2023-2024										█	█											
Minot	N - Roosevelt Park	2024-2025											█	█										
Minot	S - Roosevelt Park (Zoo)	2025-2027												█	█	█								
Minot	27th Street Diversion	2027-2030														█	█	█	█					
Minot	N-Valker Road	2030-2031																		█	█			
Minot	S - Valker Road	2031-2032																			█	█		
Minot	Downtown Floodwalls	2032-2034																				█	█	█
Minot	Keller	2033-2034																					█	█
Minot	Leites Brekke	2033-2034																					█	█
Burlington	Des Lacs Levees & Floodwalls	2016-2018			█	█	█																	
Burlington	Mouse Levees	2018-2020					█	█	█															
Burlington	Colton Avenue Bridge	2018-2020					█	█	█															
Tierracita Vallejo	T.V. Pump Station	2020-2021							█	█														
Tierracita Vallejo	T.V. Levees	2021-2022								█	█													
Tierracita Vallejo	T.V. Railroad Closure	2021-2023								█	█	█												
Varden	Robinwood/Country Club Acres Levee	2024-2025											█	█										
Varden	Brooks Addition Levee	2025-2026												█	█									
Varden	Varden Club Levee	2026-2027													█	█								
Apple Grove	Apple Grove Levee	2028-2029															█	█						
Eastside Estates	Eastside Estates Levee	2030-2031																	█	█				
Talbotts	Talbotts Levee	2031-2032																		█	█			
Kings Court	Kings Court Levee / Rechannelization	2032-2034																				█	█	█

1. Prioritization of tasks and subprojects is based on the feasibility level of design for the project scope at this time (September 5, 2014). Future investigations and detailed design will require adjustments to the proposed timeline. Any schedule slippage in critical path tasks or changes to key assumptions could require modifications to the schedule set forth in the estimated timeline and could require reevaluation of estimated funding.
2. The proposed sequence is based on the assumption that land acquisition is completed for each phased subproject prior to the bidding and construction phases of the subproject.

ATTACHMENT 1

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the [<short description of proposed alteration>](#) for [<project name and location>](#). The ATR was conducted as defined in the Alteration-Specific Review Plan to comply with the requirements of EC 1165-2-216. During the ATR, compliance with established policy principles and procedures and legal requirements was verified. This included the determination whether the proposed alteration would impair the usefulness of the federal project or was injurious to the public interest. All comments resulting from the ATR have been resolved.

SIGNATURE

Name
ATR Team Leader
Office Symbol

Date

SIGNATURE

Nathan Wallerstedt P.E. PMP
District Section 408 Coordinator
CEMVP-PM-B

Date

SIGNATURE

Nathan J. Snorteland
Director Risk Management Center
CEIWR-RMC

Date