Draft Supplemental Environmental Assessment

Mouse River Enhanced Flood Protection Project
Phases MI-6, MI-7, MI- 8, and MI-9

Prepared for
Souris River Joint Board
U.S. Army Corps of Engineers

May 2023

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Abbreviations and Acronyms

AEP	annual exceedance probability
BNSF	Burlington Northern Santa Fe Railway
CDBG	Community Development Block Grant
cfs	cubic feet per second
cfs	Cubic feet per second
CS	construction stage
CWA	Clean Water Act
dBA	decibels
DEQ	North Dakota Department of Environmental Quality
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FPPA	Farmland Protection Policy Act
HTRW	Hazardous, Toxic, and Radioactive Waste
HUD	U.S. Department of Housing and Urban Development
IpaC	Information, Planning, and Consultation
MREFPP	Mouse River Enhanced Flood Protection Project
NDDWR	North Dakota Department of Water Resources
NEPA	National Environmental Policy Act
NLCD	National Land Cover Database
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
OHWM	ordinary high water mark
PEIS	Programmatic Environmental Impact Statement
RPA	Requester's Preferred Alternative
SEA	Supplemental Environmental Assessment
SHPO	State Historic Preservation Office
SoCP	Species of Conservation Priority
SRJB	Souris River Joint Board
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service

1 Introduction

There has been a history of flooding along the Souris River (also referred to as the Mouse River) in north-central North Dakota. In 2011, the flood of record occurred in the Souris River Basin, and caused more than $1 billion in damages to homes, businesses, public facilities, agriculture, and infrastructure along the entire length of the Souris River.

The Souris River Joint Board (SRJB; the "requester") is pursuing a plan to reduce future flood risks throughout the U.S. portions of the Souris River Basin by constructing a series of new levees, floodwalls, and other flood risk-reduction features. This plan has become known locally as the Mouse River Enhanced Flood Protection Project (MREFPP). The MREFPP would be constructed and permitted in a number of stages over the course of multiple decades, depending on available funding. Ultimately, at completion of construction, the MREFPP would provide flood risk reduction to 27,400 cubic feet per second (cfs), flows equivalent to those experienced during the 2011 flood.

Construction of the MREFPP would require alterations to a number of U.S. Army Corps of Engineers (USACE) flood risk-reduction projects, collectively referred to as the Souris River Basin Project. The SRJB submitted a letter to the USACE to initiate the process for obtaining approval under Section 14 of the Rivers and Harbors Act of 1899 (33 United States Code (USC) 408 (hereafter referred to as Section 408) to allow alterations to existing USACE projects in the Souris River Basin. USACE may issue Section 408 permission to alter a USACE project if it is determined that the modifications are not injurious to the public interest and will not impair the usefulness of the project. The proposed alterations and modifications would further reduce the risks for future flood events for communities along the river. This document supplements previous environmental and other compliance reviews outlined in the MREFPP Programmatic Environmental Impact Statement (PEIS) and adds more specificity to Milestone 2 – the South Minot System (Phases MI-6, MI-7, MI-8, and MI-9) of the MREFPP.

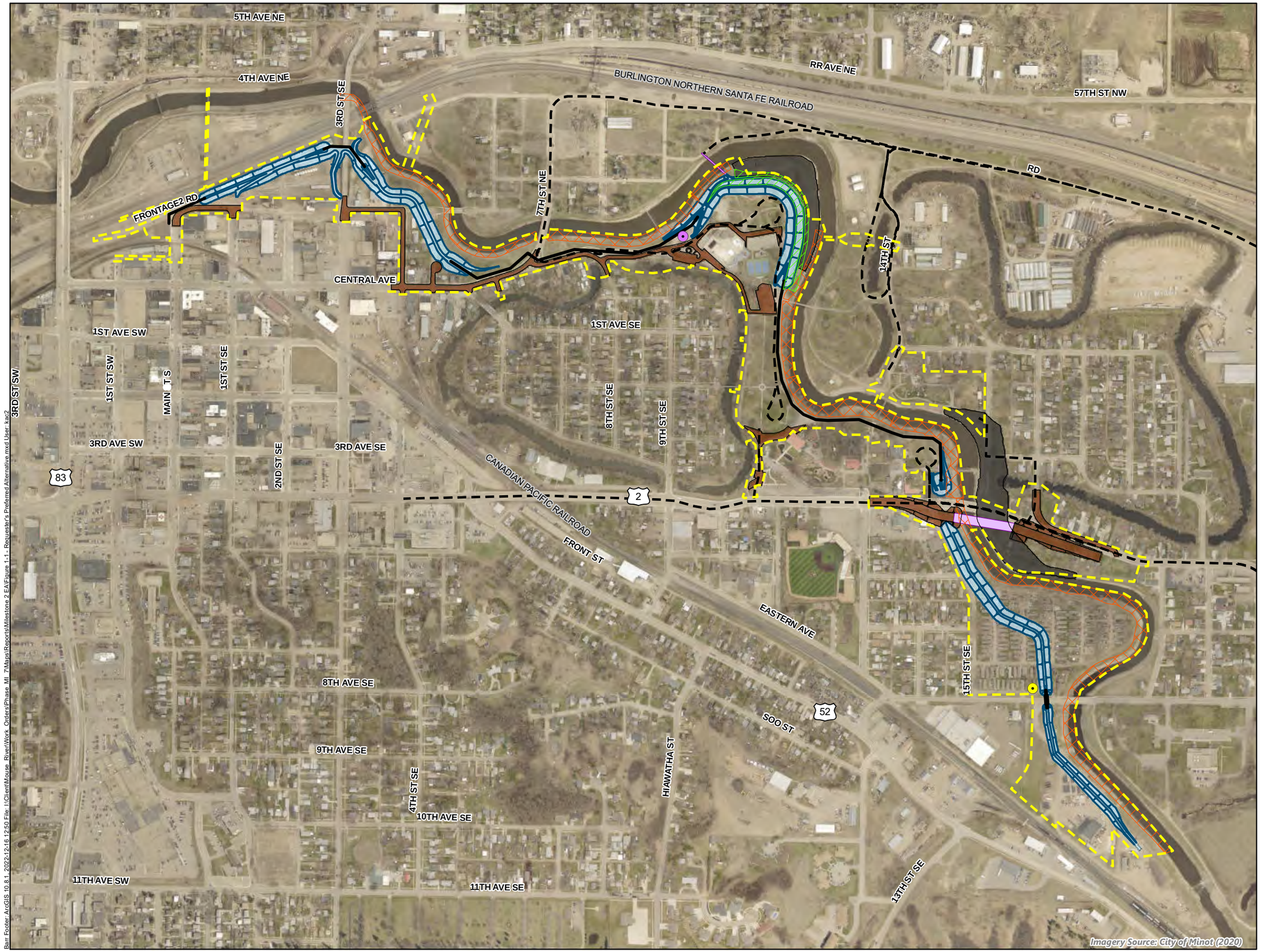
In addition, the Project would also involve placement of fill materials in waters of the United States, which is regulated by Section 404 of the CWA. A permit is required from the USACE for any activities involving placement of fill in wetlands and waterbodies that are classified as waters of the U.S. The decision on an USACE permit application pursuant to Section 404 will be made concurrently with the Section 408 request. This Environmental Assessment includes information required for Section 404 approval.

As part of the Section 408 and Section 404 processes, the USACE must comply with the National Environmental Policy Act (NEPA) of 1969, as amended. The USACE St. Paul District serves as the lead federal agency responsible for preparing NEPA documentation, with the USACE Omaha District providing regulatory and technical assistance. The USACE completed a PEIS under NEPA for the MREFPP in July 2017 (reference [1]), and Record of Decision was issued for the MREFPP on December 19, 2017 (reference [2]). The PEIS addressed general impacts associated with construction of the MREFPP, as well as site-specific impacts associated with the first phases of design, collectively known as construction stage (CS) 1.5. Because of the multitude of flood risk-reduction segments, or phases, associated with the MREFPP, interim impacts were evaluated for five construction stages (CS 1, CS 1.5, CS 2, CS 3, and CS 4), with each

construction stage representing the completion of at least three, and up to seven, Project phases. Milestone 2 – the South Minot System is part of CS 2 and comprises the following phases:

- Phase MI-6: South Downtown/Roosevelt Park
- Phase MI-7: Roosevelt Park and Zoo
- Phase MI-8: South Valker Road
- Phase MI-9: Burdick Expressway Bridge

One of the purposes of the PEIS was to describe general impacts associated with the MREFPP while providing the framework for evaluation of impacts associated with subsequent project phases. Much of the information presented in the PEIS is incorporated by reference in this Supplemental Environmental Assessment (SEA), which allows for document brevity while still addressing site-specific impacts resulting from Phases MI-6, MI-7 MI-8, and MI-9 of Milestone 2 (Project) of the MREFPP, located in and around Roosevelt Park in Minot, North Dakota (Figure 1-1). This current Project is part of CS 2, as described in Section 4.13.1.3 of the PEIS (reference [1]).



Project Area

Levee Footprint

Floodwall Alignment

Turf Reinforcement Mat

Bank Stabilization Rip-Rap

Overbank Excavation

Road Modifications and Parking Areas

Bridge Modifications

Access Road

Pump Stations

Approximate Proposed Pump Station (New)

Existing Pump Station (Replacement)

0 300 600 1,200

Feet

BARR

Figure 1-1

REQUESTER'S PREFERRED ALTERNATIVE
MREFPP Milestone 2
Minot, ND

Barr Footer: ArcGIS 10.8.1, 2022-12-16 12:50 File: I:\Client\Mouse_River\Work_Orders\Phase_MI_7\Maps\Reports\Milestone 2 EA\Figure 1-1 - Requester's Preferred Alternative.mxd User: kac2

2 Purpose and Need for Action

The purpose and need of the Project is no different than that of the MREFPP, as presented in the PEIS (reference [1]). The purpose of the proposed Project is to meet the following goals established by the Project requester:

- Reduce the risk of property damage and loss of life in the most densely populated reach of the river due to floods that approach the size of the 2011 flood (i.e., 27,400 cfs), regardless of where precipitation occurs in the Souris River Basin.
- Remove as many structures as possible from the Federal Emergency Management Agency (FEMA) preliminary regulatory floodplain (10,000 cfs flood) and provide a higher level of flood protection along the most densely populated reaches of the river through implementation of interim flood risk-reduction measures (i.e., incremental project phases) that will be consistent and compatible with the MREFPP.
- Provide protection to FEMA's preliminary regulatory floodplain (10,000 cfs flood) or other measurable protection levels with each incremental project phase.
- Keep critical elements of the public transportation system operating during and after a flood event that approaches the size of the 2011 flood.
- Design and construct a flood risk-reduction system for a 27,400 cfs design flood event that is consistent with current USACE standards and FEMA requirements for accreditation.

The need for action arises from reoccurring flooding in the Project area, beyond the limits of what can be contained by the existing Souris River Basin Project. Flooding has resulted in significant property damage, the displacement of thousands of residents, interference with transportation systems and emergency services, disruption to regional commerce, and total losses of more than $1 billion. Numerous residents along the river have expressed their interest in additional flood risk-reduction measures to protect them from floods of this magnitude and to avoid additional costs of flood insurance.

Further information on the history of flooding in the region, as well as existing flood risk reduction projects can be found in the PEIS (Sections 1.3 and 1.4 of reference [1]).

3 Alternatives

An evaluation of a reasonable range of alternatives is required under NEPA for all jurisdictional activities. EC 1165-2-220 states that the alternatives analysis for NEPA compliance should focus on the Requester's Preferred Alternative (RPA) and a No-Action alternative. Section 404(b)(1) guidelines takes practicability of alternatives into consideration, and no alternative may be permitted unless it is found to be the least environmentally damaging practicable alternative. In order to be practicable, an alternative must be available, achieve the overall project purpose (as defined by the USACE), and be feasible when considering cost, logistics, and existing technology. The alternatives analysis for the Project focuses on actions and features that could be used to reduce the risk of flooding across portions of the Souris River Basin within the Milestone 2 Project area. For the currently proposed Project, modifications in design would not appreciably change impacts to Waters of the United States. When impacts of any alternative are not appreciably different than the applicant's proposal, the USACE may defer to the applicant's proposal.

3.1 Requester's Preferred Alternative

The RPA would include significant modifications to the existing levee system in Milestone 2 in order to (1) accommodate the design flow increase from 5,000 cfs to 27,400 cfs, (2) meet current USACE design criteria to obtain USACE Section 408 permission, and (3) obtain future FEMA accreditation for the flood risk management system for the base flood event. The RPA includes Phases MI-6, MI-7, MI-8, and MI-9 as described in this section (Figure 1-1).

The RPA would also address deficiencies identified by the USACE in its October 2019 routine inspection, including: unwanted vegetation growth, encroachments, erosion/bank caving, closure structure corrections, general infrastructure, as well as management and availability of manuals, records, and training.

3.1.1 MI-6: South Downtown/Roosevelt Park

Phase MI-6 would provide flood risk-reduction features within the 1st Avenue NE and Central Avenue E area, located to the northeast of Downtown Minot (Figure 1-1). This phase includes the following items:

- Approximately 2,052 LF of new levee and 2,521 LF of new floodwall.
- A removable closure through the floodwall consisting of stoplogs.
- 8th Street NE Pump Station and Gatewell, Central Avenue E Gatewell, and associated structures.
- 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. This includes penetrations through the line of protection that are necessary for municipal utilities.
- Franchise utility relocation.

- City greenway implementation and features, including a shared-use path system and open space on top and along the levee system.
- Corrective action to address deficiencies identified in the USACE 2019 inspection report.

3.1.2 MI-7: Roosevelt Park and Zoo

Phase MI-7 would provide flood risk-reduction for the Roosevelt Park and Zoo area, in the central portion of Minot (Figure 1-1). This phase includes the following items:

- Approximately 1,500 LF of new levee and 2,100 feet of new floodwall
- Levee ramps for access, maintenance, and inspection at locations identified in the construction drawings.
- A stoplog closure at the existing Roosevelt Park pedestrian bridge.
- Bank erosion protection for the Mouse River channel and flood risk-management features at various locations.
- Watermain, Sanitary sewer and franchise utility upgrades for pipe networks crossing under the levee and floodwall within the Project right-of-way
- Municipal infrastructure modifications and improvements, including sanitary sewer, water main, storm sewer, parking lot, and street reconstruction
- Modifications to Roosevelt Park to accommodate the proposed levee/floodwall system and zoo relocation including redesigned trails, relocated playgrounds and monuments, relocated MCE railroad and replacement of a bathroom facility.
- Zoo modifications including relocating the North American Exhibit within Roosevelt Park, modifications and relocations to exhibits impacted by the proposed levee/floodwall system, redesigned trails, and modifications to zoo infrastructure.
- City greenway features including pedestrian trail system and open space
- Magic City Express railroad relocation/modifications
- Relocation of the existing Zoo pedestrian bridge to just downstream of the 8th Street Pump Station, including associated trail connections

3.1.3 MI-8: South Valker Road

Phase MI-8 would provide flood risk-reduction within the central portion of Minot near South Valker Road (Figure 1-1). This phase includes the following items:

- New levee alignments on the south side of the Mouse River extend from the Burdick Expressway bridge to the end of 17th Street SE.

- Levee ramps for access, maintenance, and inspection at locations identified in the construction drawings.
- Bank erosion protection for the Mouse River channel and flood risk-management features at various locations.
- Municipal infrastructure modifications and improvements including sanitary sewer, water main, storm sewer, 8th Avenue SE pump station, and pavement reconstruction.

3.1.4 MI-9: Burdick Expressway Bridge

Phase MI-9 includes the modification of the Burdick Expressway bridge (Figure 1-1). Highway B2 and the Burdick Expressway bridge are identified as critical transportation routes through Minot in the event of a flood. Based on required design flows and hydraulic modeling requirements, modifications to this bridge structure are essential to maintain connectivity during the design flood event. Bridge modifications would include the following:

- Realignment to the south to allow for traffic flow on the existing bridge during construction.
- The bridge will be modified from a 200-foot span length to approximately 395 feet
- The bridge will also be raised approximately 10 feet.
- Adjusted roadway approaches.
- Channel excavation will be performed around the new structure in conjunction with the bridge modifications. Levee alignments will tie into the bridge abutments and match into the roadway approaches.

3.1.5 Borrow Site

The Project would require borrow material that could be used as levee fill. The proposed Project would require up to 200,000 cubic yards of borrow material to construct the levees. Construction of Milestone 2 will obtain borrow from the Minot Area Development Corporation (MADC) site (Figure 3-1). The MADC site includes approximately 51 acres and would be accessed from 42nd Street Northeast. The material will be transported to the site from Highway 2 or Central Avenue.

Project Area

Minot Area Development Center (MADC) Borrow Area

Proposed Haul Route to Borrow Site

0 600 1,200 2,400

Feet

BARR

Figure 3-1

BORROW SITE LOCATION
MREFPP Milestone 2
Minot, ND

Barr Footer: ArcGIS 10.8.1, 2022-12-15 15:19 File: I:\Client\Mouse_River\Work_Orders\Phase_MI_7\Maps\Reports\Milestone 2 EA\Figure 3-2_Borrow Site Location.mxd User: kac2

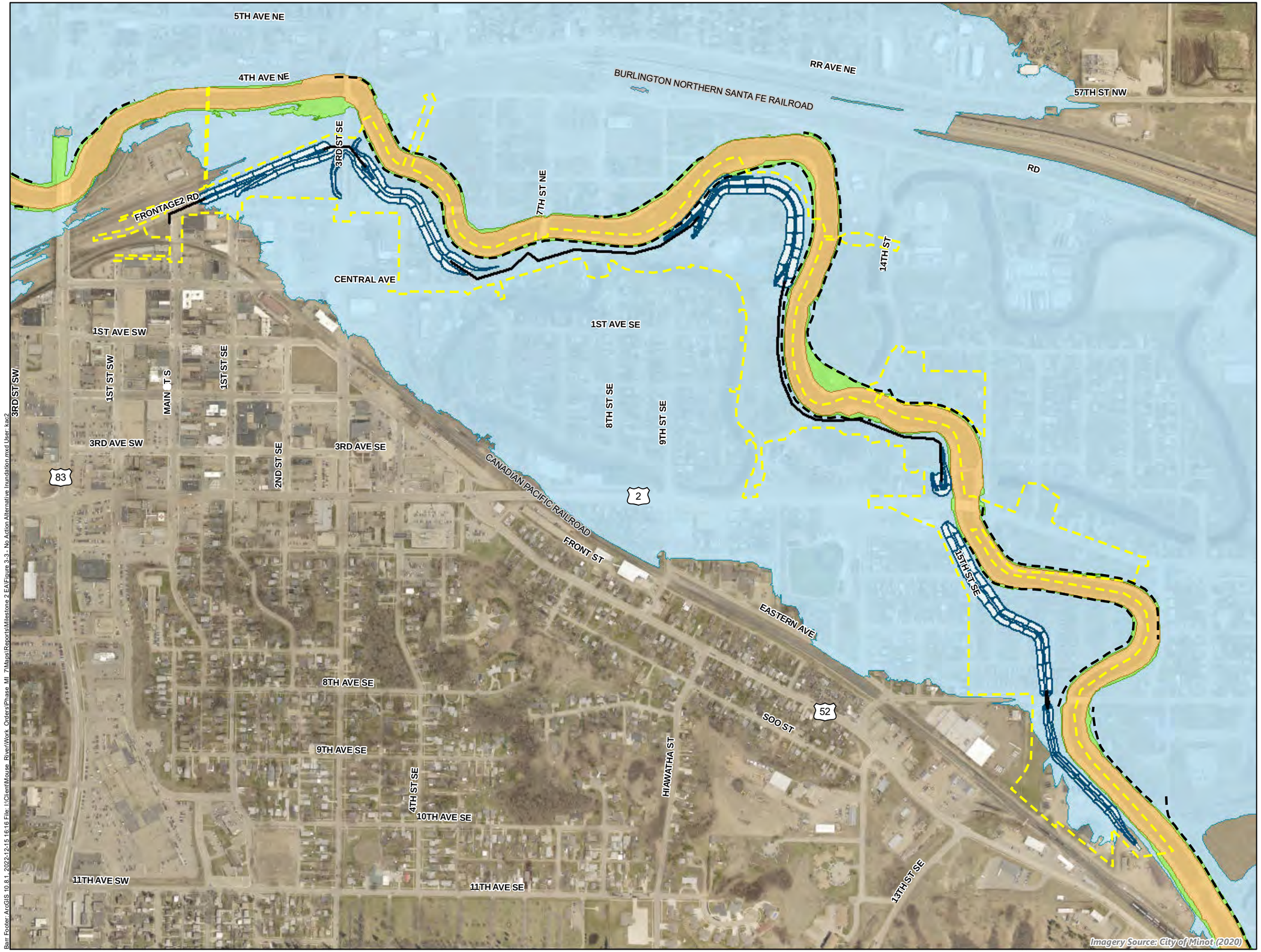
3.2 No Action Alternative

As stated in the PEIS (reference [1]), in instances where management measures, such as flood fighting, are likely to take place, no action should be evaluated as no change from the current management direction or level of management intensity. Flooding in the Project area has often been anticipated based on snowpack, precipitation forecasts, and hydrological conditions, allowing for successful flood fighting to flows of approximately 10,000 cfs in Minot (Figure 3-2). The 10,000 cfs flood event has a 1 percent annual chance of occurring. The primary no-action alternative evaluated in this SEA shall be based on a successful flood fight to 10,000 cfs[1] and will be referred to as the No-Action Alternative.

Under the No-Action Alternative, any flows over 10,000 cfs will assume overtopping of the levees and flooding behind those areas. The effectiveness of the No-Action Alternative provides the basis for assessing impacts, which are presented in Section 5.

Figure 3-2 shows the extent of inundation associated with the No-Action Alternative. Regardless of the past success to fight flood flows in excess of 10,000 cfs, it should be noted that flood fighting can be an intensive endeavor, carries a high level of risk and uncertainty, and is not a favorable course of action for the community.

[1] While the City of Minot may be able to flood fight flows up to 12,000 cfs if given enough time, flood fighting to 10,000 cfs has been assumed for analysis in this document.



Project Area

Levee Footprint

Floodwall Alignment

Existing Federal Flood Control Features

Modeled Inundation Extents

5,000 cfs flow

10,000 cfs flow

27,400 cfs flow

0 300 600 1,200

Feet

BARR

Figure 3-2

NO ACTION ALTERNATIVE INUNDATION (FLOOD FLIGHT TO 12,000 CFS)
MREFPP Milestone 2
Minot, ND

Barr Footer: ArcGIS 10.8.1, 2022-12-15 16:16 File: I:\Client\Maxus_Rivers\Work_Orders\Phase_MI_7\Maps\Reports\Milestone 2 EA\Figure 3-3 - No Action Alternative Inundation.mxd User: kaz2

4 Affected Environment

This section provides information on the existing resources and condition of the environment in the Project area as they relate to the existing social, economic, cultural, and environmental settings surrounding the project.

In this EA, several specific terms are used to describe the affected area around the Project. These terms are defined below.

- Project area is the broad, nonspecific area in the vicinity of the Project. The construction limits, Project footprint and the impact area would both be within the project area.
- Project footprint is the specific area covered by Project features
- Impact area is the construction limits for construction that has undergone advanced design, and accounts for site access and temporary workspace.

4.1 Geology, Soils, and Groundwater

4.1.1 Geology

The Project area is within the floodplain of the Souris River Valley which was carved out of the deposits of the Late Wisconsin age glacial advances. Bedrock from the Fort Union Group (Paleocene) is exposed at the bottom of the river valley. Following the glacial advance of the Late Wisconsinan, large discharges of glacial meltwaters flowed through the Souris River Valley, eroding the valley to its present elevation (reference [3]).

The Souris River Valley is generally comprised of floodplain alluvial deposits consisting of sands, gravels, silts, and clays. The sides of the valley are fairly steep and are dissected by several, narrow coulees containing intermittent streams. Colluvial fan deposits of sandy and silty clay are found in the Souris River Valley near the mouths of these coulees. Sand and gravel deposits within the till stratigraphy are used as construction and aggregate resources (reference [3]).

Various, thin beds of lignite are located within the Fort Union Group and generally outcrop in the Souris River Valley northwest of Minot, outside of the Project area. Minot is at the easternmost edge of the Williston Basin; however the surrounding vicinity is only considered a minor producer of oil and gas (reference [3]).

The seismic risk for the Project area is very low. The Project is within an area rated as a less than one-percent chance of damage from natural or human induced earthquake (reference [4]).

4.1.2 Soils

Soils present within the Project area are listed in Table 4-1. Over 60 percent of the soils are classified as urban land, which are soils that have been altered from human development. Approximately 30 percent of the soils are located on Velva loam soils which mainly consist of deep, level, well-drained soils that formed

in stratified alluvium on river bottoms. Velva soils make for fair topsoil but are subject to frost heaving and offer poor stability within embankments. Soil units found within the Project area have a low to moderate susceptibility to sheet and rill erosion (reference [5]). Figure 4-1 shows the distribution of the various soil units within the Project area.

Table 4-1 Soil Units in the Project Area

Map Unit Symbol	Soil Name	Percent Slope	Erosion Factor Kf(1)	Prime Farmland	Acres	Percent of Project Area(2)
F646B	Urban land	0-6	-(3)	No	1.2	1.1
F645B	Urban land-Udifluvents loamy complex	0-6	-(3)	No	65.3	60
F576A	Velva loam, moist, occasionally flooded	0-2	0.28	Yes	32.1	30
F996	Water	N/A	-(3)	No	8.5	8
F997	Water, intermittent	N/A	-(3)	No	0.1	1

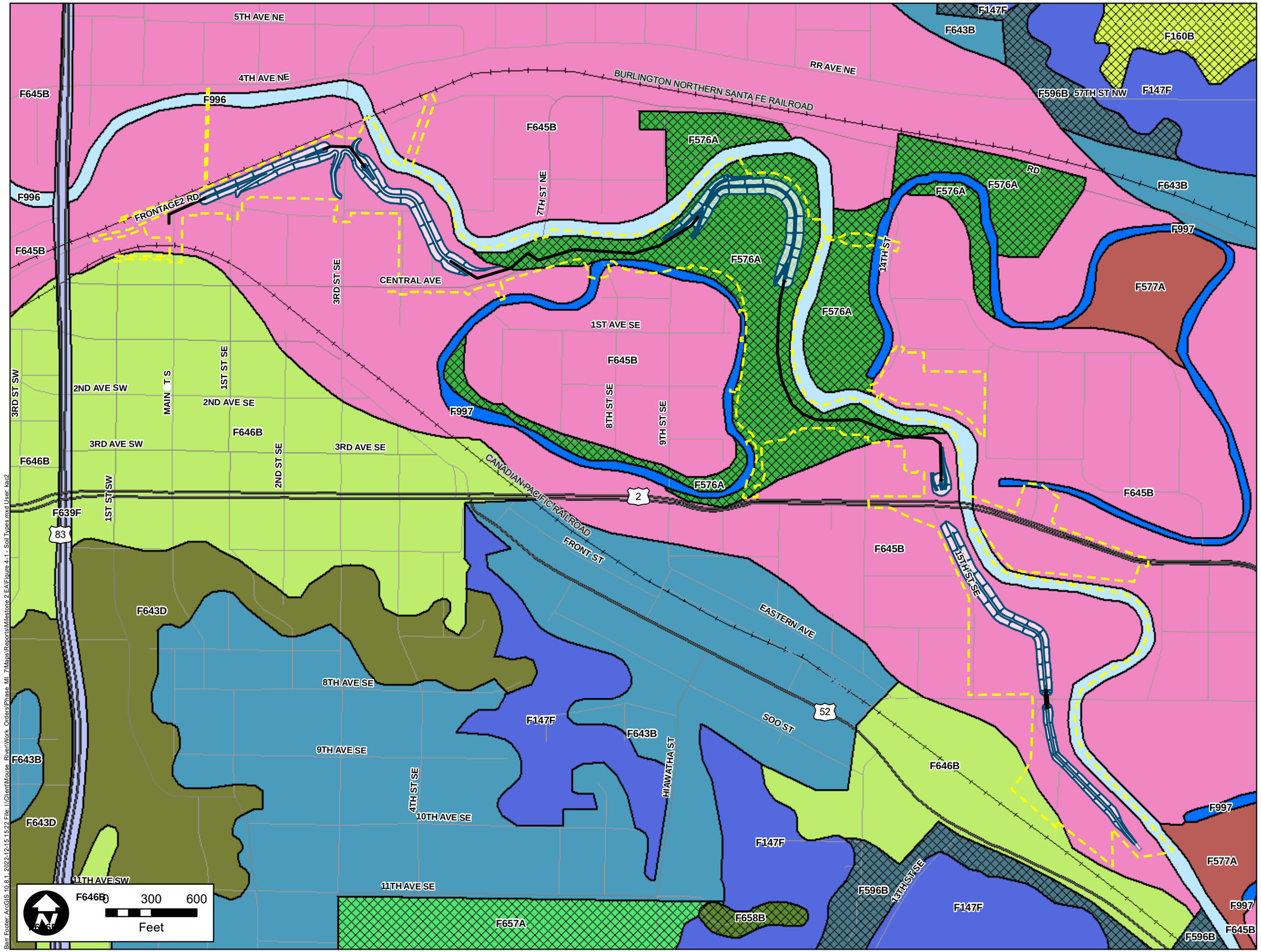
Source: reference [6]

(1) Erosion Factors indicate susceptibility of a soil to sheet and rill erosion by water. Kf indicates the erodibility of material less than 2 millimeters in size. Values of K range from 0.02 to 0.69. Higher values indicate greater susceptibility. Data from the U.S. Department of Agriculture Web Soil Survey https://websoilsurvey.sc.egov.usda.gov

(2) Do not add to 100 percent due to rounding.

(3) No erosion factor listed by the U.S. Department of Agriculture Web Soil Survey.

The Farmland Protection Policy Act (FPPA), U.S. Department of Agriculture (USDA) regulation implementing the FPPA (7 CFR Part 658), and USDA Departmental Regulation No. 9500-003, Land Use Policy, provides protection for prime and important farmland, prime rangeland, and forestland. The Project area contains approximately 32.1 acres of prime farmland (Figure 4-1), all of which is currently devoted to urban uses.



Project Area

Levee Footprint

Floodwall Alignment

Farmland Classification

Not Prime Farmland

All Areas are Prime Farmland

Map Unit Name

F147F	Buse-Barnes-Darnen loams, 9 to 35 percent slopes
F596B	Darnen loam, 2 to 6 percent slopes
F657A	Forman loam, west, 0 to 3 percent slopes
F658B	Forman-Aastad loams, west, 3 to 6 percent slopes
F160B	Hamlet-Souris loams, 1 to 5 percent slopes
F646B	Urban land, 0 to 6 percent slopes
F645B	Urban land-Udifluvents loamy complex, 0 to 6 percent slopes
F643B	Urban land-Udorthents loamy complex, 0 to 6 percent slopes
F643D	Urban land-Udorthents loamy complex, 6 to 15 percent slopes
F576A	Velva loam, moist, 0 to 2 percent slopes, occasionally flooded
F577A	Velva, moist-Fluvaquents, channeled fine sandy loams, 0 to 2 percent slopes, frequently flooded
F996	Water
F997	Water, intermittent

BARR

Figure 4-1

SOIL TYPES
MREFPP Milestone 2
Minot, ND

4.1.3 Groundwater

Groundwater resources in the Project area consist of unconsolidated sand and gravel aquifers. The Souris Valley aquifer system occurs along the entire length of the Mouse River in Ward County and contains multiple water bearing units with varying depths of hydrologic connection, including the Minot aquifer and the Souris Valley aquifer (reference [7]). The Minot aquifer consists of saturated sand and gravel deposits and is in the southwest corner of the Souris River Basin, underlying the majority of Minot. The Minot aquifer is approximately 30 to 50 feet thick, covers an estimated 6 to 7 square miles, and is overlain by 50 to 100 feet of silts and alluvial clay. The Minot aquifer is confined by the Northwest buried-channel aquifer to the northwest and the Souris Valley aquifer to the west and southeast but it's connection to each of these aquifers is poor and limited (reference [7]).

The Souris Valley aquifer system underlies the Project area and is the primary source of public water supplies for several communities in the region (Figure 4-2). Minot draws the majority of its public water supply from the Minot aquifer, the remaining supply is pulled from the Sundre aquifer and the Mouse River. The Project is entirely within the wellhead protection area established by the North Dakota Department of Environmental Quality (DEQ) to protect the Souris Valley aquifer system, including the Minot aquifer (reference [7]).

The North Dakota Department of Water Resources (NDDWR) identified one observation well within the Project area located on a residential property at the corner of 3rd Street SE and 1st Avenue NE. This observation well was installed in July of 1992 to a depth of 280 feet (reference [8]).

4.2 Surface Waters

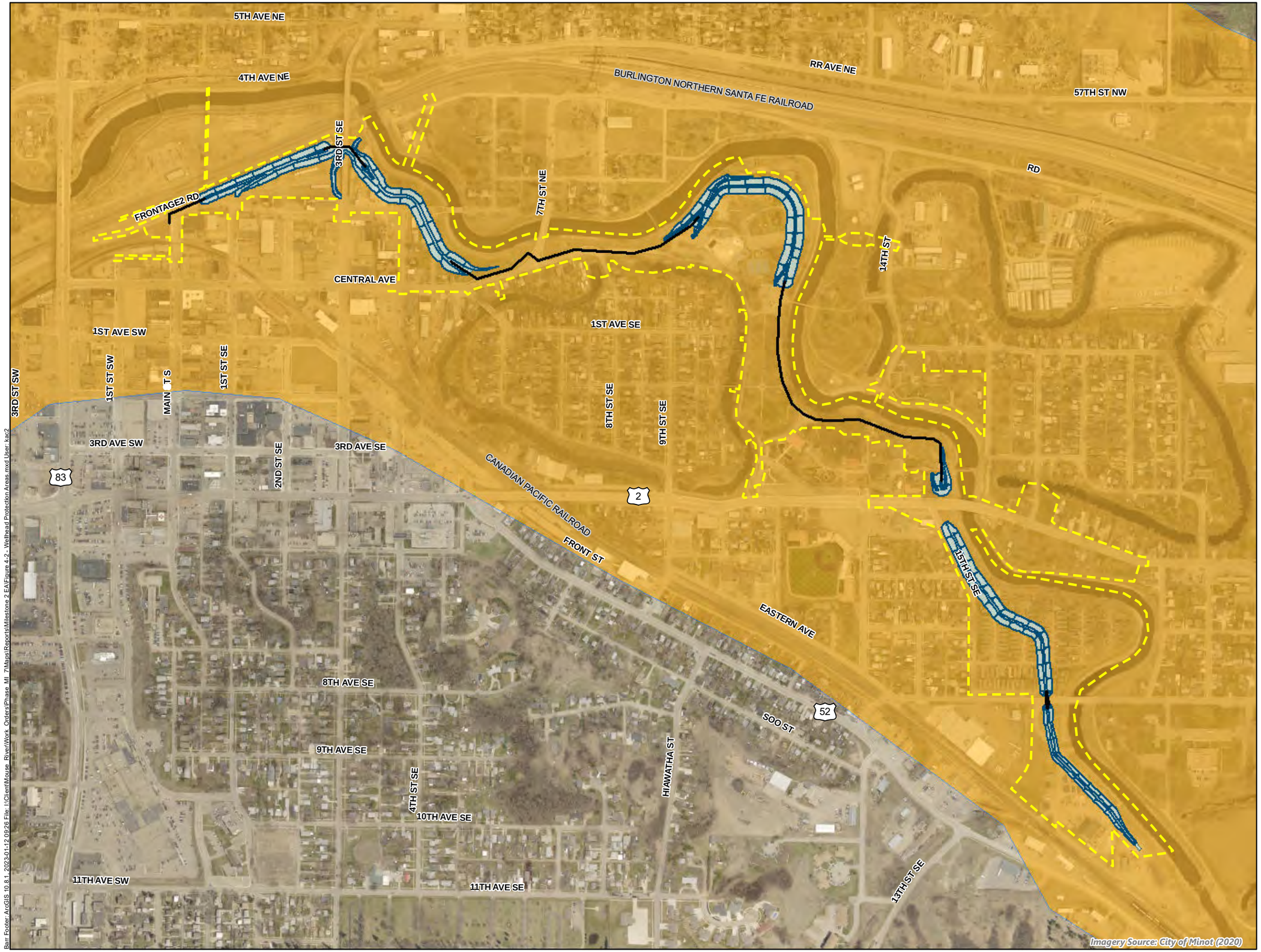
4.2.1 Mouse (Souris) River

The primary water resource located within the Project area is the Mouse (Souris) River. Upstream of the Project area, the river channel is steep and confined within a narrow floodplain. As the Mouse River approaches Minot, it becomes more channelized and straightened due to previous flood risk reduction projects which are further discussed in Section 2.2.5.1 of the PEIS (reference [1]).

The Mouse River flows west to east through the Project area and is influenced by four dams located upstream of the Project area (Figure 4-3). The primary purpose of several of these dams was to create additional habitat for waterfowl and other aquatic species, not for impounding water or flood management purposes; however, these reservoirs have incidentally been able to provide some additional storage during periods of high flows. An analysis of these dams located along the Mouse River can be found in Section 3.2.1 of the PEIS (reference [1]).

4.2.1.1 Water Quality Classification

Under the North Dakota Administrative Code (33-16-02.1), the Mouse River is classified as a Class IA water. Class IA waters are identified as being suitable for the propagation or protection of local fish species and other aquatic biota and for swimming, boating, and other water recreation. Water quality in Class IA waters is intended to also be suitable for use in irrigation, stock watering, and wildlife without harmful effects (reference [9]).



Project Area

Levee Footprint

Floodwall Alignment

Wellhead/Source Water Protection Area

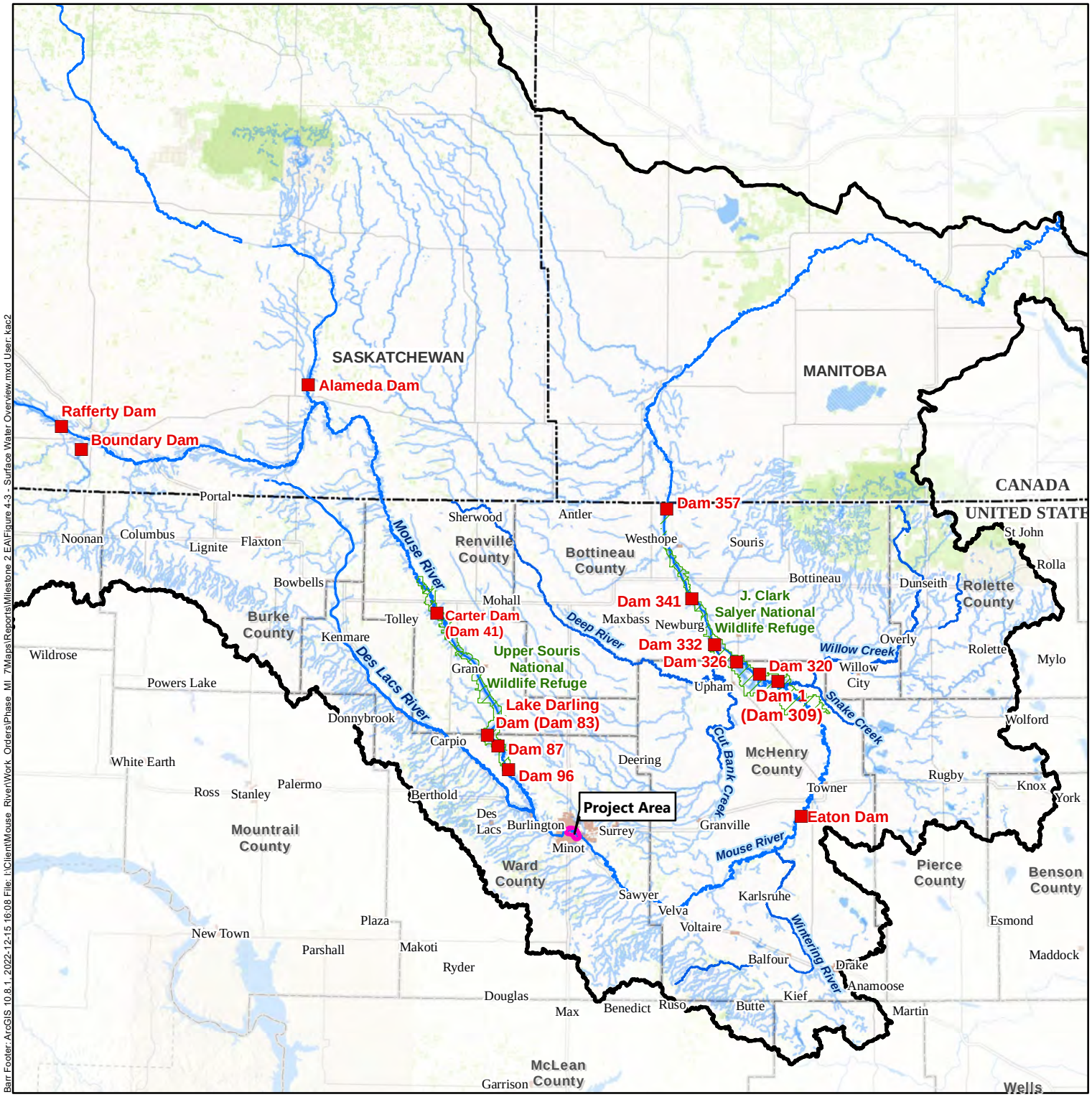
0 300 600 1,200

Feet

BARR

Figure 4-2

WELLHEAD PROTECTION AREAS
MREFPP Milestone 2
Minot, ND



Project Area
Existing Dams
Mouse/Souris River Watershed
National Wildlife Refuge
Provincial/State Boundaries
County Boundaries

0 10 20 40
Miles

Figure 4-3

SURFACE WATER OVERVIEW
MREFPP Milestone 2
Minot, ND

Bar Footer: ArcGIS 10.8.1, 2022-12-15 16:08 File: I:\Client\Mouse_River\Work_Orders\Phase_MI_7\Maps\Reports\Milestone 2 EA\Figure 4-3 - Surface Water Overview.mxd User: kac2

4.2.1.2 Impairment Status

Under Section 303(d) of the Clean Water Act (CWA), states are required to monitor and assess their waters to determine if they meet water quality standards and thereby support the beneficial uses they are intended to provide (33 U.S.C 1313(d)) (reference [9]). In 2018, the NDDH published their integrated water quality assessment report, which reviews the standards of quality for bodies of waters in North Dakota. This report lists five sections of the Mouse River as impaired, all classified as low priority based on waterbody/pollutant combinations. No segments with an impairment status are located within the Project area (Figure 4-4). The nearest impaired section of the Mouse River is upstream, from Lake Darling to its confluence with the Des Lacs River near Burlington, North Dakota (reference [10]). Refer to Section 3.2.1.2 of the PEIS (reference [1]) for further detail on the impairment status of the Mouse River.

4.2.2 Floodplain

Studies are currently underway to update the Mouse River 1% Annual Exceedance Probability (AEP) floodplain. As part of the detailed Flood Insurance Study, updates to the floodplain and floodway boundaries are being assessed along portions of the Mouse River (reference [11]). Preliminary study recommendations suggest modifying the 1% AEP floodplain to be based on a discharge rate of 10,000 cfs, twice the rate used to calculate the current 1% AEP effective floodplain (reference [12]). An appeal of this recommendation is underway suggesting 8,000 cfs as the 1% AEP. If the study, or the appeal, is accepted by FEMA, this modification would expand the existing 1% AEP floodplain in the Project area.

4.2.2.1 Hydrology and Hydraulics

A hydrologic and hydraulic study was completed to evaluate the existing conditions in support of floodplain management alternatives for the Mouse River Valley (reference [13]). Hydraulic models were used to predict how flooding occurs under existing conditions and to evaluate what could be expected to occur in the event of a 50-year flood (5,000 cfs), 100-year flood (10,000 cfs) and a flood similar to the flood of record (27,400 cfs). As shown in the PEIS (Section 3.2.2.1 of reference [1]), the flood of record scenario results in a much larger inundation area than the other two modeled flood events.

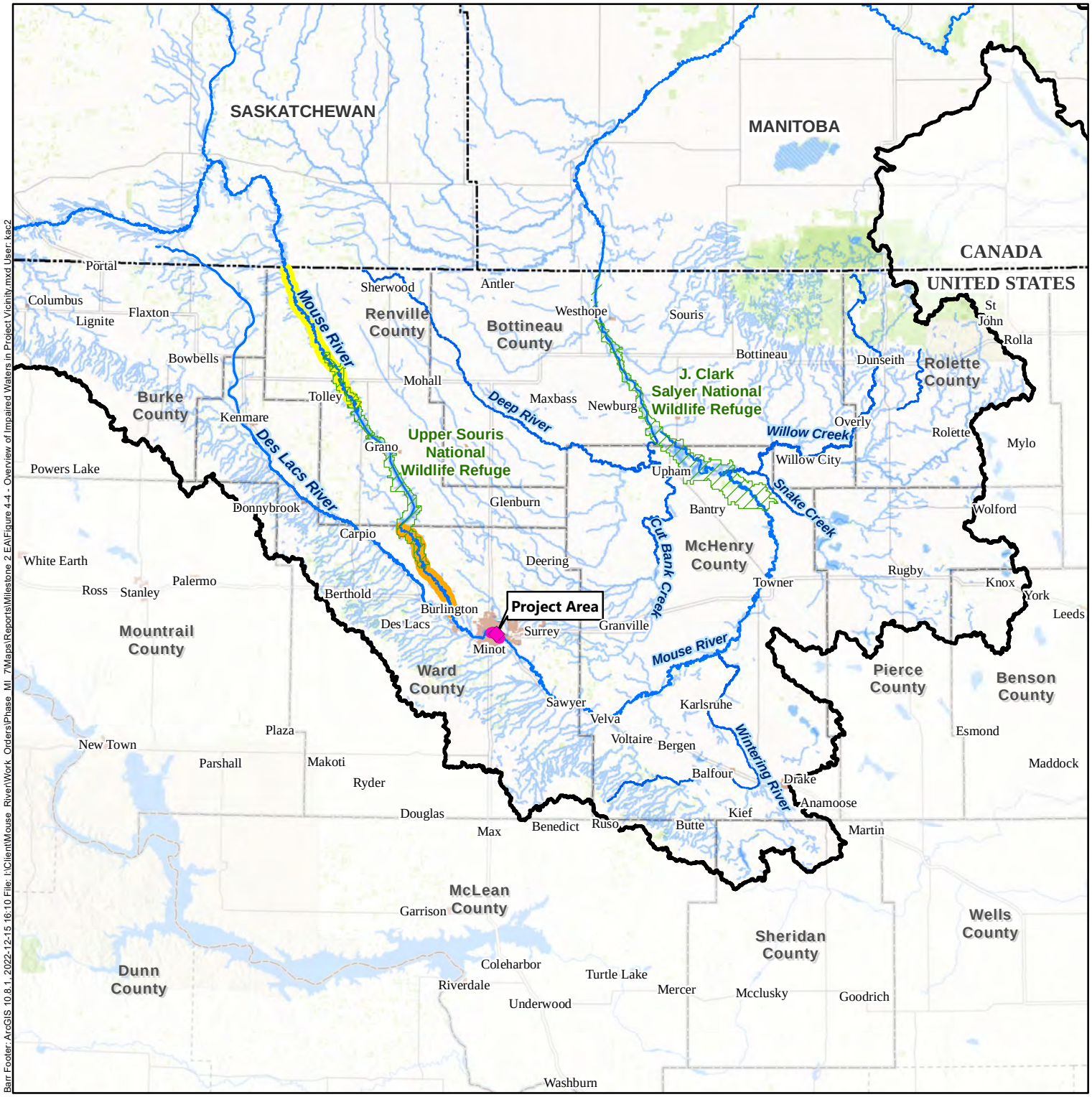


Figure 4-4

OVERVIEW OF IMPAIRED WATERS IN PROJECT VICINITY
MREFPP Milestone 2
Minot, ND

Bar Footer: ArcGIS 10.8.1, 2022-12-15 16:10 File: I:\Client\Mouse_River\Work_Orders\Phase_MI_7\Maps\Reports\Milestone_2_EA\Figure 4-4 - Overview of Impaired Waters in Project Vicinity.mxd User: kac2

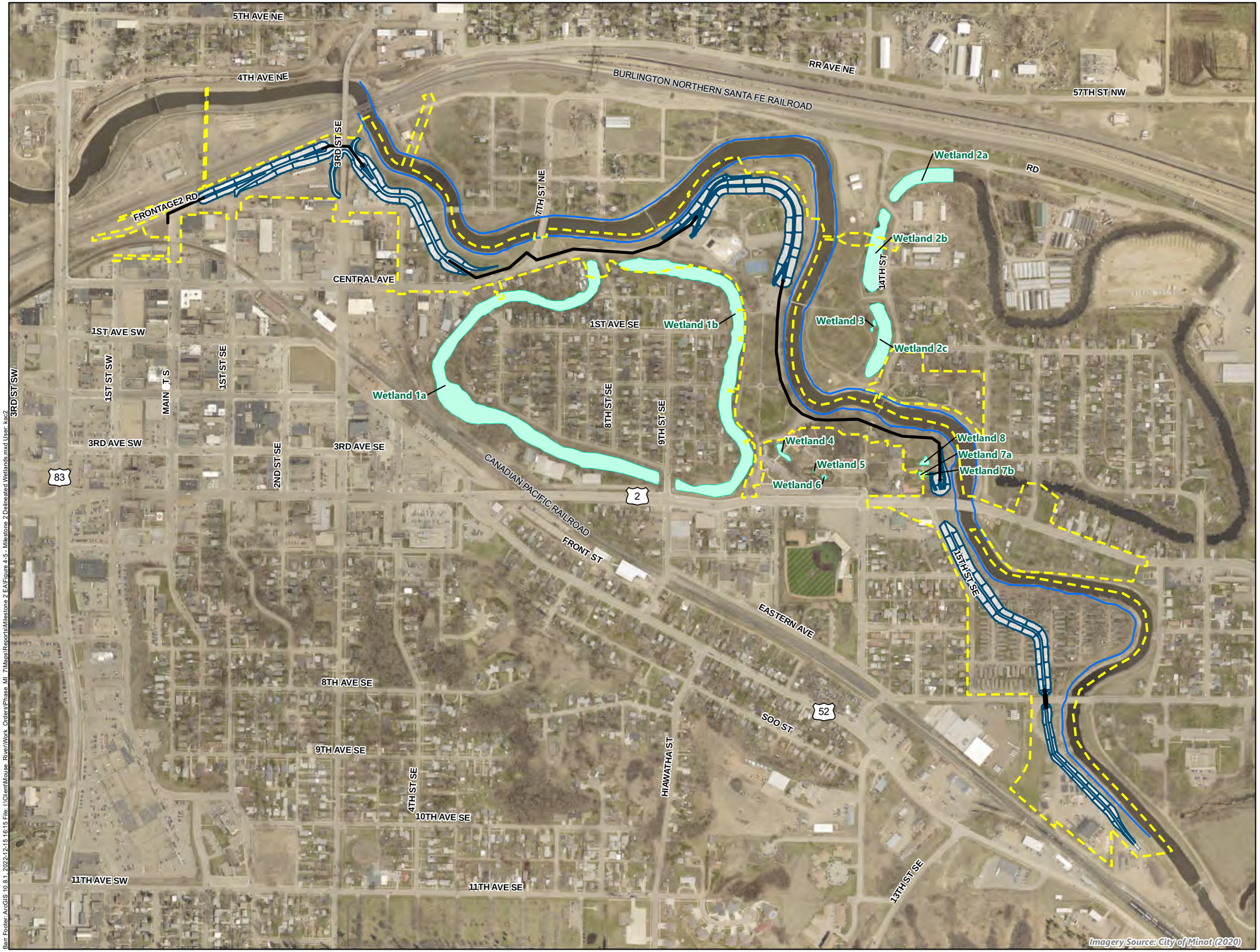
4.2.3 Wetlands

An aquatic resources field delineation for the Project impact area was completed by Houston Engineering on August 23, 2021, and June 4, 2022. Eight wetlands, (total 14.06 acres), and two other waters, (totaling 18.65 acres) were identified during the field delineation (reference [14]). The delineated wetlands were primarily associated with natural depressions within historical oxbow lakes, and some wetlands were identified as constructed landscaping features within Roosevelt Park Zoo. The delineated other waters are identified as sections of the Mouse River flowing though the Project area, as well as a drainage swale associated with the adjacent river (Figure 4-5).

A separate field wetland delineation for potential borrow site locations was completed by Akerman-Estvold in October and November 2021. A total of 36 wetlands, (total 52.96 acres), and 11 other waters, (Table 4-2)(total 15.40 acres). Of the 36 wetlands and 11 other waters, six wetlands and two other waters are jurisdictional waters of the United States and are regulated under Section 404 of the CWA. The remaining resources are not considered jurisdictional and are not regulated by the USACE (references [14]; [15]). The wetlands are primarily associated with natural depressions common in the prairie pothole region, roadside ditch wetlands, and basin wetlands. The borrow site location was identified avoiding wetland areas inventoried during the field delineation, (Figure 4-6).

Table 4-2 Wetlands Delineated for Milestone 2

Location	Number of Wetlands	Acres of Wetlands
Phase MI-6	2	10.83
Phase MI-7	6	3.23
Phase MI-8	0	0
Phase MI-9	0	0
Borrow Site	36	52.96
TOTAL	**44**	**67.02**



Project Area
Levee Footprint
Floodwall Alignment
Delineated Wetland
Ordinary High Water Mark

0 300 600 1,200
Feet

BARR

Figure 4-5

MILESTONE 2 DELINEATED WETLANDS
MREFPP Milestone 2
Minot, ND

Barr Footer: ArcGIS 10.8.1, 2022-12-15 16:15 File: I:\Client\Mouse_River\Work_Orders\Phase_MI_7\Maps\Reports\Milestone 2 EA\Figure 4-5_Milestone 2 Delineated Wetlands.mxd User: kac2

Minot Area Development Center (MADC) Borrow Area

Delineated Wetland

0 150 300 600

Feet

BARR

Figure 4-6

BORROW SITE
DELINEATED WETLANDS
MREFPP Milestone 2
Minot, ND

Barr Footer: ArcGIS 10.8.1, 2022-12-15 16:16 File: I:\Client\Mouse_River\Work_Orders\Phase_III_7\Maps\Reports\Milestone 2 EA\Figure 4-6 - Borrow Site Delineated Wetlands.mxd User: kac2

4.3 Biological Resources

4.3.1 Vegetation

The Project area primarily consists of developed land. As such, the existing vegetation in the Project area is dominated by altered cover types, specifically maintained lawns, roadway ditches. Trees are scattered throughout the Project area, including the following species, green ash (*Fraxinus pennsylvanica*), bur oak (*Quercus macrocarpa*), box elder (*Acer negundo*), American elm (*Ulmus americana*), and eastern cottonwood (*Populus deltoides*). There are no undisturbed native plant communities remaining within the Project area. Urbanized corridors and developed riparian areas, along with the presence of existing flood risk-reduction features, have resulted in a disturbed, non-continuous corridor throughout the Project area. Plant species typically found in developed and disturbed urbanized environments are common in the Project area. The Borrow Site is primarily composed of agricultural fields, with a few scattered wetlands. There is a strip of mixed prairie with smooth brome (*Bromus inermis*) adjacent to the Borrow Site.

According to the North Dakota Department of Agriculture, there are 13 state noxious weeds that are enforced by all cities and counties in North Dakota (reference [16]). Several of the 13 state noxious weeds have been documented in Ward County; these include: absinth wormwood *(Artemisia absinthium*), salt cedar (*Tamarisk ramoissima* spp.), leafy spurge (*Euphorbia esula*), diffuse knapweed (*Centaurea diffusa* Lam.), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus Nutans* L.), dalmatian toadflax (*Linaria gentistifolia* spp. *Dalmatica*), purple loosestrife (*Lythrum salicaria* L., *Lythrum virgatum* L., and all cultivars), Russian knapweed (*Centaurea repens* L.), spotted knapweed (*Centaurea maculosa* Lam.), and yellow toadflax (*Linaria vulgaris*) (reference [17]).

A tree inventory was conducted for Phases MI-6 and MI-7 as part of the biological studies for the Project. The tree inventory identified a total of 220 trees scattered throughout the MI-6 construction limits and approximately 504 trees within the MI-7 construction limits. Frequently observed species include the tree species noted above. Tree inventories will be conducted in the future for Phases MI-8 and MI-9.

4.3.2 Fish and Wildlife

A number of fish and wildlife species use various portions and habitats along the Mouse River. Fish surveys conducted between 1960 and 2020 indicate that the stretch of the Mouse River in the vicinity of Minot has been inhabited by 19 species of fish, including popular game fishes such as walleye, perch, and northern pike (references [18]; [19]). Anecdotal reports from anglers and game wardens indicate that walleye and northern pike fishing has been very good at times since the flood of 2011 (reference [18]). A complete list of the fish species that have historically inhabited the Souris River in the vicinity of Minot is provided in Table 4-3.

Table 4-3 Fish Species Known to Occur in the Souris River Near Minot

Species Common Name	Species Scientific Name
Black Bullhead	*Ameiurus melas*
Blacknose dace	*Rhinichthys atratulus*
Brassy minnow	*Hybognathus hakinsoni*
Brook stickleback	*Culaea inconstans*
Blackside darter	*Percina maculate*
Common shiner	*Luxilus comutus*
Creek chub	*Semotilus atromaculatus*
Emerald shiner	*Notropis atherinoides*
Fathead minnow	*Pimephales promelas*
Johnny darter	*Ethestoma nigrum*
Longnose dace	*Rhinichthys cataractae*
Northern pike	*Esox lucius*
Sand shiner	*Notropis stramineus*
Smallmouth Bass	*Micropterus dolomieu*
Tadpole madtom	*Noturus gyrinus*
Trout perch	*Percopsis omiscomaycus*
Walleye	*Sander vitreus*
White sucker	*Catostomus commersonii*
Yellow perch	*Perca flavescens*

Wildlife species inhabiting the Project area are those species that are well-habituated to human presence and are able to use the altered or degraded vegetation that typify the area. These include small to medium mammals (e.g., squirrels, fox, and deer), perching birds, common raptors, and common insect species.

Nest surveys were conducted in the Phase MI-6 and MI-7 Project areas in mid-November of 2021, late March of 2022, and early to mid-April of 2022 (reference [20]). The surveys were conducted to document the presence or absence of any probable nesting sites within the Phase MI-6 and MI-7 Project areas or their immediate vicinity. Several nests were observed during the survey; these nests were typically small and consistent with construction attributed to squirrels or small nesting birds. One red-tailed hawk (*Buteo jamaicensus*) was observed in the Project area during the survey; however, no red-tailed hawk nests were observed. Nest surveys would be conducted in the future for Phases MI-8 and MI-9.

4.3.3 National Wildlife Refuges

There are no National Wildlife Refuges (NWRs) located within the Project area. The Upper Souris NWR is a 39,092-acre refuge located 14 miles northwest of the Project area in the Souris River Valley, extending approximately 35 miles along the Souris River. It includes the 9,600-acre impoundment Lake Darling, which is managed as a regulated supply of water to marshes within the Refuge and downstream, especially for the J. Clark Salyer NWR 110 miles downstream. NWRs provide important resting, forage, and habitat for migratory birds and other wildlife. They are important components of the Central Flyway system used by migrating waterfowl and other birds.

4.3.4 Threatened and Endangered Species

Under Section 7 of the Endangered Species Act (ESA) of 1973, federal agencies are required to ensure that agency actions are not likely to jeopardize the continued existence of any listed species or result in the destruction of adverse modification of critical habitat. 16 U.S.C. § 1536(a)(2). Listed species include endangered and threatened species. An endangered species, according to the U.S. Fish and Wildlife Service (USFWS), is a species that is in danger of becoming extinct throughout all of its range, whereas a threatened species is one that is likely to become endangered in the foreseeable future. A federal candidate species is a species for which the USFWS has sufficient information to propose listing them as endangered or threatened under the ESA; however, candidate species have no federal protection under the ESA.

A May 2023 review of the USFWS Information, Planning, and Consultation (IPaC) System identified six federally endangered, threatened, or candidate species known or believed to occur in Ward County, as summarized in Table 4-4. With the exception of the monarch butterfly (*Danaus plexippus*), a federal candidate species, more detailed information on the life histories of each of these species is in the PEIS (Section 3.3.4.1 of reference [1]).

Table 4-4 Summary of Threatened and Endangered Species in Ward County

Species	Status	Preferred Habitat
Whooping crane (*Grus americana*)	Endangered	Shallow wetland with cattails, bulrushes, and sedges and adjacent uplands
Dakota skipper (*Desperia dacotae*)	Threatened	Native prairie with high diversity of wildflowers and grasses
Northern long-eared bat (*Myotis septentrionalis*)	Endangered	Roosts in trees (both live and dead) greater than 3 inches in diameter that have loose or peeling bark, cavities, or crevices
Piping plover (*Charadrius melodus*)	Threatened	Barren sand and gravel shores of rivers and lakes, avoiding areas of dense vegetation
Rufa red knot (*Calidris canutus rufa*)	Threatened	Exposed mudflats and open sparsely vegetated areas
Monarch butterfly (*Danaus plexippus*)	Candidate	Fields and parks where native flowering plants, including milkweed (*Asclepias* spp.), which is required for breeding

The USFWS has designated critical habitat for whooping crane, Dakota skipper, and piping plover. However, there is no designated critical habitat for the whooping crane in North Dakota. There are designated critical habit units for the piping plover and Dakota skipper in North Dakota, but they are more than 20 miles from the Project area.

4.3.4.1 Species of Conservation Priority

There are 115 Species of Conservation Priority (SoCP) in North Dakota; these are represented by three levels of conservation priority (Level I = 36 species; Level II = 44 species; Level III = 35 species). The most current information on the distribution and relative abundance of SoCP species is found in North Dakota's 2015 Wildlife Action Plan, and consists of 47 birds, two amphibians, nine reptiles, 21 mammals, 22 fish, 10 freshwater mussels, and four insects (reference [21]). It is likely that many of the SoCP bird species are occasionally present in the Project area. However, it is unlikely that SoCP species in general are regular inhabitants of the Project area. Many of the SoCP species are likely found in one or more of the four NWRs within 50 miles of the Project area, especially the SoCP waterfowl and shorebird species. Of the federal species known to occur in Ward County, the whooping crane, and piping plover are also SoCP species.

4.4 Land Use and Infrastructure

Minot is an urban community located in the Souris River Valley, with the Mouse River flowing through it. Land use and infrastructure in the Minot area are strongly influenced by the aggressive pace of regional growth experienced in the past decade. Minot's population increased significantly due largely to the expansion of the petroleum industry tapping the Bakken shale formation during that period. Population growth resulted in a growing demand for housing and infrastructure (e.g., water, sewer, and transportation systems), though the rate of growth is leveling out.

4.4.1 Land Use and Zoning

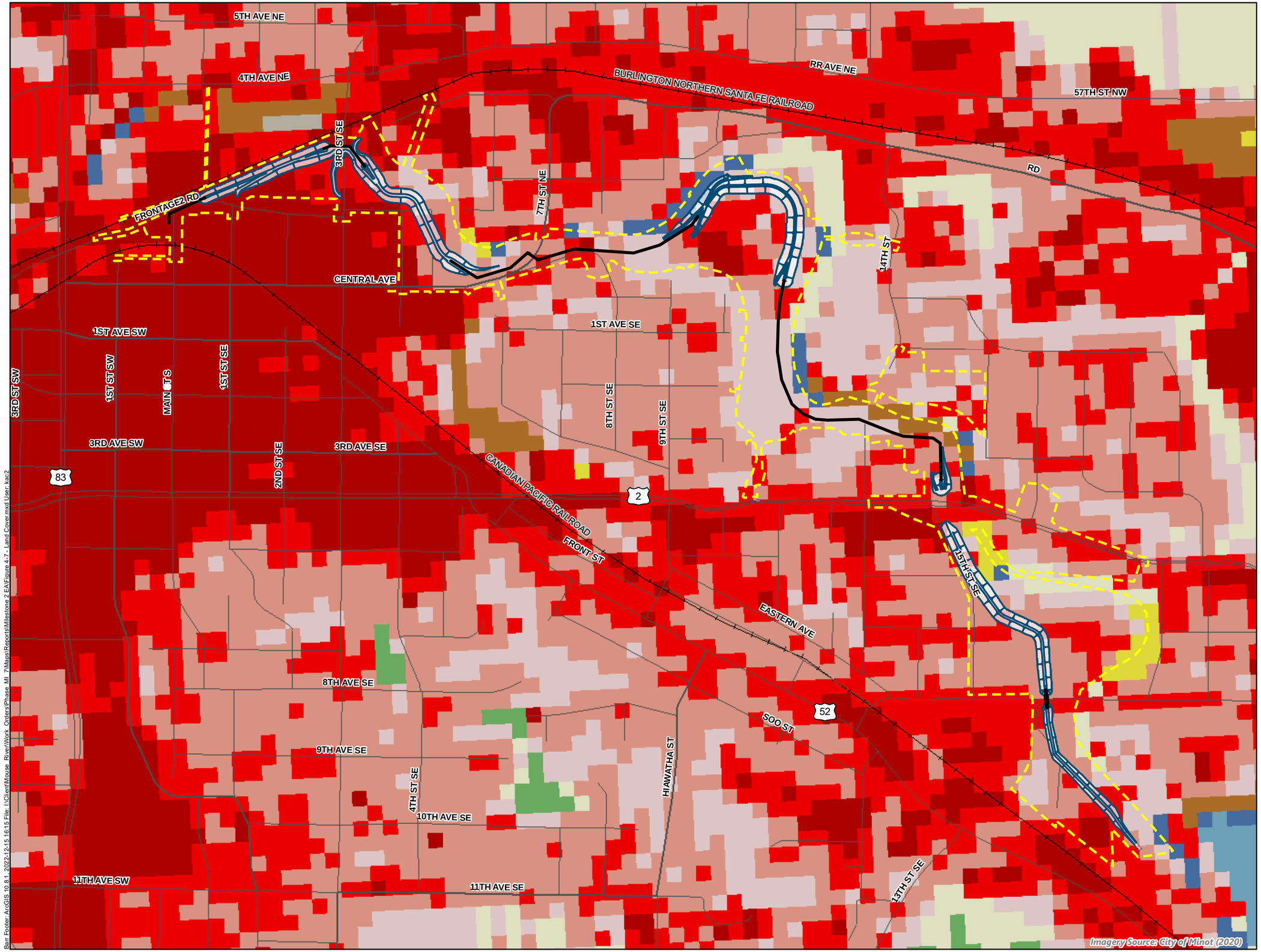
Land use in the Project area was assessed by reviewing local zoning ordinances and relevant comprehensive land use and natural resource plans; federal, state, and local agency websites; aerial photography; and a variety of GIS mapping sources including the Multi-Resolution Land Characteristics Consortium, National Land Cover Database 2011 (NLCD). Minot's Land Use Plan and 2012 Comprehensive Plan provide an overview of existing and planned land use in Minot. Over the last few years, Minot has experienced city growth in all directions. The flooding event of 2011 has pushed land use developments away from the river and to areas further from the core of Minot.

The Project is centrally located within Minot, following the path of the Mouse River. Land cover generally reflects the general types of land use (i.e., developed) within the area. The NLCD mapping results showing the land cover in the Project area are provided in Figure 4-7. Within and directly adjacent to the Project boundary are residential properties, Roosevelt Park and Zoo, industrial properties, commercial properties, and the Burlington Northern Santa Fe Railway. Land cover of the Project area in Minot is predominately developed area, a mix of low intensity and open space with some medium and high intensity. Other land cover includes developed areas, woody and emergent herbaceous wetlands associated with areas directly adjacent to Mouse River, and old oxbows associated with the river channel.

Zoning reflects land-use restrictions, limitations, rights, and privileges assigned by municipalities. At present, Minot governs zoning and land use within their corporate city limits and an extraterritorial zoning boundary.

Minot Zoning Districts are shown on Figure 4-8. The Project area is in the following zoning districts:

- Single family residence
- Public zone
- Light industrial
- Heavy industrial
- General commercial



Project Area
Levee Footprint
Floodwall Alignment

Land Cover (USGS 2019)
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Herbaceous
- Hay/Pasture
- Cultivated Crops
- Emergent Herbaceous Wetlands

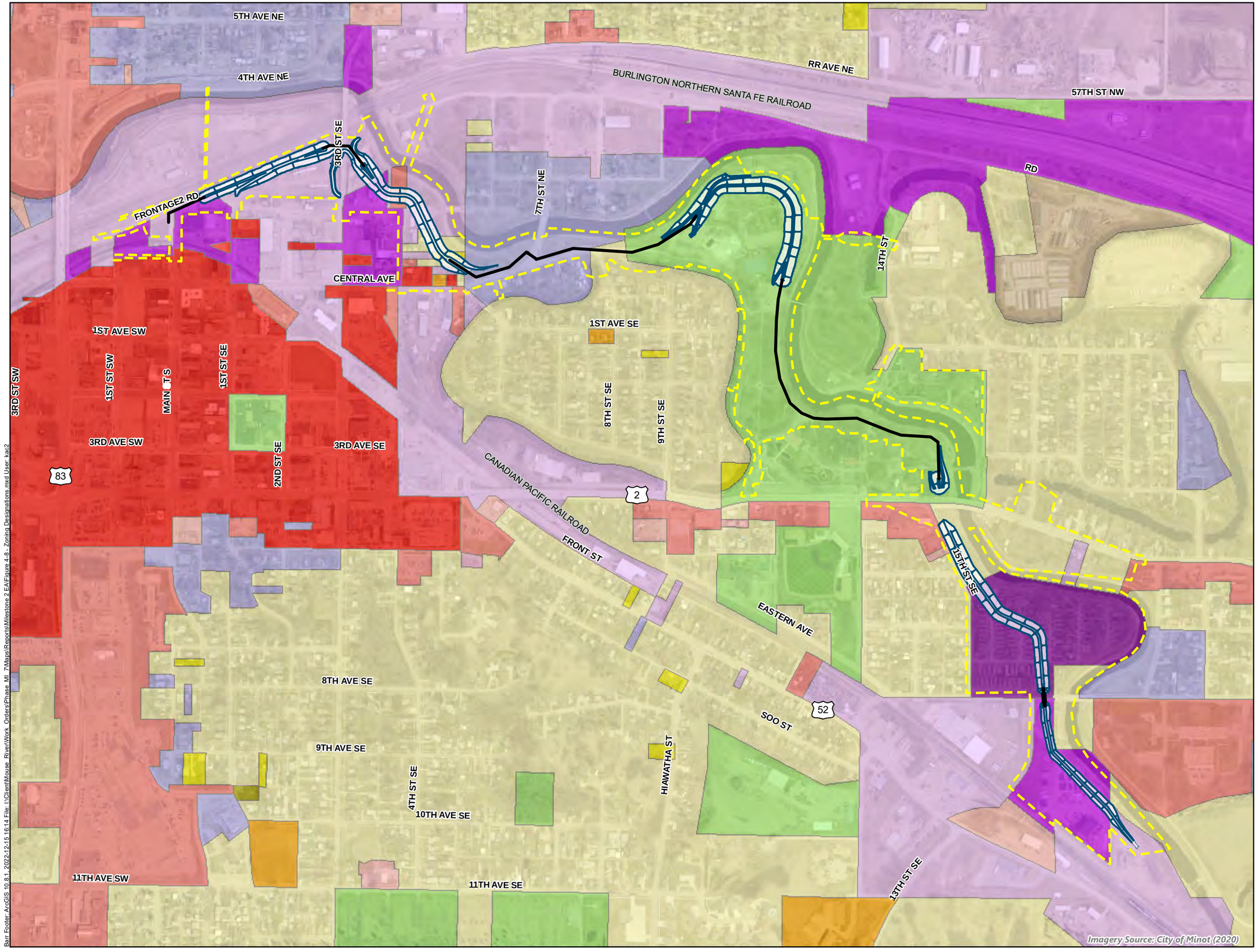
0 300 600 1,200
Feet

BARR

Figure 4-7

LAND COVER
MREFPP Milestone 2
Minot, ND

Barr Foster ArcGIS 10.8.1, 2022-12-15 16:15 File: I:\Client\Mouse_River\Work_Orders\Phase_MI_7\Maps\Reports\Milestone 2 EA\Figure 4-7_Land Cover.mxd User: kac2



Project Area

Levee Footprint

Floodwall Alignment

City of Minot Zoning

- AG - Agriculture District
- C1 - Limited Commercial District
- C2 - General Commercial District
- C3 - Central Business District
- M1 - Light Industrial District
- M2 - Heavy Industrial District
- MH - Manufacture Home District
- O - Office
- P - Public Zone
- R1 - Single Family Residence District
- R2 - Two-Family Residence District
- R2B - Two-Family Residence District
- R3 - Multiple Residence District
- R3B - Multiple Residence District
- R4 - Planned (Residential)

0 300 600 1,200

Feet

BARR

Figure 4-8

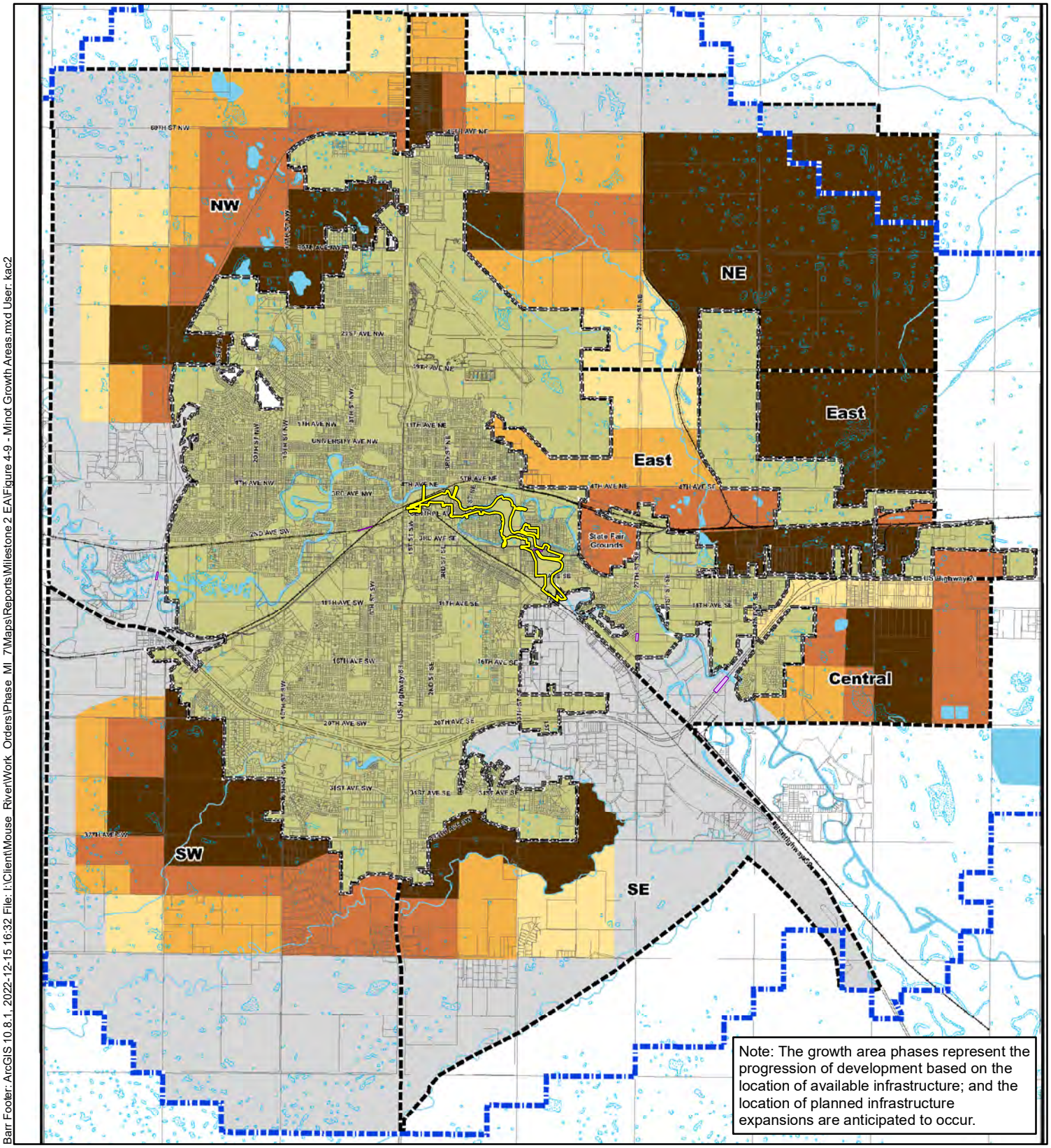
ZONING DESIGNATIONS
MREFPP Milestone 2
Minot, ND

Barr Footer: ArcGIS 10.8.1, 2022-12-15 16:14 File: I:\Client\Mouse_River\Work_Orders\Phase_III_7\Maps\Reports\Milestone 2 EA\Figure 4-8_Zoning Designations.mxd User: kac2

4.4.2 Future Land Use and Flood Recovery Planning

Minot's Comprehensive Plan (reference [22]) recognizes that the city has experienced significant new development due to the oil boom in western North Dakota, agriculture and railroad-related business, flood recovery and reconstruction, the Minot Air Force Base, Minot State University, and Minot's continued role as a regional center for western North Dakota and eastern Montana. These aspects are discussed in more detail in the PEIS (Section 3.6 of reference [1]). The Comprehensive Plan has identified "growth areas" with a logical pattern of land uses to allow compact, orderly, rational growth to occur, creating desirable new neighborhoods. The designated growth areas are all located outside of Minot City limits (Figure 4-9). These growth areas have been planned to address future scenarios ranging from explosive growth to slow growth (reference [22]).

The proposed flood risk-reduction Project is compatible with Minot's future planning efforts. Minot's land use planning integrates greenway connections and compact development in the city. The 2012 Comprehensive Plan recognizes the need for rational and responsible growth and development that offers a well-planned community and preservation of quality of life. Important considerations are made for coordinated land use and transportation plans; encouragement of new and continued, balanced growth of commercial/industrial development; and maintenance of downtown Minot as a focal point. Minot's land use plan identifies the entire Mouse River reach within the city, as conceptual greenway connections. Designating greenway connections involves protecting and enhancing drainage corridors; providing amenities; connecting major destinations with biking/walking routes; providing active living choices; connecting wildlife habitat; and enhancing existing streets (reference [1]).



Barr Footer: ArcGIS 10.8.1, 2022-12-15 16:32 File: I:\Client\Mouse_River\Work_Orders\Phase_MI_7\Maps\Reports\Milestone 2_EA\Figure 4-9 - Minot Growth Areas.mxd User: kac2

Project Area
2-Mile Jurisdictional Boundary
Growth Area Boundaries
Phase 1
Phase 2
Phase 3
Phase 4
Phase 5
City of Minot (2011)
Railroad
Airport
Streams
Open Water
Wetland

0 3,000 6,000
Feet

Figure 4-9

MINOT GROWTH AREAS
MREFPP Milestone 2
Minot, ND

4.4.3 Infrastructure

Infrastructure provides the basic physical and organizational structures needed for the operation of a functional society. Infrastructure located within the Project area includes roadways, railways, transit systems, utilities, water delivery, and internal drainage systems, along with emergency services.

4.4.3.1 Existing Flood Risk-reduction Infrastructure

The existing flood risk-reduction features within Minot were federally designed and constructed by the USACE based on the project authorized by Section 201 of the Flood Control Act of 1965 (P.L. 89-298) and modified based on recommendations by the USACE Chief of Engineers in House Document 286, 87th Congress, 2nd Session, and House Document 321, 91st Congress, 2nd Session. The project features consist primarily of channel modifications, channel cutoffs, and levees and are part of an authorized federal project that extends from Burlington to Logan, which includes flood risk reduction storage behind the Burlington Dam. Channel modifications were designed to accommodate flows up to 5,000 cfs. In addition, several stretches of levee were also constructed. The Minot Flood Emergency Action Plan has identified measures to provide protection up to 10,000 cfs. Additional discussion of flood risk-reduction features in the Project area are located in the PEIS (Section 1.4 of reference [1]).

There are eight federal levee systems along the Mouse River in the river reach extending from Burlington through Minot. One of these levee systems is located adjacent to the Project area, Minot Left Bank, and the other is located within the Project area, Minot Right Bank.

4.4.3.2 Transportation

Roadways

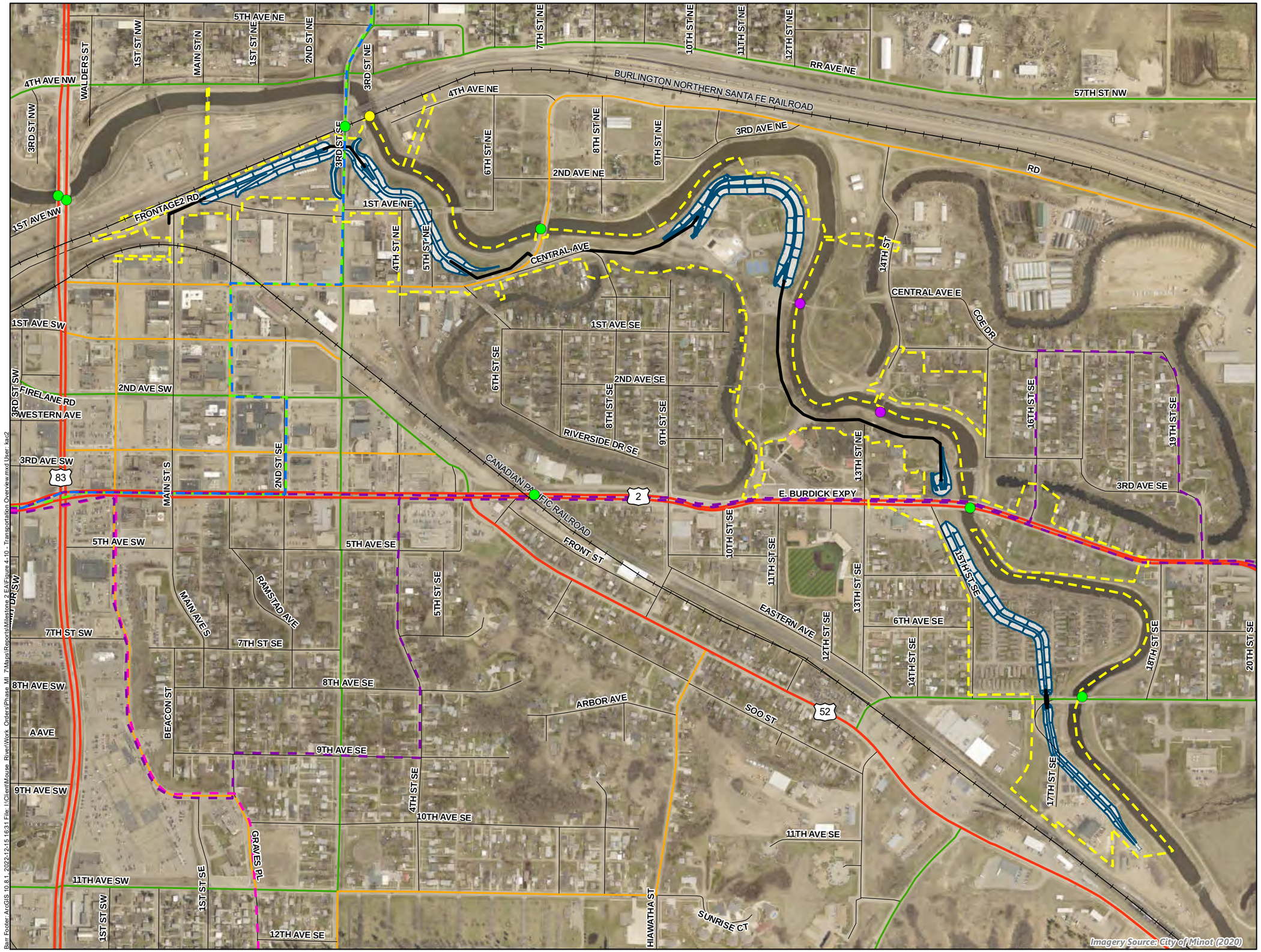
Minot is situated along U.S. Highway 2 and U.S. Highway 83; both are major arterial roadways. U.S. Highway 83 is located immediately west of the Project area and U.S. Highway 2, known as Burdick Expressway in Minot, bisects the Project area. As major arterial roadways, these transportation routes are some of the state's primary roadway corridors for long trips and are essential for commerce to and through the region as well as the state (reference [23]). Principal arterial roads, minor arterial roads, and collector (urban and rural) roadways in the vicinity of the Project are shown in Figure 4-10. These minor arterial and collector roadways serve the sub-region, providing connections to principal arterial roadways, activity centers, business/retail, schools, hospitals, and neighborhoods. Several bridges cross the Mouse River within the Project area, these include two transportation roadway bridges and two pedestrian bridges (Figure 4-10). The roadway transportation bridges are located along E Burdick Expressway and 8th Avenue SE. One pedestrian bridge is located adjacent to Roosevelt Park Zoo and the other is within Roosevelt Park, east of the Roosevelt Park Swimming Pool.

Railroad

The Burlington Northern Santa Fe Railway (BNSF) mainline is located north of the Project area and intersects the western portion of the Project area. Approximately 30 trains per day use this portion of the rail to accommodate freight traffic for agricultural and industrial purposes, as well as AMTRAK passenger rail services. The location of the BNSF mainline is shown on Figure 4-10.

Public Transit

There are two local public transit systems (Minot City Transit and Souris Basin Transportation) in the Project area. Public transit serves Minot by providing an alternate means of transportation, reducing traffic, and supporting community members who do not have access to personal vehicles. Minot City Transit operates nine fixed bus routes in Minot, which operate daily Monday through Saturday (Figure 4-10). Souris Basin Transportation is a non-profit corporation providing rural public transit service within Minot and the surrounding seven county area. This bus service operates along 14 routes, with focus on the elderly and special-needs individuals. Jefferson Lines provides commercial bus service to and from Minot. This intercity service provides connections to cities along U.S. Highway 2 throughout North Dakota (reference [23]).



Project Area
Levee Footprint
Floodwall Alignment
Principal Arterial - Other
Minor Arterial
Collector
Local
Railroads
Road Bridge
Railroad Bridge
Pedestrian Bridge

City Transit Routes
West
East
North Central
South #2

0 300 600 1,200
Feet

BARR

Figure 4-10

TRANSPORTATION OVERVIEW
MREFPP Milestone 2
Minot, ND

Barr Foster: ArcGIS 10.8.1, 2022-12-15 16:31 File: I:\Client\Mouse_River\Work_Orders\Phase_MI_7\Maps\Reports\Milestone 2 EA\Figure 4-10 - Transportation Overview.mxd User: kaz2

4.4.3.3 Private Utilities

Private, non-municipal utility companies serving the communities in the Project area are listed in Table 4-5. Private utilities are commonly referred to as franchise utilities because these companies have contractual permission to place their utilities in the public rights-of-way, with various local exceptions. Generally, franchise agreements between local governments and utility companies require that the utility company be responsible for relocating any utilities that conflict with the location of public improvements.

The Montana-Dakota Utilities Company is the natural gas provider in the Project area. Within Minot, underground gas mains and service pipelines are commonly run adjacent to and within the impact area. Natural gas service distribution stations are also scattered throughout Minot near the Project area. Xcel Energy is the primary electric provider in the Project area. Infrastructure within and adjacent to the impact area includes overhead transmission and distribution lines, distribution switches, underground transformers and distribution lines, and streetlights. Two other private utility companies in the Minot area offer communication services (Table 4-5).

Table 4-5 Non-Municipal Utility Providers

Utility Company	Service Type
Xcel Energy	Electric
Montana Dakota Utilities	Natural Gas
Souris River Telecommunications	Communications
Midcontinent Communications	Communications

4.4.3.4 Municipal Utilities

Minot operates a municipal water system with wells that draw groundwater from the Minot Aquifer and the Sundre Aquifer. Groundwater from the Minot and Sundre aquifers is being withdrawn at an unsustainable rate. Minot is currently supplying water to the NAWS system and the North Prairie Rural Water District system. Since 2008, Minot has been providing water from the city's groundwater wells to Berthold, Deering, Kenmare, Mohall, Burlington, and the North Central Rural Water Consortium. This interim water supply, as the NAWS project infrastructure is being completed, is provided by Minot through temporary water service contracts (reference [22]). This project has been delayed due to lawsuits initiated in the mid-2000's. Today construction of the NAWS system is ongoing and is anticipated to be fully completed in 2029. The City of Minot will continue to provide water to these communities until completion of the NAWS system (reference [24]).

Minot operates a municipal sanitary sewer system. Sanitary sewer system facilities that serve Minot include the treatment facility, valley forcemains and lift stations, and the puppy dog sewer system which is currently undergoing expansion and enhancement with USACE funding (these actions are independent of those being evaluated in this PEIS). The Minot Wastewater Treatment Plant, located southeast of Minot, consists of aeration ponds with mechanical aerators for primary treatment, a series of facultative lagoon

ponds for secondary treatment, and an artificially constructed (discharging) wetland system for tertiary treatment (reference [22]).

Minot maintains and operates a storm sewer system within the city. Minot's storm sewer system consists of underground pipes, manholes, lift stations, and other associated infrastructure. Portions of this infrastructure are located in the Project area (reference [22]).

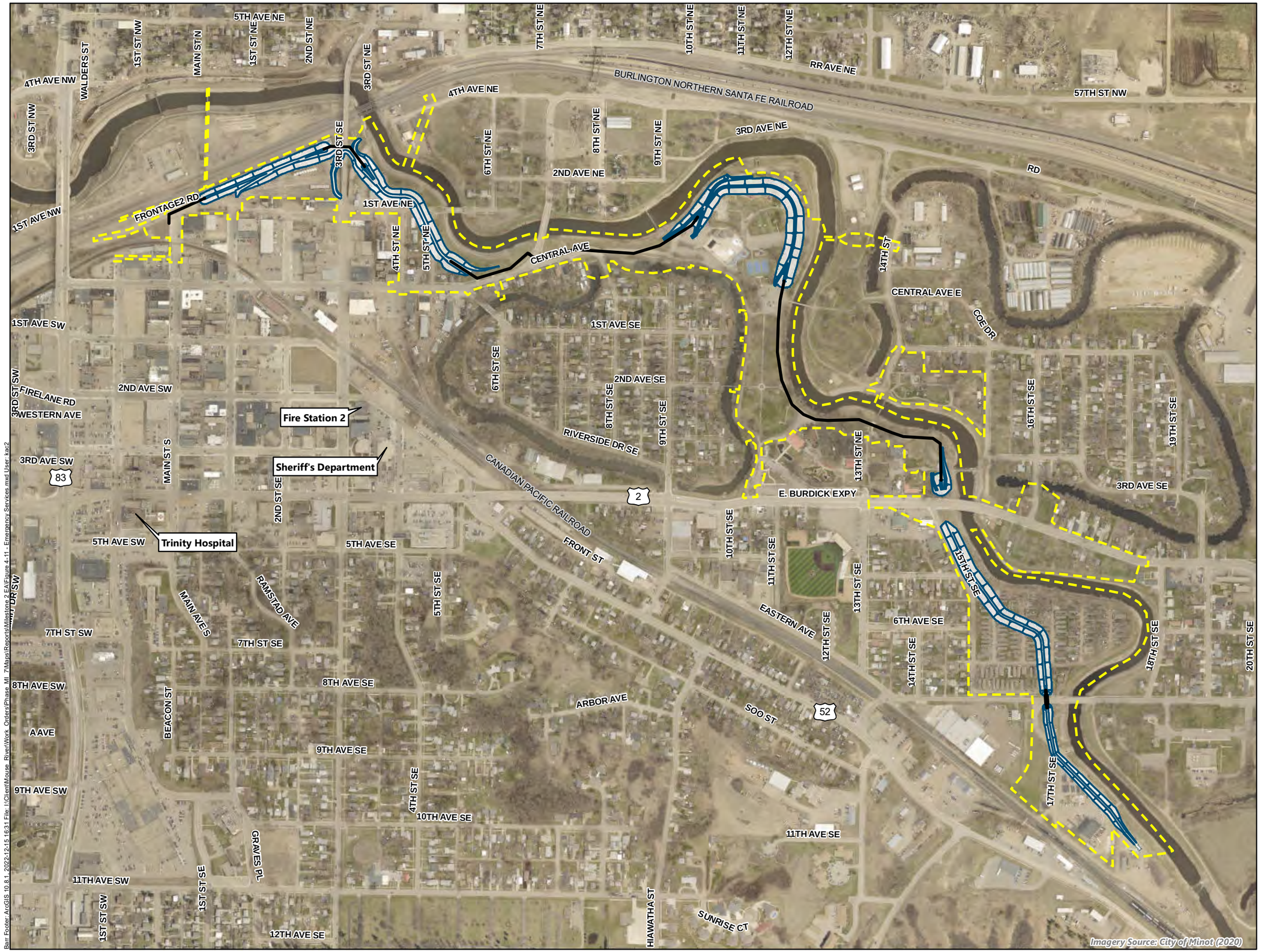
4.4.3.5 Emergency Services

Emergency services are provided throughout the Project area and are critical in times of flooding and other natural disasters.

The Minot Police Department, which is headquartered in the in the central part of town on 2nd Avenue SW, has a police chief and 81 accompanying police officers. The Minot Police Department is separated into three divisions: patrol, investigation, and administration (reference [25]). The Ward County Sheriff's Department is at 204 Front Street SE, approximately 0.25 miles southwest of the Project area (Figure 4-11).

Minot has a fire department with 60 firefighters and additional junior firefighters. Minot has a total of four fire stations spread throughout the city. The station located nearest to the Project area is Fire Station 2 located at 201 3rd Street SE (reference [25]), approximately 0.2 miles from the Project (Figure 4-11).

Comprehensive medical emergency services are available within Minot; hospitals and a trauma center are also located near the Project area. Trinity Health is the hospital located closest to the Project area, approximately 0.5 miles to the southwest (Figure 4-11). Minot has a group of state-certified First Responders that respond to medical emergencies awaiting ambulance transport to a medical facility (reference [25]).



Project Area

Levee Footprint

Floodwall Alignment

0 300 600 1,200

Feet

BARR

Figure 4-11

EMERGENCY SERVICES
MREFPP Milestone 2
Minot, ND

Barr Footer: ArcGIS 10.8.1, 2022-12-15 16:31 File: I:\Client\Mouse_River\Work_Orders\Phase_III_7\Maps\Reports\Milestone 2 EA\Figure 4-11 - Emergency Services.mxd User: ksc2

4.5 Potential Contaminated Sites

4.5.1 Hazardous, Toxic, and Radioactive Waste Assessment

A Hazardous, Toxic, and Radioactive Waste (HTRW) Assessment was completed for Phases MI-6 and MI-7 of the Project area in July 2022 (Appendix 1). The HTRW Assessment was completed in accordance with ER 1165-2-132 USACE Water Resources Policies and Authorities, Hazardous, Toxic, and Radioactive Waste Guidelines for Civil Works Projects (reference [26]). The information gathered for the HTRW Report covers the entire Project area, and additional review of this information was completed to include Phases MI-8 and MI-9 of the Project in this assessment. The following is a list of notable findings that may present an environmental risk as part of the Project implementation:

Phase MI-6

- Three pad-mounted transformers, two of which contained "non-PCB" stickers, and two electrical boxes were observed throughout the HTRW Assessment area. No leaks, staining, rust spots, or dents were observed.
- Eight pole-mounted transformers were observed throughout the HTRW Assessment area. One located on the west side of 5th Street NE had oil stains present on the pole and on the ground at the base of the pole. No other leaks or spills were observed.
- The BNSF railroad borders the HTRW Assessment area. This railroad corridor has been in use since at least 1904. Railroad ties are typically treated with creosote, which can leach into soil and groundwater. Additionally, railways are typically sprayed with herbicides to prevent significant vegetation growth.
- Several sanitary line pumps and a pumping station are present along the bank of the Mouse River within the HTRW Assessment area. No signs of stressed vegetation, staining, or odors were observed.
- Portions of the HTRW Assessment area have been used for commercial and industrial purposes since at least 1904. These properties were not observed to have any vegetative stress or staining visible from public rights-of-way.
- Two historic warehouse buildings located in the HTRW Assessment area along the BNSF railroad tracks, the JB Central Warehouse building north of the intersection of 1st Street NE and 1st Avenue NE and a privately owned warehouse building located along the BNSF railroad tracks north of the Minot Farmers Elevator. These building footprints are present in areas where historic listings were present such as Standard Oil Co., Cole Petroleum Co., Farmers Union Oil Co., and J.P. Elliot's Elevator.
- The current building located at 115 1st Avenue NE, historically International Oil Co. and Farmers Union Oil Co., which was listed as a site with a cleaned up leaking registered storage tank and a possible brownfield site.

- The current property located at 510 Central Avenue East which was historically the location of the Westland Oil Co. and Filling Station where numerous oil tanks, and an oil warehouse were present.
- Farmers Union Elevator located at 318 1st Avenue NE.
- Minot Farmers Elevator, listed as a potential brownfield site, northwest of the intersection of 1st Avenue NE and 3rd Street NE.
- The Ice Box bar located at 100 3rd Street NE is listed as a possible brownfield site.
- Two Minot buildings, a storage building and maintenance shop, located northeast of the intersection of 1st Avenue NE and 3rd Street SE.
- A parking lot located near the Minot maintenance shop is listed as a possible brownfield site.
- Former Bridgeman Creamery, southwest of the corner of 3rd Street SE and 1st Avenue NE, is listed as a brownfield catalyst site due to neighboring ASTs and USTs as identified in the Minot Brownfields Redevelopment Areawide Plan (Appendix F of Appendix 1).
- Structures built before 1978 have the potential to contain lead-based paint or asbestos containing materials.

Phase MI-7

- Several sanitary line pumps and a pumping station are present along the bank of the Mouse River within the HTRW Assessment area. No signs of stressed vegetation, staining, or odors were observed.
- Three pad-mounted transformers, none of which contained “non-PCB” stickers, were observed throughout the HTRW Assessment area. No leaks, staining, rust spots, or dents were observed.
- Two pole-mounted transformers were observed throughout the HTRW Assessment area. No leaks or spills were observed.
- Portions of the HTRW Assessment area have been used for commercial and industrial purposes since at least 1904. These properties were not observed to have any vegetative stress or staining visible from public rights-of-way.
- Structures built before 1978 have the potential to contain lead-based paint or asbestos containing materials.

Phase MI-8

- Several sanitary line pumps and a pumping station are present along the bank of the Mouse River within the HTRW Assessment area. No signs of stressed vegetation, staining, or odors were observed.

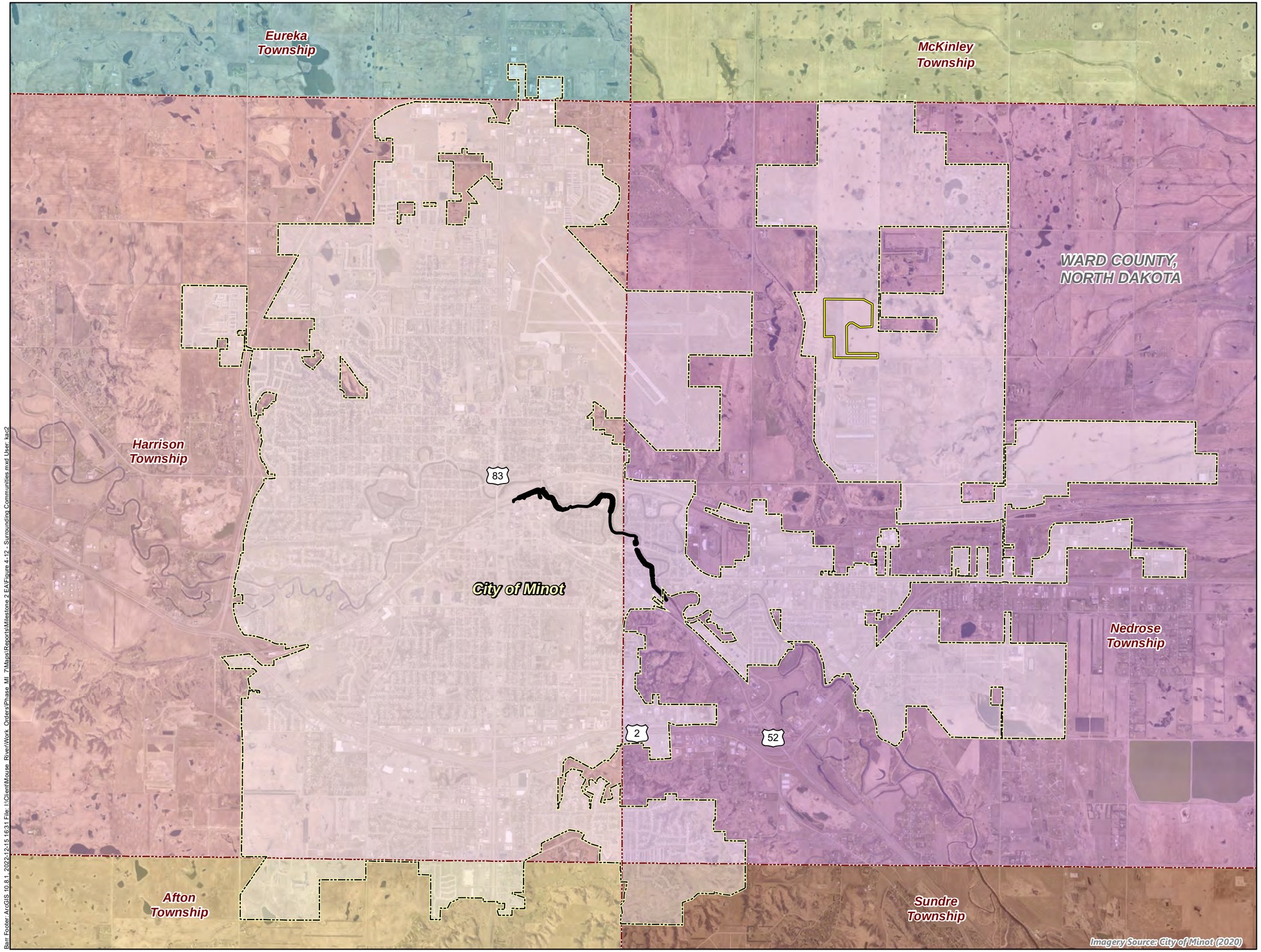
- Three pole-mounted transformers were observed throughout the HTRW Assessment area. No leaks or spills were observed.
- Portions of the HTRW Assessment area have been used for commercial and industrial purposes since at least 1904. These properties were not observed to have any vegetative stress or staining visible from public rights-of-way.
- Several vacant lots located at the intersection of E Burdick Expressway and 16th Street SE are listed as possible brownfield sites due to contamination from previous residential development.
- Historic Alan Kurth Olds Nissan located on 1310 E Burdick Expressway is identified as having a leaking registered storage tank with a completed cleanup status as of 1998.
- Structures built before 1978 have the potential to contain lead-based paint or asbestos containing materials.

Phase MI-9

- Several sanitary line pumps and a pumping station are present along the bank of the Mouse River within the HTRW Assessment area. No signs of stressed vegetation, staining, or odors were observed.
- Two pole-mounted transformers were observed throughout the HTRW Assessment area. No leaks or spills were observed.
- Portions of the HTRW Assessment area have been used for commercial and industrial purposes since at least 1904. These properties were not observed to have any vegetative stress or staining visible from public rights-of-way.
- The Precise Transport property located at 1015 17th Street SE is a trucking business that has two above ground storage tanks in a secondary containment unit visible from the right-of-way. Various semi-trucks and other vehicles are parked throughout the property.
- Structures built before 1978 have the potential to contain lead-based paint or asbestos containing materials.

4.6 Socioeconomics

The following sections discusses the socioeconomics within the Project area and surrounding communities. Data for Sections 4.6.1 through 4.6.3.2 was obtained from the U.S Census Bureau American Community Survey (reference [27]) and Headwaters Economics Demographic Profile for North Dakota, Ward County, the City of Minot, and Nedrose Township (reference [28]). Nedrose Township was assessed in this review as the southern-most portion of Phase MI-8 and the borrow site are located within Nedrose Township and will be affected by construction of the proposed Project (Figure 4-12).



Levee/Floodwall Alignment

Minot Area Development Center (MADC) Borrow Area

City of Minot

Afton Township

Eureka Township

Harrison Township

McKinley Township

Nedrose Township

Sundre Township

0 0.25 0.5 1
Miles

BARR

Figure 4-12

SURROUNDING COMMUNITIES
MREFPP Milestone 2
Minot, ND

4.6.1 Population

Minot is the fourth largest city in North Dakota and the county seat for Ward County. Minot serves as a local hub and trade center for northwestern North Dakota. According to the 2020 data, the population of Minot is approximately 47,834, which comprises approximately 69 percent of the total population of Ward County, and approximately 6 percent of the total population of North Dakota. From 2010 to 2020 the population of Minot has experienced rapid growth with a 22.5 percent population increase, a 6.5 percent-faster growth rate than Ward County. Table 4-6 presents the population characteristics for the communities within and surrounding the Project area.

Table 4-6 Population, 2010-2020

Population	Minot	Nedrose Township	Ward County	North Dakota
Population (2020)	47,834	2,040	68,962	760,394
Population (2010)	39,054	1,831	59,461	659,858
Population Change (2010-2020)	8,780	209	9,501	100,536
Population Percent Change (2010-2020)	22.5	11.4	16	15.2

Source: reference [28]

The population of Minot is male dominant with 52 percent identifying as male and 48 percent identifying as female. From 2010 to 2020 the population has also gotten younger, with a median age of 33.8 in 2010 compared with a median age of 32.1 in 2020. Similarly, the populations of Ward County and North Dakota as a whole have become younger with a larger population of males compared to females. Please refer to Table 4-7 for a comparison of each region and gender distribution.

Table 4-7 Age and Gender Distribution, 2010-2020

	Minot	Nedrose Township	Ward County	North Dakota
Total Population	47,834	2,040	68,962	760,394
Total Female (%)	23,097 (48)	1,049 (51)	32,798 (48)	371,110 (49)
Total Male (%)	24,737 (52)	991 (49)	36,164 (52)	389,284 (51)
Median Age (2020)	32.1	43.1	31.6	35.2
Median Age (2010)	33.8	46.1	33.6	37.2
Median Age Percent Change	-5.0	-6.5	-5.1	-5.4

Source: reference [28]

4.6.2 Employment and Industry

Employment by industry in Minot is dominated by the social services (education, health care, and social assistance), retail trade, and hospitality (arts, entertainment, recreation, accommodation, and food) industries. These three industries employ approximately 51 percent of the Minot workforce. Many of the residents of the surrounding communities also commute to Minot for work as Minot is the regional economic center and is home to a number of the region's major employers. Table 4-8 presents the employment by industry for each area.

Table 4-8 Employment by Industry, 2010-2020

	Minot	Nedrose Township	Ward County	North Dakota
Civilian Employees > 16 years, 2020	26,027	1,150	34,749	401,579
Education, health care, and social assistance (%)	27.1	24.8	26.5	26
Retail trade (%)	14.9	7.4	14.1	11.3
Arts, entertainment, recreation, accommodation, and food (%)	8.7	5.6	7.8	7.9
Professional, management, administration, and waste management (%)	7.2	9.4	6.5	6.6
Agriculture, forestry, fishing & hunting, and mining (%)	7	4.2	8.9	9.2
Finance & insurance, and real estate (%)	6.4	9.9	6.6	5.7
Construction (%)	5.9	14	6.4	7.4
Transportation, warehousing, and utilities (%)	5.8	6.5	5.9	5.4
Wholesale trade (%)	4.1	3.4	3.8	3.4
Public administration (%)	4	6.1	4.8	4.7
Other services, except public administration (%)	3.7	4.6	3.8	4.4
Manufacturing (%)	3	2.2	2.9	6.7
Information (%)	2	2	1.8	1.2

Source: reference [28]

4.6.3 Housing Characteristics

4.6.3.1 General Characteristics

Housing units in the Project area and their average rate of occupancy and vacancy from 2016 to 2020 are summarized in Table 4-9. Minot had a moderate vacancy rate of 13.3 percent, a rate only slightly lower than both Ward County and the state of North Dakota. This is an indicator that the demand for housing in Minot is being adequately met.

Table 4-9 Housing Characteristics, 2020

	Minot	Nedrose Township	Ward County	North Dakota
Total Housing Units	24,395	824	33,083	376,597
Occupied (%)	86.7	86	85.9	85.2
Vacant (%)	13.3	14	14.1	14.8

Source: reference [28]

4.6.3.2 Relocations and Buyouts

Since the 2011 Souris River flood, Minot has been actively buying properties located within the flood inundation area, using U.S. Department of Housing and Urban Development (HUD) and local funding. Minot was incorporated into HUD's Community Development Block Grant Disaster Recovery (CDBG-DR) program for the 2011 disasters. Under this program, as stated in the PEIS (reference [1]), Minot received two-CDBG-DR funding allocations, which enabled Minot to acquire flood damaged properties near the Mouse River and within the flood inundation area, including single and multi-family residences, mobile homes and pads, and religious and commercial establishments. In total, 53 homes and businesses have been acquired by Minot within the Project area.

4.6.4 Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income in developing, implementing, and enforcing environmental laws, regulations, and policies (reference [29]).

In accordance with Executive Order (EO) 12898 (reference [30]), *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), this section evaluates environmental justice with respect to the Project. EO 12898 requires federal agencies to identify and address disproportionately high and adverse health or environmental effects of its programs, policies, and activities on minority and low-income population. Additional information on regulatory responsibilities under EO 12898 and the environmental justice assessment process can be found in the PEIS (Section 3.6.4 of reference [1]).

The Project's environmental justice analysis included the three census tracts located within the Project construction limits; census tract 101, 102 and 107.02. Data from the census tracts was compared to data for the City of Minot, Nedrose Township, Ward County and the State of North Dakota. Overall, the data

indicates that the distribution of minority populations in the Project area does not meet the thresholds discussed in the PEIS (Section 3.6.4.2 of reference [1]) which would require additional assessment of the potentially disproportionate impacts to minority communities from the Project (Table 4-10 and Table 4-11). However, Census Tracts 101 and 107.2 had significantly higher proportions of low-income populations compared to the reference geographies.

In addition, The United States Environmental Protection agency developed an environmental justice mapping and screening tool called EJscreen that provides nationally consistent dataset to identify environmental justice communities based on demographic and socioeconomic conditions. The EJscreen tool was queried to identify low income and minority populations that may occur within the Project area (reference [31]). According to the EJscreen tool 19 percent of the population within the Project area includes people of color and one low-income community is located within Census Tract 101.

Table 4-10 Minority Population Composition Comparison with the Region of Interest

			Racial Minority Populations (%)						Ethnic Minority (%)[2]
Area	Total Population (number of persons)[1]	White %	Black or African American	American Indian & Alaska Native	Asian	Native Hawaiian & Other Pacific Islander	Some Other Race	Total Racial Minority (%)	Hispanic or Latino Ethnicity
Census Tract 101	2,925	92.7%	6.9%	1.2%	0.3%	1.0%	3.1%	12.5%	10.8%
Census Tract 102	5,470	96.0%	5.6%	5.5%	0.9%	0.2%	4.9%	17.1%	11.4%
Census Tract 107.02	3,136	80.5%	1.9%	15.5%	7.1%	0.7%	0.7%	25.9%	6.4%
Minot	47,834	84.1%	5.2%	2.1%	1.9%	0.3%	1.7%	11.2%	6.5%
Township of Nedrose	2,040	95.2%	0%	1.6%	0%	0%	0%	1.6%	0%
Ward County	68,962	85.7%	4.7%	1.9%	1.5%	0.3%	1.6%	10%	6.4%
North Dakota	760,394	85.7%	3.2%	5.2%	1.6%	0.1%	1.2%	11.3%	4%

Notes: Persons may opt to identify with more than one racial minority, therefore, the sum of all racial categories in the table may equal more than 100%.
Source: reference [27]

(1) Total Racial Minority populations and White populations may not add up to 100 percent as not all racial minority populations were included in this analysis. Racial minority populations that were excluded were the smaller sub-classifications such as those of two or more races.

(2) The Hispanic or Latino ethnicity is not included in the total racial minority population percentages as it can be claimed by a person of any race. The Hispanic or Latino ethnicity is therefore included separately and reflects an ethnic minority.

Table 4-11 Racial Composition of the Population in Minot: Change from 2010 to 2020

Race	Population in 2010	Population in 2020	Percent change within racial class from 2010 2020
White	90.4%	84.1%	-6.3%
Black	1.8%	5.2%	3.4%
American Indian	2.4%	2.1%	-0.3%
Asian	1.2%	1.9%	0.7%
Native Hawaiian & Other Pacific Islander	0.1%	0.3%	0.2%
Other	1.2%	1.7%	0.5%
Two or more Races	3%	4.7%	1.7%
Total	**100.1%**	**100%**	
Hispanic or Latino	3%	6.5%	3.5%

Source: reference [27]

Low-Income Populations

Low-income populations (defined as individuals living in households below the poverty threshold in the Census Tracts compared to Minot , Township of Nedrose, Ward County, and North Dakota are provided in Table 4-12. None of the evaluated communities have a significant low-income population representing more than 40 percent of the total population. However, Census Tract 101 and Census Tact 107.2 have significantly higher proportion of low income residents compared to Census Tract 102, Minot, Nedrose Township, Ward County, and State averages (reference [31])..

Table 4-12 Poverty and Income Characteristics (2020)

Jurisdiction	Total Population (number of persons)	% Below Poverty Threshold	Median Household Income
Census Tract 101	2,925	25.0%	36,422
Census Tract 102	5,470	7.7%	69,735
Census Tract 107.02	3,136	24.2%	66,862
Minot	47,834	10.8%	$64,401
Township of Nedrose	2,040	2.5%	$104,063
Ward County	68,962	9.1%	$68,098
North Dakota	760,394	10.5%	$65,315

Source: reference [28]

4.7 Recreation

Recreation is an important consideration to the communities throughout the Project area. Minot and the Minot Park District seek to preserve and promote a park system that meets the needs of all, and recognize that community facilities such as parks, trails, and open space are integral components of Minot's community character (reference [22]).

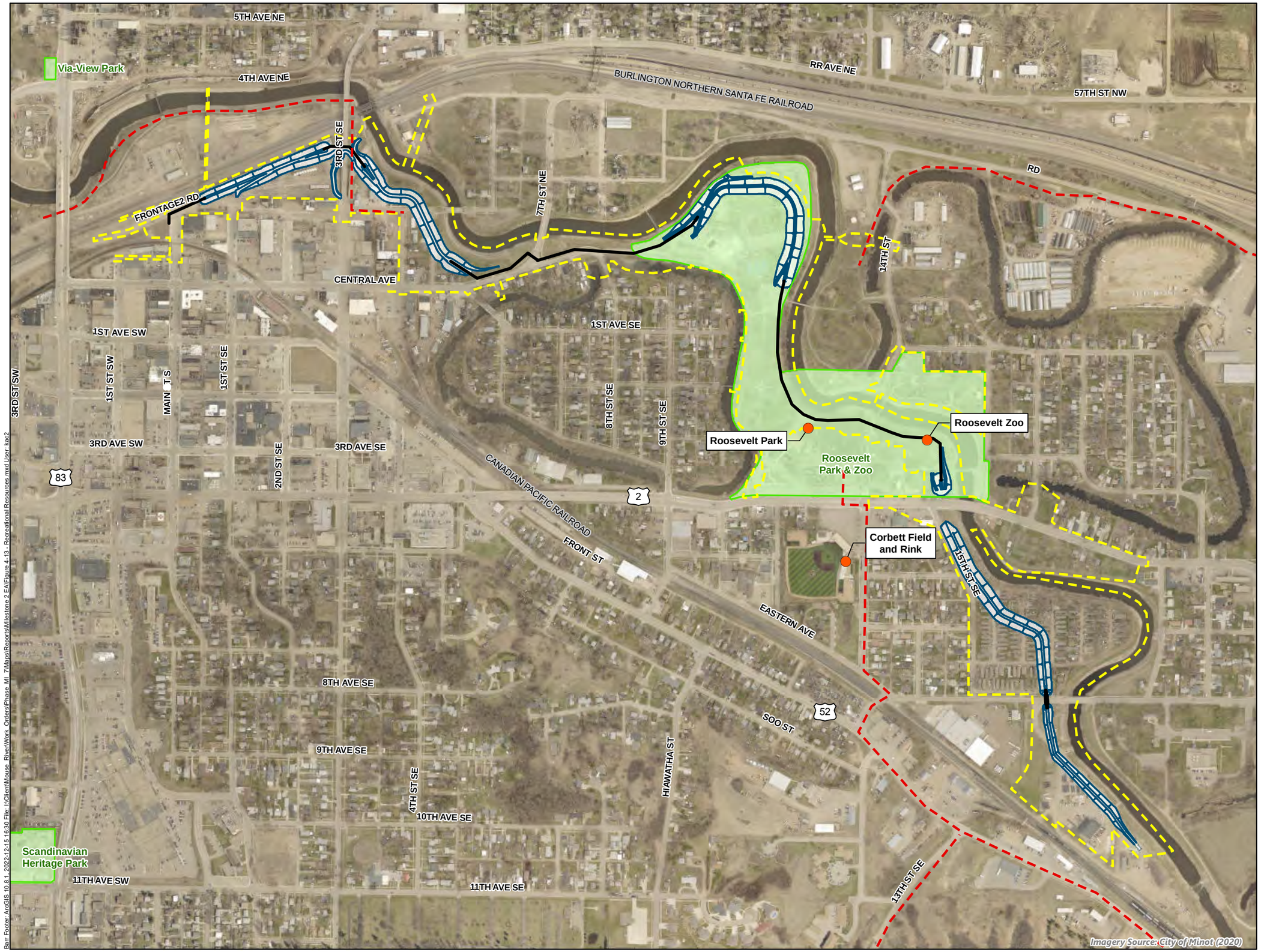
Recreational features within and adjacent to the Project area include Roosevelt Park, Roosevelt Zoo, Corbett Field and Rink, and Minot Park District trail/sidewalk systems (Figure 4-13). Roosevelt Park has a variety of public recreational amenities which include a swimming pool, skate park, tennis courts, hiking trails, picnic areas, and access to the Mouse River for fishing. The Roosevelt Zoo and North Dakota Medal of Honor Memorial are also located within the park. Corbett Field and Rink, located south of the Project area, includes a professional and amateur level baseball diamond which converts into a leisure skating rink in the winter, a grandstand, and picnic areas. Minot Park District trail/sidewalk systems travel through and adjacent to the Project area, with approximately 1.4 miles of trail within Roosevelt Park. There are no state or federal parks, recreational areas, nature preserves/areas, or scenic byways in the immediate Project area; however, NWRs are located upstream and downstream of the Project area.

Section 6(f) properties are properties that received funding from the Land and Water Conservation Fund (LWCF), which the National Park Service funds. Roosevelt Park has received grant funds for developing or maintaining five recreational facilities in the Project area, as shown on Table 4-13. According to Section 6(f), Recreational facilities that received funding from the LWCF must be retained and used in perpetuity solely for outdoor recreation.

Table 4-13 Recreational Facilities Funded by the Federal Land and Water Conservation Fund within the Project Area

Grant ID & Element	Grant Element Title	Funding Amount	Year Approved / Expiration
38-00207	Minot Roosevelt Park Swimming Pool	$119,947	1971/1972
38-00314	Minot Roosevelt Park Tennis Park	$5,428	1972/1973
38-00628	Minot Roosevelt Park Footbridge	$65,300	1977/1979
38-00629	Minot Park Improvement (Roosevelt Park, Spring Lake Park, Polaris Park, 24th Street Park, Oak Park)	$15,347	1977/1979
38-01184	Minot Parks Playground Improvement (Leach Park, Oak Park, River Side Park, Roosevelt Park, Green Valley Park)	NA	NA

Source: reference [1]



Project Area
Levee Footprint
Floodwall Alignment
Recreational Location
City of Minot Park
Recreational Trail

0 300 600 1,200
Feet

BARR

Figure 4-13

RECREATIONAL RESOURCES
MREFPP Milestone 2
Minot, ND

4.8 Aesthetics and Visual Resources

Information on how aesthetic and visual resources of a landscape are defined and assessed is found in Section 3.8 of the PEIS (reference [1]). The Souris River is the central defining visual resource in the landscape of the Project area. The aesthetics of the river corridor have been previously altered by flood risk reduction projects (i.e., the existing federal projects), including river channel re-alignments, channel cutoffs, and the addition of levees, pump stations, and ponding areas to the viewshed.

The built environment is generally urban, as the Project is entirely within downtown Minot. A portion of the Project, in particular MI-6, is within an industrial portion of Minot. This area contains warehouses and industrial infrastructure such as rail lines, rail yards, and grain elevators. The civic area of downtown Minot is of visual significance for the historic and architectural presence of its buildings and bridges, such as the Soo Line Passenger Depot, the Eastwood Park Neighborhood, 1st Avenue bridge, and Anne Street bridge. The aesthetics of the Project footprint and the associated viewshed within this area are urban and dense, comprised of taller buildings, shopping/commercial businesses, and single and multi-family housing with sparse vegetation. The prominence of these buildings restricts views in this civic area. The Project also goes through Roosevelt Park, the largest park in Minot, visually characterized by the presence of large, old trees scattered throughout grassy open spaces. Views in this portion of the Project are more generally unimpeded, because of a lack of visual obstructions.

4.9 Historic and Cultural Resources

Cultural resources include historic properties such as districts, sites, buildings, structures, and objects that may be included in, or eligible for inclusion in the National Register of Historic Places (NRHP); artifacts and materials related to historic properties, significant events and people; historic records; and the lifeways, traditions, and ceremonies of communities. A historic property is any prehistoric or historic site, structure, building, object, or district included in, or eligible for inclusion in the NRHP.

4.9.1 Class I Cultural Resources Survey

A Class I cultural resources literature review was completed to identify previously documented archaeological sites and historic architectural resources within the Project area and a one-mile buffer. The literature review consists of a file search at the North Dakota State Historic Preservation Office (SHPO) and is used to gain an understanding of the types, distribution, and density of documented cultural resources in and around the Project area. The Class I literature search was completed on July 16, 2021 (reference [32]). On February 11, 2022, and July 18, 2022, a second Class I literature review was completed as part of an addendum report for the Project due to changes in the Project footprint (reference [33]).

The original (2021) Class I literature review identified 36 previously completed cultural resource investigations within the Project area and a one-mile buffer (reference [32]). Of these, 22 were conducted in the last 10 years, and seven intersect with the Project area. The literature review also found 1,020 previously documented cultural resources within the one-mile radius, consisting of architectural or architectural/historical sites. In addition, 14 site leads and 11 isolated finds were recorded in the one-mile

buffer. Thirty-three of the previously recorded cultural resources are located within the Project footprint (reference [32]).

The addendum (2022) Class I literature review identified 34 previous cultural resource investigations within the Project area and a one-mile buffer (reference [33]). Nine of these surveys intersect the Project area, and of these, eight were completed in the last 10 years. This records check again identified 1,020 previously documented cultural resources within the one-mile radius, consisting of architectural or architectural/historical sites. Eleven site leads and 12 isolated finds were also recorded in the one-mile radius. Fourteen of the previously recorded cultural resources are located within the Project footprint (reference [33]).

Omitting duplicated inventories between the original Class I and addendum Class I literature reviews, a total of nine cultural resource investigations were previously completed within portions of the Project area. Forty-one archaeological sites, three site leads, and no isolated finds were also previously documented within Project boundaries. Of these, eight sites are listed or eligible for the NRHP (32WD11, 32WD125, 32WD416, 32WD459, 32WD554, 32WD820, 32WD824, and 32WD974).

4.9.2 Class III Cultural Resources Survey

A Class III Archaeological and Historic Architectural Survey was conducted for the original Project footprint on August 27, 2021, and August 30, 2021 (reference [32]). Archaeological monitoring of several exploratory trenches for the Project occurred on October 28, 2021 (reference [32]). A second Class III cultural resources survey occurred on April 1, 2022, July 28, 2022, and August 23, 2022, as part of an addendum report for the Project due to changes in the footprint (reference [33]). Finally, two NRHP eligibility evaluations occurred for specific resources identified within the APE for the project, the first in December 2022 for site 32WD461 (Minot City Sign Shop) (reference [34]) and the second in January 2023 for 32WD941 (Roosevelt Park and Zoo) (reference [35]).

As a result of the original (2021) Class III survey, six new cultural resources, each consisting of historic architectural structures, were identified (reference [32]). The Class III survey also included a re-investigation of the 33 resources previously recorded within the Project area. Of the 39 total cultural resources located within Project boundaries, 30 architectural sites and one site lead were recommended as ineligible for the NRHP. Six architectural structures (32WD11, 32WD125, 32WD459, 32WD974, 32WD2492, and 32WD2496) were recommended eligible for the NRHP, and one architectural structure (32WD461) was unevaluated for nomination to the NRHP.

The addendum (2022) Class III survey was completed due to changes in the Project footprint following completion of the original (2021) Class III survey and report. The addendum investigation resulted in the reidentification of 14 previously recorded cultural resources and the documentation of three new cultural resources (reference [33]). The three newly documented cultural resources are historic/architectural in nature, and each are recommended not eligible for the NRHP. The previously recorded cultural resources consisted of two site leads and 12 historic architectural resources. The site leads were not located within the Project area; therefore, it was recommended that the small areas of each site lead investigated be removed from their respective site lead boundaries. Eight previously recorded historic architectural sites

were recommended as ineligible for the NRHP. The remaining four previously recorded historic architectural resources (32WD416, 32WD554, 32WD820, and 32WD824) are either recommended eligible for nomination to the NRHP or are a contributing resource to a historic district in Minot, North Dakota.

Sites 32WD554, 32WD820, and 32WD824 will not be impacted by the Project. Construction activities will stop at curb or sidewalk replacement and will therefore not negatively affect the structures at these sites. The Project, as currently planned, will remove site 32WD416 (grain elevator). As a result, an adverse effect finding is anticipated for Section MI-6 of the Project if the site cannot be avoided by Project construction activities. If the site cannot be avoided, consultation among the SRJB, USACE, North Dakota SHPO, and any other consulting parties for the Project is recommended to resolve the adverse effect.

Following comments received on October 27, 2022 from the USACE as a result of their review of the Class III reports, two separate NRHP eligibility evaluations occurred for the Project. In December 2022, site 32WD461 (the Minot City Sign Shop), which remained unevaluated for the NRHP following the 2021 Class III report, was reinvestigated for the purposes of determining NRHP eligibility (reference [34]). Analysis of site 32WD461 determined that it does not possess historic integrity or architectural distinction, and it is unable to communicate local, regional, state, or national historic significance. As a result, site 32WD461 was recommended ineligible for the NRHP.

In early 2023, the Roosevelt Park and Zoo was evaluated to determine whether it should be documented as a Historic District or Historic Landscape (reference [35]. This investigation determined that Roosevelt Park and the Roosevelt Park Zoo do not possess the historic integrity necessary to qualify them for NRHP eligibility as historic districts. Additional analysis also determined that these areas lack the necessary historic integrity to serve as an NRHP-eligible designed historic landscape. Site 32WD941, the Roosevelt Park Zoo Aviary Building, which is located outside of Project boundaries and will not be affected by the Project, was previously determined eligible for the NRHP, and this determination was upheld by the 2023 investigation (reference [35]).

The USACE coordinated the results presented in the original (2021) Class III report, addendum (2022) Class III report, the NRHP evaluation of site 32WD461, and the NRHP evaluation of Roosevelt Park and the Roosevelt Park Zoo with North Dakota SHPO and received concurrence on each respective report (ND SHPO Ref 16-0909).

4.9.3 Class III Archaeological Survey

In 2021, Metcalf Archaeological Consultants, Inc. (Metcalf) completed a Class III cultural resource inventory for the Minot Intermodal Rail Yard, which includes the proposed Borrow site for the Project (reference [36]). Metcalf investigated a total of 934.5 acres, and as a result, one isolated find was identified (32WDx833). The site is not eligible for the NRHP; therefore, Metcalf recommended a finding of No Historic Properties Affected for the undertaking. The North Dakota SHPO concurred with these recommendations on December 28, 2021 (ND SHPO Ref 22-5247) (reference [37]).

4.9.4 Native Tribes

The USACE is responsible for consultation with federally recognized tribes that have historical and cultural associations within the Project area. Please refer to the PEIS (Section 3.9.5 of reference [1]) for a list of tribes contacted by the USACE pertaining to the Project.

4.10 Air and Noise Quality

This section describes air and noise quality in the vicinity of Minot. Federal and state programs regulating air quality are described in further detail in the PEIS (Section 3.10 of reference [1]).

4.10.1 Air Quality

4.10.1.1 Criteria Pollutants

Air quality standards for the Project area are regulated by the DEQ Division of Air Quality. North Dakota Ambient Air Quality Standards were promulgated in addition to the National Ambient Air Quality Standards. DEQ's most recent Annual Air Quality Monitoring Summary indicates that no carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, ozone or particulate matter exceeds either the state or federal ambient air quality standards measured at any state-operated ambient air monitoring sites (reference [38]).

4.10.1.2 Greenhouse Gases

The Project is in an urban community with no significant sources of greenhouse gas emissions. For a more in-depth analysis of greenhouse gases please refer to the PEIS (Section 3.10.1.2 of reference [37]).

4.10.1.3 Climate

The Project area's climate is characterized by the North Dakota Agricultural Weather Network (NDAWN) as a humid continental climate. Due to its location in the center of the continent, the area experiences large seasonal temperature differences, with very cold winters and warm, humid summers. According to the NDAWN's Minot 4S station (the nearest station to the Project), the coldest temperatures are experienced in January with a normal low temp of 1 degree Fahrenheit. During the summer months, temperatures peak in July and August with a normal high temp of 80 degrees Fahrenheit (reference [39]). The area receives an average of 19.30 inches of precipitation a year, with the majority of the precipitation falling between May and June (reference [39]).

4.10.2 Noise

Primary noise sources in Minot generally originate from local traffic and residential activities such as mowing. These noises tend to be intermittent and vary depending on activity and the time of day. The Project area also experiences rail noise due to the proximity of the BNSF mainline.

Minot has adopted an ordinance that limits noise levels within the city limits. This ordinance limits any loud, unnatural, or unusual and disturbing noises that would be a detriment to the public health, comfort convenience, safety, and welfare (reference [40]).

4.11 Human Health and Safety

The existing levee system was designed to protect residents from a flood event of at least 5,000 cfs; however, the system can potentially protect residents from a flood event of 10,000 cfs with additional flood fight measures. Flooding over 10,000 cfs is much less likely to pass through the levee system which would greatly increase adverse risks to residents.

The No-Action Alternative would have temporary adverse effects on human safety during floods, when flood waters, the evacuation process, and flood fighting efforts would expose residents and workers to unsafe conditions along the flooded river. The flood fighting associated with the No-Action Alternative can be an intensive endeavor, carries a high level of risk and uncertainty, and has a higher potential for failure than permanent flood risk reduction structures. There would be continual risks of loss of lives or injuries during flood events under the No-Action Alternative, as in 2011 when two elderly residents in Burlington died as a result of complications from flooding.

5 Environmental Consequences

This chapter describes the potential environmental and social consequences of the RPA and the No-Action Alternative. Consequences generally fall into two categories – consequences related to constructing and operating flood risk-reduction features, and consequences related to flooding. Alternatives were evaluated for flood-related effects at three flood discharges: 5,000 cfs, 10,000 cfs, and 27,400 cfs. The No-Action Alternative assumes a successful flood fight to 10,000 cfs in conjunction with the existing federal project. Further detail on the No-Action Alternative can be found in the PEIS (Section 2.2.5 of reference [1]).

Mitigation measures used to avoid, minimize, or offset adverse impacts of the RPA are discussed in many of the following sections. Specific permit conditions would require certain mitigation actions. In addition, the requester has identified a number of mitigation measures that would be pursued outside of permitting requirements. Both required and voluntary mitigation actions are described in the following sections. Permit conditions have not yet been identified and therefore cannot be differentiated from voluntary measures with complete certainty.

5.1 Geology, Soils, and Groundwater

5.1.1 Requester's Preferred Alternative

Constructing the RPA would result in impacts to soils and groundwater, as described below. These impacts are similar to those described in the PEIS (Section 4.1.1.1 of reference [1]).

Geology

No significant geological resources are located in the impact area; therefore, the RPA would not adversely affect geological resources.

Soils

Construction of the associated flood risk-reduction features for the Project would permanently impact approximately 14.2 acres, 3.9 acres of which are classified as prime farmland. as All of the prime farmland located within the Project area is currently developed urban land and is not used for agricultural purposes. As a result the Project would not result in a loss of prime farmland.

Soil impacts due to construction of the Project are similar to those disclosed in the PEIS (Section 4.1.1.1 of reference [1]) and include increased potential for erosion, compaction, loss of productivity, and through contamination from leaking construction equipment. Mitigation measures to minimize soil impacts are described in the PEIS (Section 4.1.1.1 of reference [1]). Overall, the RPA would have minor adverse impacts on soils in the Project area.

Groundwater

Temporary construction dewatering activities would withdraw water from the water table aquifer. Groundwater withdrawn for dewatering would be discharged to storm sewers or directly to the river via

temporary sediment basins. Given the hydraulic separation between the water table aquifer and the deeper resource aquifers (Souris Valley aquifer system), no impacts to groundwater resources are expected.

If features associated with the RPA require impacts to NDDWR observation wells, coordination shall take place with the Water Appropriations Division to ensure wells are properly abandoned.

5.1.2 No-Action Alternative

Under the no action alternative there would be no modifications to the existing levee. As a result, the 14.2 acres of soils disturbance would be avoided. In addition, there would be no temporary construction dewatering activities.

The No-Action Alternative would inundate more acres of prime farmland than the RPA under all flow conditions evaluated. The No-Action Alternative would have varying effects to productivity increasing with the frequency and intensity of flooding. The prime farmland that would be flooded or disrupted under each alternative are shown in Figure 4-1.

5.2 Surface Waters

5.2.1 **Requester's Preferred Alternative**

Constructing, operating, and maintaining the RPA would result in temporary and permanent impacts on surface water resources, as described below.

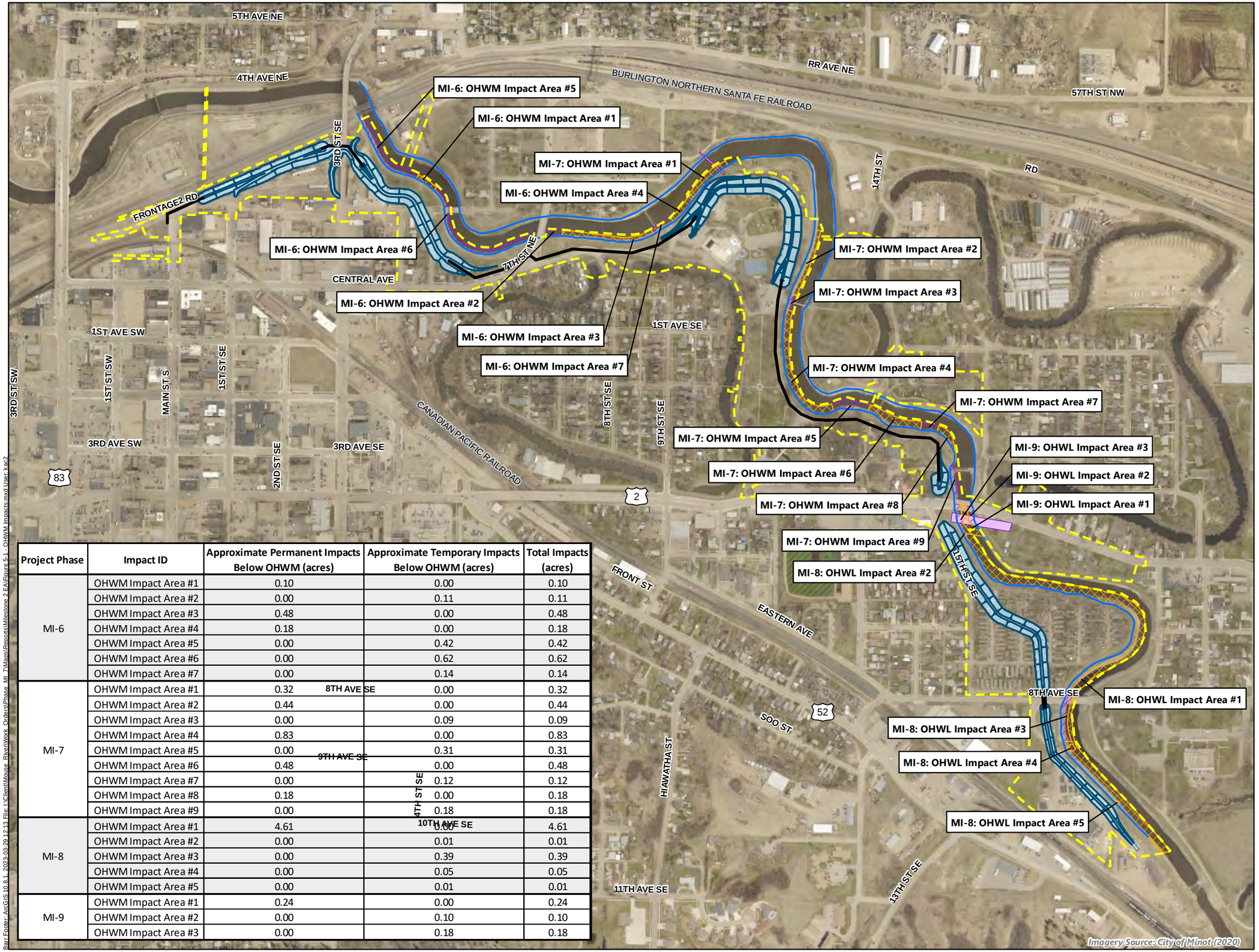
5.2.1.1 Mouse River

Temporary impacts to water resources similar to those discussed in the PEIS (Section 4.2.1 of reference [1]), would be anticipated with construction of the RPA. These temporary impacts may include localized physical disturbance caused by replacement of existing riprap, access for construction equipment during site preparation, such as vegetation clearing, grading, excavation, and soil stockpiling and an increase in the potential for soil erosion and subsequent sedimentation of surface waters. The presence of exposed topsoil and disturbed vegetation could also increase sediment runoff from stormwater. Erosion control measures would be implemented prior to the start of construction to reduce the potential runoff in the Mouse River, in accordance with the Project's Stormwater Pollution Prevention Plan (SWPPP).

Construction of the RPA would also result in permanent impacts to the Mouse River, due to several items that would require work to be done below the ordinary high water mark (OHWM). The river would be stabilized in several locations through installation of launchable riprap, both above and below the OHWM. All phases of the Project are anticipated to result in a total of 7.86 acres of permanent impacts to the Mouse River (Figure 5-1) (Table 5-1).

Table 5-1 OHWM Impacts

Impact ID	Permanent Impacts (acres)	Temporary Impacts (acres)
Phase MI 6		
OHWM Impact Area 1	0.10	0.00
OHWM Impact Area 2	0.00	0.11
OHWM Impact Area 3	0.48	0.00
OHWM Impact Area 4	0.18	0.00
OHWM Impact Area 5	0.00	0.42
OHWM Impact Area 6	0.00	0.62
OHWM Impact Area 7	0.00	0.14
Phase MI 7		
OHWM Impact Area 1	0.32	0.00
OHWM Impact Area 2	0.44	0.00
OHWM Impact Area 3	0.00	0.09
OHWM Impact Area 4	0.83	0.00
OHWM Impact Area 5	0.00	0.31
OHWM Impact Area 6	0.48	0.00
OHWM Impact Area 7	0.00	0.12
OHWM Impact Area 8	0.18	0.00
OHWM Impact Area 9	0.00	0.18
Phase MI 8		
OHWM Impact Area 1	4.61	0.00
OHWM Impact Area 2	0.00	0.01
OHWM Impact Area 3	0.00	0.39
OHWM Impact Area 4	0.00	0.05
OHWM Impact Area 5	0.00	0.01
Phase MI 9		
OHWM Impact Area 1	0.24	0.00
OHWM Impact Area 2	0.00	0.10
OHWM Impact Area 3	0.00	0.18
TOTAL	7.86	2.73



Project Phase	Impact ID	Approximate Permanent Impacts Below OHWM (acres)	Approximate Temporary Impacts Below OHWM (acres)	Total Impacts (acres)
MI-6	OHWM Impact Area #1	0.10	0.00	0.10
	OHWM Impact Area #2	0.00	0.11	0.11
	OHWM Impact Area #3	0.48	0.00	0.48
	OHWM Impact Area #4	0.18	0.00	0.18
	OHWM Impact Area #5	0.00	0.42	0.42
	OHWM Impact Area #6	0.00	0.62	0.62
	OHWM Impact Area #7	0.00	0.14	0.14
MI-7	OHWM Impact Area #1	0.32	0.00	0.32
	OHWM Impact Area #2	0.44	0.00	0.44
	OHWM Impact Area #3	0.00	0.09	0.09
	OHWM Impact Area #4	0.83	0.00	0.83
	OHWM Impact Area #5	0.00	0.31	0.31
	OHWM Impact Area #6	0.48	0.00	0.48
	OHWM Impact Area #7	0.00	0.12	0.12
	OHWM Impact Area #8	0.18	0.00	0.18
	OHWM Impact Area #9	0.00	0.18	0.18
MI-8	OHWM Impact Area #1	4.61	0.00	4.61
	OHWM Impact Area #2	0.00	0.01	0.01
	OHWM Impact Area #3	0.00	0.39	0.39
	OHWM Impact Area #4	0.00	0.05	0.05
	OHWM Impact Area #5	0.00	0.01	0.01
MI-9	OHWM Impact Area #1	0.24	0.00	0.24
	OHWM Impact Area #2	0.00	0.10	0.10
	OHWM Impact Area #3	0.00	0.18	0.18

Project Area
Levee Footprint
Floodwall Alignment
Bridge Modifications
Ordinary High Water Mark

Estimated OHWM Impacts
Approximate Permanent Impacts Below OHWM
Approximate Temporary Impacts Below OHWM

0 300 600 1,200
Feet

BARR

Figure 5-1

OHWM IMPACTS
MREFPP Milestone 2
Minot, ND

Barr Engineer: ArcGIS 10.8.1, 2023-03-29 12:13 File: I:\Client\Minot_River\Work_Orders\Phase_MI_2\Maps\Reports\Milestone_2_FA\Figure 5-1_OHWM_Impacts.mxd User: kxc2

Activities that would cause permanent and/or temporary impacts to the Mouse River for each phase are described below.

Phase MI-6:

- OHWM Impact #1 and #2 – Impacts would occur along the Mouse River channel due to associated riprap protection installation.
- OHWM Impact #3 and #4 – Impacts would occur along the Mouse River channel due to construction of the new outfall on Central Avenue, construction of the 8th Street NE Pump Station and Gatewell Outfall, and associated riprap protection installation.
- OHWM Impacts #5, #6, and #7 – temporary impacts would occur from grading activities along the Mouse River channel.

Phase MI-7:

- OHWM Impact Area #1 – Impacts would occur along the Mouse River channel due to removal of an existing bridge pier and riprap, installation of a new bridge and riprap, installation of riprap for slope and riverbank stabilization, and installation of natural bank stabilization methods.
- OHWM Impact Area #2- Impacts would occur along the Mouse River channel due to bridge removal and grade restoration.

Phase MI-8:

- OHWM Impact Area #1 – Impacts would occur along the Mouse River channel due to overbank excavation, removal of an existing bridge pier and riprap, installation of a new bridge and riprap, installation of riprap for slope and riverbank stabilization, and installation of natural bank stabilization methods.

Phase MI-9:

- OHWM Impact #1 – Impacts would occur along the Mouse River channel due to channel realignment, associated riprap protection installation for slope and riverbank stabilization, and installation of natural bank stabilization methods.

A mitigation plan to impacts below the OHWM will be developed as part of the application for a Section 404 permit. It is expected that mitigation will be developed with similar considerations as described in the PEIS (Section 4.2.1.3 of reference [1]).

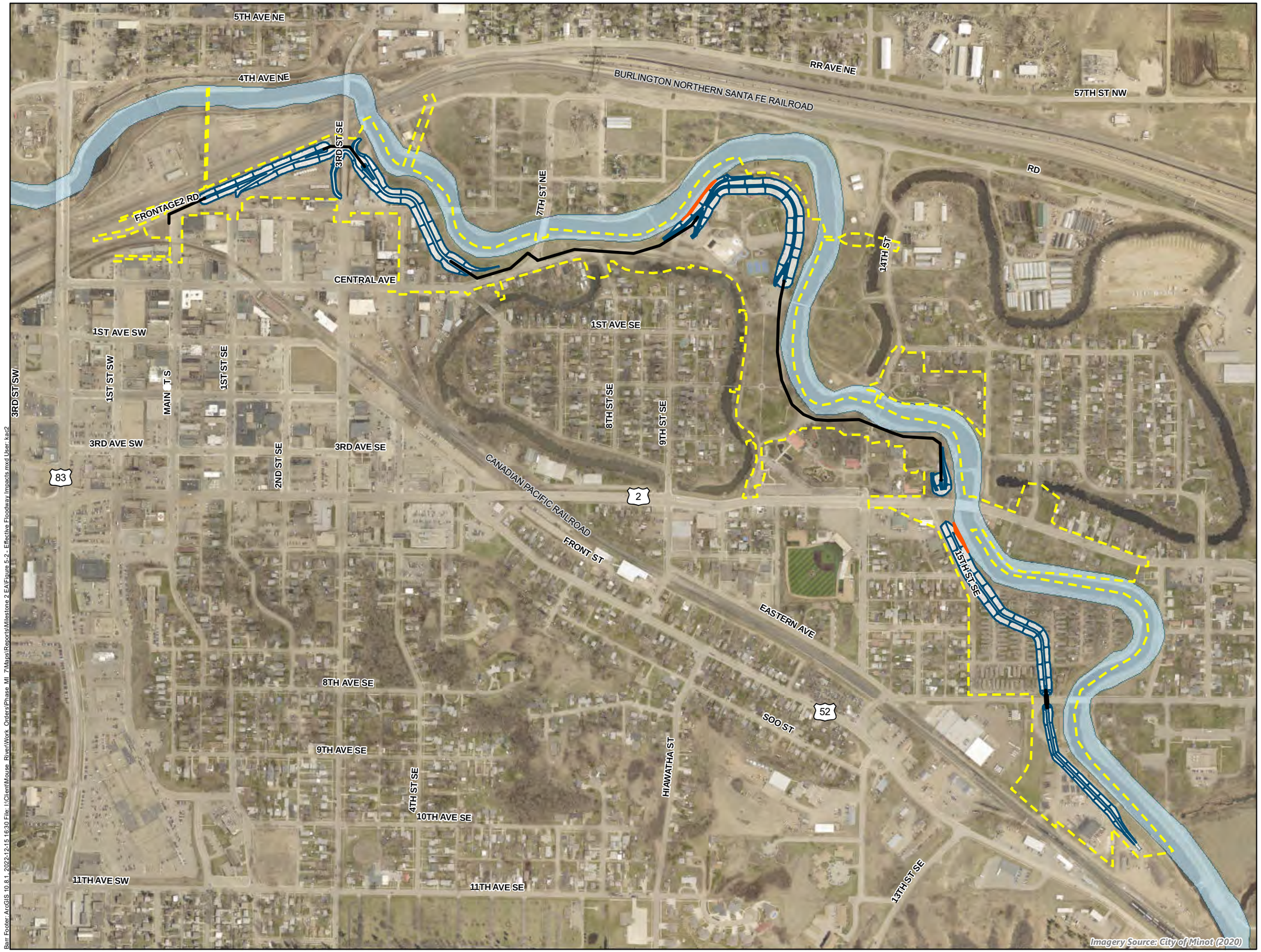
5.2.1.2 Floodplain

The RPA would involve constructing flood risk-reduction features within the Mouse River's floodplain and floodway. This work would require a Non-Building Floodplain Development Permit from the Minot floodplain administrator, as appropriate. Activities to modify the floodway would require authorization from the local floodplain administrator, as well as the NDDWR.

The purpose of the Project is to reduce impacts from flooding to commercial, industrial, and residential structures. Project design is based on recent hydrologic studies, and both the SRJB and USACE indicate that the RPA would provide better flood protection than what exists currently.

There are no anticipated adverse impacts on the effective regulatory floodway. Figure 5-2 shows proposed project features and the effective regulatory floodway. Overbank excavation areas and channel realignment within the floodway will increase the overall conveyance capacity of the channel.

The proposed levee along the Mouse River will be in the preliminary floodway (Figure 5-3). The preliminary floodway is subject to change. While overbank excavation areas within the preliminary floodway will increase the overall conveyance capacity, the work in the channel may still impact the preliminary floodway. A Conditional Letter Of Map Revision (CLOMR) application will be prepared for the project allowing FEMA to comment on the Project and how it will affect the floodplain upon construction. Although the preliminary floodway is subject to change in the near future, the RPA is not expected to encourage development in the existing floodplain or the post-Project construction floodplain.



Project Area

Levee Footprint

Floodwall Alignment

Potential Impacts to Effective Floodway

FEMA Effective Floodway

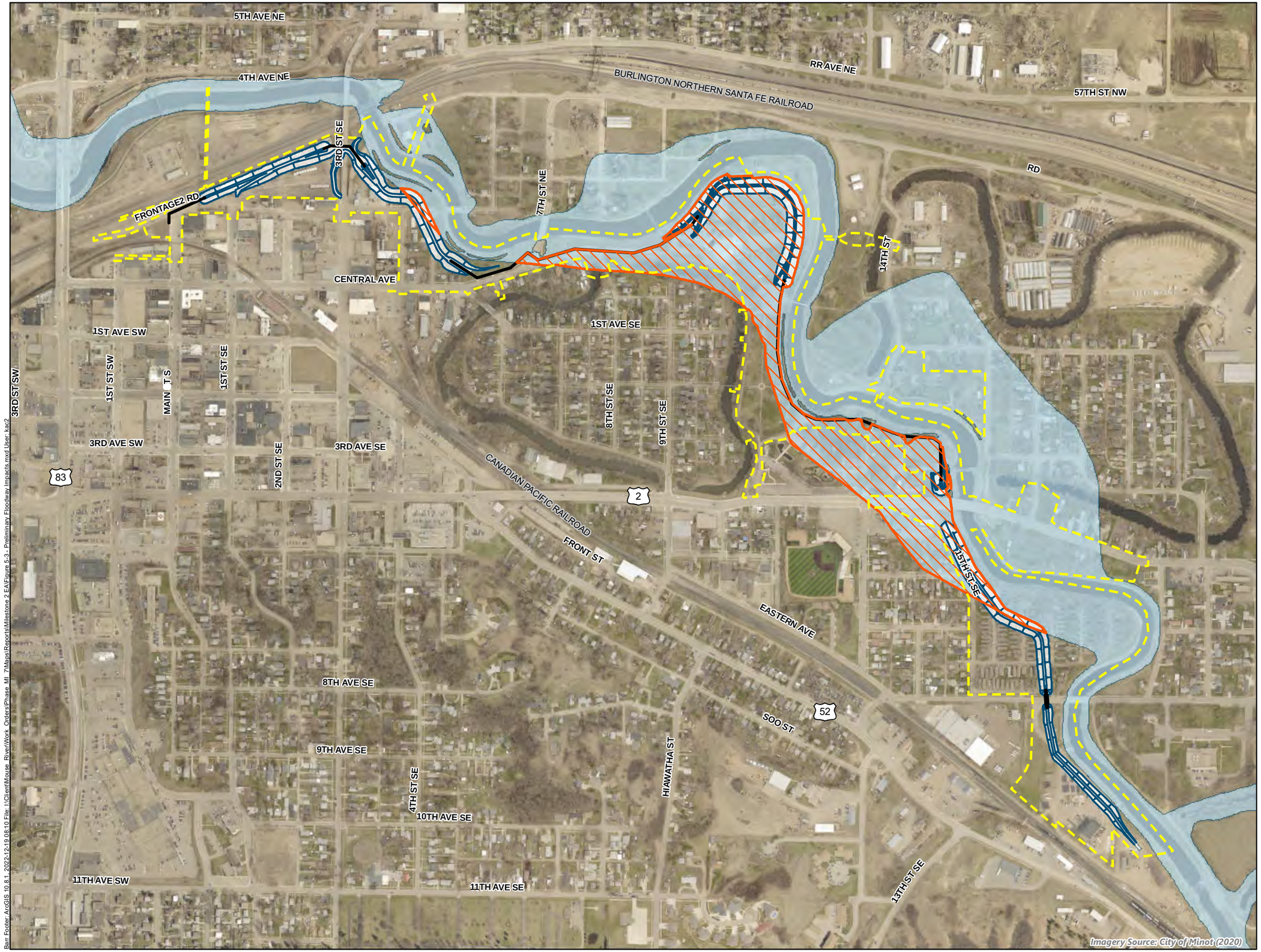
0 300 600 1,200

Feet

BARR

Figure 5-2

EFFECTIVE FLOODWAY IMPACTS
MREFPP Milestone 2
Minot, ND



Project Area

Levee Footprint

Floodwall Alignment

Potential Impacts to Preliminary Floodway

FEMA Preliminary Floodway

0 300 600 1,200

Feet

BARR

Figure 5-3

PRELIMINARY FLOODWAY IMPACTS
MREFPP Milestone 2
Minot, ND

Barr Footer: ArcGIS 10.8.1, 2022-12-19 08:10 File: I:\Client\Mouse_River\Work_Orders\Phase_MI_7\Maps\Reports\Milestone 2 EA\Figure 5-3 - Preliminary Floodway Impacts.mxd User: kac2

5.2.1.3 Wetlands

The construction of flood risk-reduction features could temporarily or permanently affect wetlands, as described in the PEIS (Section 4.2.1.1 of reference [1]). Phases MI-6 and MI-7 of the RPA are anticipated to result in 0.92 acres of permanent wetland impact and 0.24 acres of temporary impact, some of which are to incidental wetlands (Figure 5-4) (Table 5-2). No temporary or permanent impacts to wetlands are anticipated for Phase MI-8 and Phase MI-9 or at the borrow site.

Table 5-2 Wetland Impacts

Impact ID	Permanent Impacts (acres)	Temporary Impacts (acres)
Phase MI 6		
Wetland Impact Area 1	0.01	0.00
Wetland Impact Area 2	0.00	0.01
Wetland Impact Area 3	0.17	0.00
Wetland Impact Area 4	0.00	0.02
Wetland Impact Area 5	0.64	0.00
Wetland Impact Area 6	0.00	0.06
SUB TOTAL	**0.82**	**0.09**
Phase MI 7		
Wetland Impact Area 1	0.01	0.01
Wetland Impact Area 2	0.00	0.01
Wetland Impact Area 3	0.01	0.01
Wetland Impact Area 4	0.00	0.01
Wetland Impact Area 5	0.00	0.08
Incidental Wetland Impact Area 1	0.06	0.00
Incidental Wetland Impact Area 2	0.01	0.00
SUB TOTAL	**0.09**	**0.12**
Phase MI 9		
Wetland Impact Area #1	0.01	0.00
Wetland Impact Area #2	0.00	0.03
SUB TOTAL	0.01	0.03
TOTAL	**0.92**	**0.24**

Phase MI-6 and Phase MI-7 activities that would cause permanent and/or temporary impacts to wetlands are described below.

Phase MI- 6

- Wetland Impact #1– Impacts due to installation of storm sewer and culvert pipe outlets to route stormwater runoff.

- Wetland Impact #2, #3, #6 and #7– Impacts due to grading of ditches adjacent to roadway modifications and installation of storm sewer and culvert pipe inlets and outlets to route stormwater runoff.

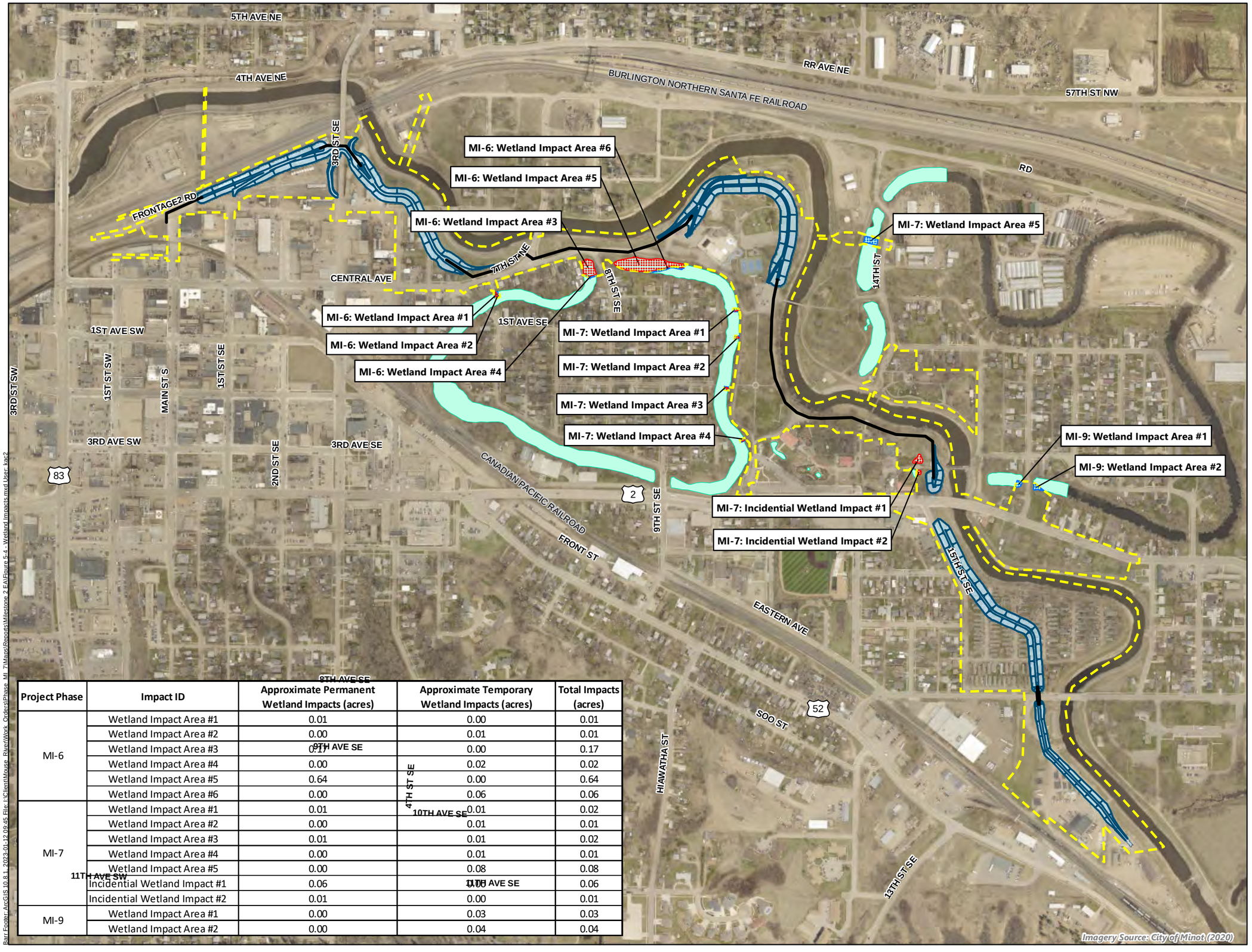
- Wetland Impacts #4 and #5 – Impacts due to grading of ditches adjacent to roadway changes.

Phase MI-7:

- Wetland Impacts #1, #2, #3, and #4 –Impacts would occur from the installation of storm sewer and culvert pipe inlets and outlets to route stormwater runoff. These impacts are due to installation of flared end sections and riprap required for the storm sewer improvements.

- Wetland Impact #5 – Impacts would occur from the installation of storm sewer across the existing wetland. Due to the location of the wetland and existing infrastructure the storm sewer will need to be installed through an open trench. Once installed the area would be returned to its original contours.

- Incidental Wetland Impacts #1 and #2 – Construction of the levee would require the relocation of the animal exhibits. The artificial ponds located within the exhibits would be filled and relocated within the Project area.



Project Phase	Impact ID	Approximate Permanent Wetland Impacts (acres)	Approximate Temporary Wetland Impacts (acres)	Total Impacts (acres)
MI-6	Wetland Impact Area #1	0.01	0.00	0.01
	Wetland Impact Area #2	0.00	0.01	0.01
	Wetland Impact Area #3	0.17	0.00	0.17
	Wetland Impact Area #4	0.00	0.02	0.02
	Wetland Impact Area #5	0.64	0.00	0.64
	Wetland Impact Area #6	0.00	0.06	0.06
MI-7	Wetland Impact Area #1	0.01	0.01	0.02
	Wetland Impact Area #2	0.00	0.01	0.01
	Wetland Impact Area #3	0.01	0.01	0.02
	Wetland Impact Area #4	0.00	0.01	0.01
	Wetland Impact Area #5	0.00	0.08	0.08
	Incidential Wetland Impact #1	0.06	0.00	0.06
	Incidential Wetland Impact #2	0.01	0.00	0.01
MI-9	Wetland Impact Area #1	0.00	0.03	0.03
	Wetland Impact Area #2	0.00	0.04	0.04

Project Area
Levee Footprint
Floodwall Alignment
Delineated Wetland
Estimated Wetland Impacts
Temporary Wetland Impacts
Permanent Wetland Impacts

0 300 600 1,200
Feet

BARR

Figure 5-4

WETLAND IMPACTS
MREFPP Milestone 2
Minot, ND

Barr Footer: ArcGIS 10.8.1, 2023-01-12 09:45 File: H:\Client\Mouse_River\Work_Orders\Phase_MI_7\Maps\Reports\Milestone 2 EA\Figure 5-4 - Wetland Impacts.mxd User: kpc2

Construction of the flood risk-reduction features could restrict flood flows to wetlands on the protected side of the levee. However, these wetland areas would still receive hydrology from subsurface flow and from overland runoff flows on the protected side of the levee. It is not anticipated that the project construction would impede surface flows to wetlands in normal conditions.

As part of the Section 404 permit, a mitigation plan will be developed for any impacts to wetlands under USACE jurisdiction. The mitigation plan is anticipated to be developed with similar considerations described in the PEIS (Section 4.2.1.3 of reference [1]) and will include site-specific mitigation.

5.2.2 No-Action Alternative

Under the No-Action Alternative, Surface water resources would continue to function as they have historically during large flood events. Flows less than 10,000 cfs would generally be confined within the existing levees. Some flood-fighting measures would be necessary to close gaps and raise low spots in the existing levee where the top elevations are lower than the 10,000 cfs inundation profile.

5.2.2.1 Mouse River

Under the no action alternative, no construction activities would occur within the Mouse River. Temporary impacts from site preparation vegetation clearing, grading and soil stockpiling would not occur. Preventing approximately 2.73 acres of temporary impacts below the OWHM of the Mouse River. Permanent impacts from the installation of launchable riprap below the OHWM would not occur avoiding 7.86 acres of permanent impacts below the OHWM of the Mouse River.

Flood fighting efforts to 10,000 cfs would minimize property damage behind existing levees. With the No-Action Alternative, the Mouse River would begin overtopping some existing flood protection systems with flows over 10,000 cfs, potentially causing flood-related damages to public infrastructure and private properties behind the levees.

The No-Action Alternative would continue to cause riverbank erosion during large flood events, but not to any levels that would be expected to alter the impairment status or existing impoundment functions along the Mouse River.

5.2.2.2 Floodplain

Floodplain areas would remain unchanged under the No-Action Alternative. During the early stages of the 2011 flood event, Minot was able to successfully fight flood to 10,000 cfs. The flood fight to 10,000 cfs would consist primarily of filling in low spots in the existing levee system. These emergency measures would be outside of the effective regulatory floodplain.

Much of the Project area that was inundated during the 2011 flood is anticipated to be in the new regulatory floodplain, requiring property owners to purchase flood insurance. Once the new regulatory floodplain is made effective, some of the locations where temporary fill would be placed during a flood fight would be in the new floodplain and floodway.

5.2.2.3 Wetlands

Under the no action alternative wetlands within the Project area would not be disturbed from construction activities. Avoid approximately 0.92 acres of permanent wetland impacts and 0.24 acres of temporary impacts. However, the No-Action Alternative could result in direct, temporary impacts to wetlands if flood fighting measures require placement of fill (i.e., sandbags, temporary levees, etc.) directly in wetland areas. During flood events greater than 10,000 cfs, wetlands located outside the existing levees would become inundated. If these wetlands are inundated with either more water or for a longer duration than usual, they may be vulnerable to seasonal vegetation die-off or transition to different wetland plant community types.

5.3 Biological Resources

5.3.1 **Requester's Preferred Alternative**

Constructing, operating, and maintaining the RPA could temporarily and permanently affect biological resources, as described below.

5.3.1.1 Vegetation

The RPA would both temporarily and permanently affect vegetation in the Project area, as described in the PEIS (Section 4.3.1.1 of reference [1]). Removing existing vegetation for clearing, grading, excavating, or constructing Project features would permanently and adversely affect vegetation. Following construction, vegetation along the levee system would be replanted with a native seed mixture. Agricultural vegetation within the Borrow Site would be removed during Project construction. Following construction, the RPA could allow vegetation to establish without the disturbance of flooding, which would be a benefit to the local plant community.

Overall, impacts related to the spread of noxious weeds/non-native plant species would likely be minor and would not differ significantly from the current spread of non-native plant species within the existing Project area.

A tree inventory that included Phases MI-6 and MI-7 was completed for the Project. The tree inventory identified trees over 4-inch caliper that would be impacted by construction activities. A total of 220 trees were identified within the MI-6 construction limits. Of the trees identified in the MI-6 construction limits, 42 would be preserved and 178 would be removed, including 54 riparian trees and 124 non-riparian trees. The 54 riparian trees being removed were located along the the south bank of the Mouse River and along the dead loop south of the Roosevelt park Access road. A total of 504 trees were identified within the MI-7 construction limits. Of the trees identified in the MI-7 construction limits, 234 would be preserved and 268 would be removed, including 91 riparian trees and 177 non-riparian trees. Tree removal would occur during the winter months to prevent disturbance to sensitive wildlife species.

The removed riparian trees will be mitigated through off-site replacement at 2:1 ratio. Approximately 108 trees for MI-6 and 182 trees for MI-7 will be planted to mitigate the impacts to riparian trees. A tree inventory for Phases MI-8 and MI-9 would be completed in the future, prior to construction activities.

5.3.1.2 Fish and Wildlife

The RPA would require that Project features be constructed within the Mouse River floodplain or floodway. Impacts associated with this would be similar to those described in the PEIS (Section 4.3.1.1 of reference [1]). Some of these impacts are generally related to change in habitat due to changes in vegetation, light penetration, and current velocities; however, the current distribution and abundance of fish species and other aquatic organisms in the Mouse River would not be notably altered.

Fish and wildlife may be impacted due to the placement of riprap for erosion and scour protection. Riprap can improve habitat diversity for aquatic organisms; however, it can also change the habitat and impede the movement of wildlife that frequently move between terrestrial and aquatic habitats; examples include turtles, waterfowl, muskrats, etc. The placement of riprap has been shown to have both beneficial and detrimental impacts to aquatic habitat.

There would be minor, temporary losses of wildlife habitat expected with the construction of the RPA. It is anticipated that during construction, mobile wildlife species would temporarily abandon habitats in the Project area as a result of increased noise and human activity. It is anticipated that mobile wildlife would use adjacent similar habitats during Project construction. Some mortality may occur to less mobile species, should they be present in the Project area when construction activities are occurring. Following construction, it is anticipated that many species would quickly recolonize the area of impact soon after Project completion.

Following construction, the RPA could benefit some wildlife species as a result of creation of upland habitat in areas that are currently flood prone.

5.3.1.3 Endangered and Threatened Species

Based on the May 2023 IPaC query, there are six federally endangered, threatened, or candidate species known to occur in Ward County (Table 4-4). Potential impacts to federal candidate species were not evaluated in this SEA. The Project was reviewed for potential effects on federally threatened or endangered species using the North Dakota Determination Key and the Northern Long-Eared Bat Rangewide Determination Key. As stated in the determination keys, a "no effect" determination was concluded for the Dakota Skipper and whooping crane and a "may affect, not likely to adversely affect" determination was concluded for piping plover, red knot, and northern long-eared bat.

The presence of the northern long-eared bat has not been confirmed in the Project area. However, it is possible that northern long-eared bats could use some of the mature trees in the Project area during the summer months. As discussed in Section 5.3.1.1, some tree removal will be necessary for the Project. However, the Project will avoid or minimize the potential for adverse effects to the northern long-eared bats by following USFWS northern long-eared bat guidelines for tree removal. It is anticipated that the Project may affect, but is not likely to adversely affect the northern long-eared bat.

The Dakota skipper is a species of butterfly known to occur in various patches of native grasslands in this general region of North Dakota. The Project area primarily consists of mowed grasses and other disturbances typical of a city-setting and does not contain suitable Dakota skipper habitat. As noted in

Section 4.3.1, there is an area of smooth brome grass mixed prairie just west of the Borrow Site, which could potentially provide suitable habitat for the Dakota skipper. A Dakota skipper survey was conducted in July 2022 across the smooth brome grass mixed prairie along the western edge of the Borrow Site. No Dakota skippers were documented during the survey (reference [41]). As such, a "no effect" determination was concluded for the Dakota skipper.

5.3.1.4 National Wildlife Refuges

Nearby NWRs would be unaffected by the RPA because the Project would not impact the hydrologic connections between the Project area and the NWRs.

5.3.1.5 Nesting Birds

Migratory birds, as well as their nests and eggs are protected under the Migratory Bird Treaty Act (MBTA) of 1918. Under the MBTA, it is illegal to remove an active, occupied migratory bird nest. Construction of the RPA could potentially affect use of trees, shrubs, or ground vegetation in the Project area by nesting birds.

During construction, it is anticipated that nesting birds would temporarily avoid using any otherwise preferred nest sites within the active construction area. It is expected that nesting birds would resume use of preferred nest sites within the Project area once construction was completed. The Project would include conditions to avoid or minimize disturbance of bird nests, such as conducting tree clearing outside of the nesting season or conducting bird surveys prior to tree clearing. Overall, there may be minor, temporary adverse effects resulting from construction-related clearing; however, birds are anticipated to return to and use the Project area upon completion of construction.

5.3.2 No-Action Alternative

Potential impacts to vegetation, fish, and wildlife would be the same as currently experienced for flood scenarios of 5,000 cfs and 27,400 cfs. Emergency flood fighting efforts for flows over 10,000 cfs could result in the placement of sandbags or fill material in wetland or upland vegetation communities, resulting in temporary disturbance to habitats associated with these areas.

5.3.2.1 Vegetation

High-water events would continue to have mostly minor impacts on vegetation communities. Effects would include potential loss of trees and shrubs due to high flow velocity or prolonged inundation. Depending on the timing and duration of high-water events, there would also be a potential disruption in seasonal reproductive cycles (e.g., flowering or seed production). These impacts would be temporary, as the majority of the plant community types in the Project area have adapted to some degree to periodic flooding and episodic inundation. The magnitude of the impacts to vegetation under the No-Action Alternative would be expected to increase along a gradient between the 10,000 cfs flow condition and the 27,400 cfs flow condition.

5.3.2.2 Fish and Wildlife

Under the No-Action Alternative, wildlife species in the Project area would be periodically displaced during high water events, and fish species would temporarily relocate to slower backwaters off of the main channels. Periodic high water events and their resulting effects on fish and wildlife are naturally occurring and not necessarily adverse impacts. For instance, certain fish species respond favorably to flooding as spawning and forage conditions are improved with the inundation of the floodplain. The magnitude and duration of the impacts under the No-Action Alternative would be expected to increase between the 10,000 cfs flow condition and the 27,400 cfs flow condition. Fish stranding under the No-Action Alternative would be larger under the 27,400 cfs flow conditions than under the 5,000 cfs or 10,000 cfs flow conditions as fish could stray further from the river channel. However, foraging and spawning opportunities could be improved.

5.3.2.3 Endangered and Threatened Species

Under the No-Action Alternative, potential impacts to threatened and endangered species would continue to be the same as currently experienced during flood events. However, with the exception of the northern long-eared bat, suitable habitat for the threatened and endangered species listed in the IPaC query is not present in the Project area. Northern long-eared bat habitat would continue to be temporarily altered during flood events.

5.3.2.4 National Wildlife Refuges

The No-Action Alternative would not affect NWRs because none are located within 14 miles of the Project area. The nearest NWR is the Upper Souris NWR, located upstream of the Project area.

5.3.2.5 Nesting Birds

Under the No-Action Alternative, impacts to nesting birds would not change from present conditions. Flood events would continue and could result in mortality of some birds or temporary displacement from their habitats.

5.4 Land Use and Infrastructure

5.4.1 **Requester's Preferred Alternative**

Constructing, operating, and maintaining the RPA could both positively and negatively affect existing and potential land use and infrastructure in ways similar to those described in the PEIS (Section 4.4.1.1 of reference [1]). Mitigation measures for these resources would also be similar to those described in the PEIS (Section 4.4.1.1 of reference [1]).

5.4.1.1 Existing/Potential Land Use

Construction of the proposed flood risk-reduction features would negatively affect commercial, industrial, residential, and recreational land use by permanently converting those lands into use for flood risk-reduction. FEMA is presently in the process of designating a new 1% AEP floodplain, and the new floodplain designation would also positively affect the existing land use classifications in the Project area by lowering the amount of land in the designated floodplain.

The land directly adjacent to the Mouse River channel, within the footprint of the RPA, is designated as future greenway and is a flood risk-reduction strategy designed to create a community asset (references [42]; [43]). The greenway would provide opportunities to connect new open space and provide recreational amenities and opportunities for Minot and the rest of the region while also providing additional flood storage.

Construction operations, temporary work easements, and staging of equipment would temporarily affect land use to a small extent and would result in temporary detours and disruption to regular use and access to residential-, recreational-, commercial-, or industrial-use properties. After construction has been completed, land uses would generally be restored to pre-project conditions. The RPA would benefit the existing developed land use by provide an expanded flood protected area that would encourage utilization of the land by residents and businesses.

5.4.1.2 Infrastructure

Flood Risk-reduction Infrastructure

The RPA would modify the existing flood risk-reduction features in the Project area and significantly improve the flood risk-reduction infrastructure, as discussed in this SEA. Many of the Milestone 2 features would be constructed within the rights-of-way of existing flood risk-reductions structures, while others will be constructed in new areas. Impacts associated with construction and operation of the RPA are discussed in Chapter 5 of this SEA.

Transportation

Construction of the RPA would benefit the local roadway network by providing a more stable transportation system that would not be subjected to closure due to flooding events. However, minor detours will be required to construct each phase of the project, all planned detour routes for each phase will be approved by the City of Minot prior to construction of each respective phase.

Construction of Phase MI-6 would require modifications to traffic patterns on 1st Avenue NE, Central Avenue E, Main Street, 1st Street E, 2nd Street E, 3rd Street E, 4th Street E, 5th Street E, 1st Street SE, 7th Street SE, and 8th Street S. Traffic control plans with the proposed detour routes will be reviewed and approved by the City of Minot prior to construction of Phase MI-6.

Construction of certain project features would require modifications to traffic patterns and create limited access to Roosevelt Park during Phase MI-7. Access to the park would still be maintained throughout construction. No detours or long-term roadway closures for Phase MI-7 are anticipated.

Construction of Phase MI-8 would include modifications to the Burdick Avenue bridge. While temporary impacts to traffic patterns are anticipated, no detours or long-term roadway closures are anticipated for Phase MI-8.

Construction of Phase MI-9 would require temporary modification to traffic patterns along 7th Street SE. Access to businesses along this roadway would be maintained throughout construction. No detours or long-term roadway closures are anticipated for Phase MI-9.

Three Minot City Transit bus routes are located within the Project area and would be temporarily impacted during construction. These bus routes would follow the noted general traffic detours with minor impacts, mainly associated with route schedules.

Construction of Phase MI-6 would have temporary impacts to railways and railway traffic due to work occurring within railway the ROW. Acquisition of railway ROW is pending and coordination with railways is currently ongoing and will continue throughout construction.

Construction of the RPA is not anticipated to impact aviation.

Utilities

The RPA would significantly benefit both public and private utilities by providing greater flood resilience, upgraded stormwater management, and improved infrastructure. The RPA would temporarily disrupt the services of both public and private utilities, particularly during relocation of utilities that penetrate the levee. Utility disruption plans will include redundancy to limit the number of interruptions during construction. If interruptions are necessary, residents and businesses would be provided with reasonable advance notice prior to the disruption. Any disruptions that occur would be prioritized appropriately and minimized to the greatest extent possible.. Affected utilities on specific parcels and the corresponding relocations and modifications to this infrastructure would be identified during final design.

Emergency Services

The RPA would indirectly and permanently benefit emergency services in the Project area by improving the transportation network so that major transportation corridors could remain open during flood events similar to the 2011 flood. It is expected that construction of the RPA would result in minimal disruption to access for emergency services.

5.4.2 No-Action Alternative

The following sections describe potential impacts to land use and infrastructure of the No-Action Alternative. Potential impacts under 5,000 cfs, 10,000 cfs, and 27,400 cfs flow conditions were considered.

5.4.2.1 Existing/Potential Land Use

There would be no effect to the existing or potential land use under the no action alternative. The property would not be disturbed from construction operations and there would be no conversion of land use. Access to residential, recreational, commercial, and industrial properties will not be disrupted.

In flood events greater than 10,000 cfs, floodwaters would overtop flood risk-reduction features, adversely affecting land use in the Project area. Potential adverse effects range from minor to significant, increasing in severity with higher water levels. Under the No-Action Alternative, emergency flood risk-reduction actions would begin to take place when conditions appear to be favorable for flooding. Temporary land use limitations would result in the vicinity of these actions and would vary with the intensity and duration of flooding.

Flood events topping 10,000 cfs would substantially and adversely affect existing and potential land uses. Flood flows of 10,000 cfs would overtop existing flood risk-reduction elements, and residential, commercial, industrial, and open space would be inundated, potentially resulting in weeks to months of flood-related clean up and restoration. Financial risk due to flooding in this area deters residential, commercial, and industrial development in these areas.

A flood event of 27,400 cfs would significantly and adversely affect existing and potential land uses. Flood flows of 27,400 cfs would inundate entire neighborhoods adjacent to the Mouse River. Many of these properties would become permanently unusable or too costly to restore, resulting in permanent an unplanned changes in land use. Clean up and recovery from such an event would take many months or years.

5.4.2.2 Infrastructure

Transportation

Under the No-Action Alternative there would be no modifications to existing roadways. As a result, there would be no temporary detour routes. In addition, there would be no impacts to roads up to 10,000 cfs. Local and regional agencies would continue to monitor roadway and traffic circulation conditions, pursuing improvements throughout the project area as needed. Flood events greater than 10,000 cfs would cause local roads and bridges near the Mouse River to experience localized flooding and closures. Transportation systems serving local and regional destinations would be inundated. Access disruptions could last from hours to months depending on location and the severity of the flood event.

Utilities

Under the No Action Alternative there would be no modifications to the existing utilities. With flows of 10,000 cfs and greater, public and private underground utilities would be submerged. Adverse effects to utilities could include degradation of structural integrity or backflow of floodwaters entering or accumulating through the systems. Services could be disrupted for an extended period, and subsequently restoring the affected areas could be costly.

Under the No-Action Alternative, a flood event of 27,400 cfs would significantly and adversely affect infrastructure in the affected area. This alternative would cause long-term disruptions and destruction of the infrastructure in the project area, resulting in widespread impacts that would be felt regionally and potentially statewide. Significant clean-up and repair efforts could last for months if not years.

5.5 Contaminated Sites

5.5.1 Requester's Preferred Alternative

Based on the results of the HTRW Assessment discussed in Section 4.5.1, there are several sites in the Project area with the potential to have an environmental risk as part of Project implementation. Potential impacts associated with these existing sites include encountering petroleum impacted soils during construction. A plan has been developed for encountering and disposal of contaminated soils during construction and is discussed in Article 5, Section 5.06 E of the General Conditions. A Demolition Plan and

a Health, Safety and Emergency Response Plan have been developed that contractors will follow during project work to minimize the potential risk for employee and public health and safety.

Impacts from hazardous materials and petroleum products could result from construction-related activities in areas where contaminated soil or groundwater occur, as described in the PEIS (Section 4.5.1.1 of reference [1]). These impacts could include exposure of construction workers or nearby residents to hazardous substances that are encountered during construction activities. Also, contaminants could inadvertently be spread to other areas as the result of moving contaminated soils during excavation activities or pumping contaminated groundwater during dewatering activities.

A Contingency Plan has been developed by the Requester to guide actions if unanticipated environmental conditions are encountered during construction of the RPA. Contingent conditions that could be encountered are uncovering an unknown underground storage tank, a water well or vent pipe, debris, containers, contaminated soils, or contaminated water that accumulates within an excavation. The Requester has indicated that these and other unexpected conditions would be addressed according to the procedures described in the Contingency Plan. Adherence to these plans would minimize potential risk to public health and safety. Should an unexpected condition be encountered, work would immediately stop, and an environmental professional would be contacted to inspect, assess, and manage the situation in accordance with the Contingency Plan, provided in the HTRW Assessment report (Appendix H of Appendix 1).

5.5.2 No-Action Alternative

River flows greater than 10,000 cfs could result in the inundation of potentially contaminated sites and the spreading of these contaminants from the sites. Sites with storage tanks and septic systems could be inundated, potentially causing overflow, and spreading the contents throughout the environment contaminating soil, groundwater, and surface waters in the surrounding area. Significant negative impact to the surrounding area, following a flood event, is anticipated due to the number of sources and volume of potential contaminates located within the inundation area.

5.6 Socioeconomics

5.6.1 **Requester's Preferred Alternative**

Constructing, operating, and maintaining the RPA will likely affect property values, tax revenue, regional growth, employment, business activity, community cohesion, community growth and development, and environmental justice. The entire population of Minot would benefit from flood risk reduction at flows of 27,400 cfs with the construction of the RPA. Negative socioeconomic impacts associated with the Project are minor and similar to those described in the PEIS. The socioeconomic impacts would be minimized through the reduced potential need to relocate homes and businesses from the protected area, and the creation of jobs by requiring workers for each phase of construction (Section 4.3.1.2 of reference [1]).

5.6.1.1 Environmental Justice

No minority communities were identified within the Project area. Census Tract 101 and 107.2 contained a higher proportion of low income residents, however low income populations do not make up a majority

of the census tract total population. The Project will benefit the entire community by providing flood protection regardless of race or socioeconomic status. While there are pockets of low-income and minority populations within the project area, implemented flood protection benefits and the adverse impacts of Project construction would reach all population groups, and would not result in disproportionate adverse impacts to low income or minority populations. Therefore, no environmental justice communities would be disproportionately impacted by the Project.

5.6.1.2 Relocations and Buyouts of Businesses and Homes

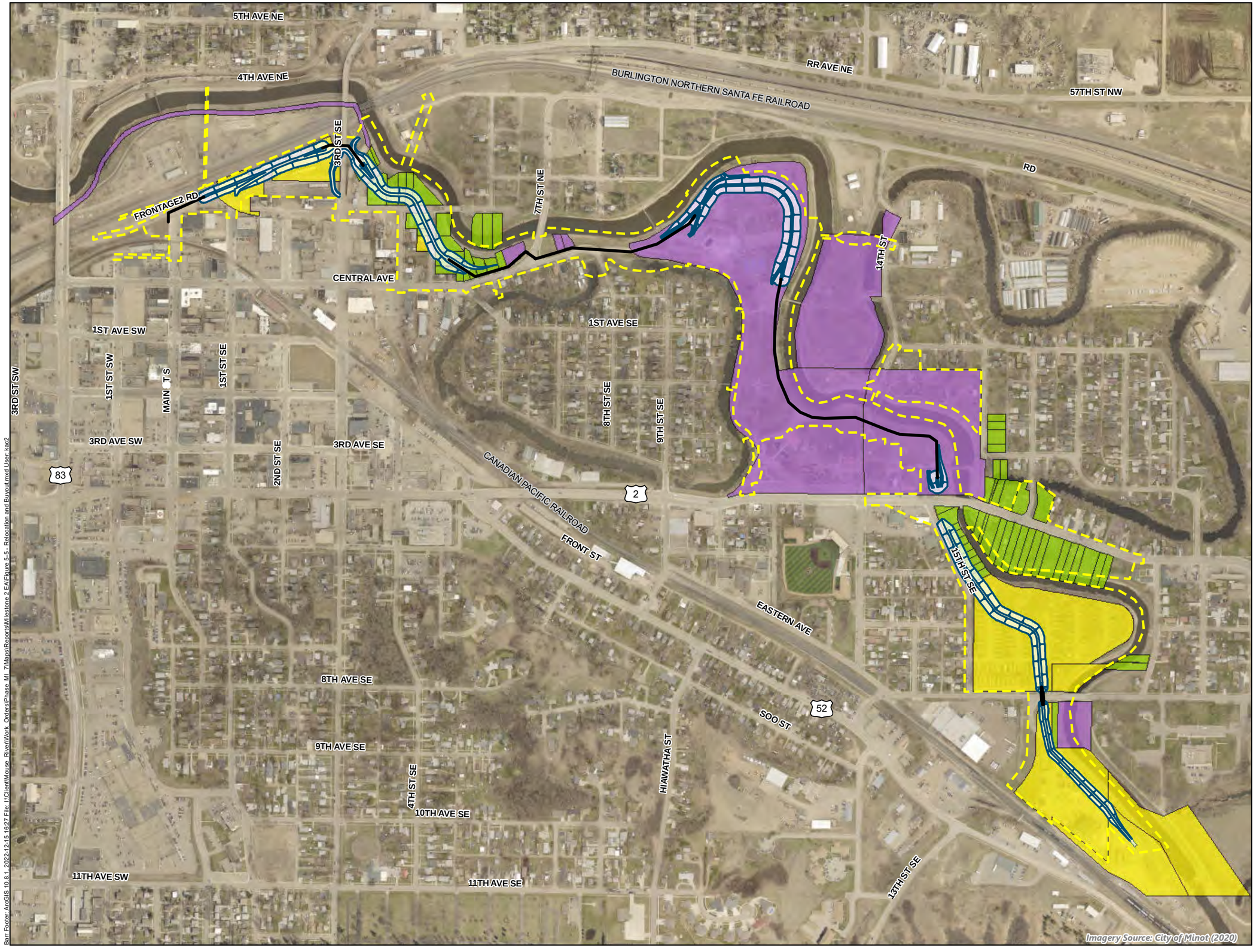
In advance of beginning design of Milestone 2, the City of Minot was involved in flood recovery efforts since the 2011 flood of the Mouse River. As part of these recovery efforts the City has been actively engaged in the acquisition of properties along the corridor using CDBG funding through HUD.

As part of this effort the City of Minot, under its delegated authority from HUD, developed a memorandum of understanding (MOU) with ND SHPO, to expedite the environmental review process and provide the framework for identifying properties that required further coordination.

The RPA would require the acquisition of 10 properties, in addition to the 53 homes and businesses that have been acquired by Minot to facilitate Project construction (Figure 5-5). Minot is working through property buyouts with minimal issues from landowners. However there have been a few differences of opinion on property valuation.

Additionally, construction of the RPA would require several permanent and temporary easements within Phase MI-6 of the Project area, on private owned property. The estimated area of permanent easements required for Phase MI-6 is 28.4 acres. The estimated area of temporary construction easements required for Phase MI-6 is 6.9 acres. All property acquisitions and easements would be acquired using state and local funds.

As of October 2022, 58 of the 68 property acquisitions required have been finalized and the remaining 10 are still in progress. Additionally, as of August 2022, the acquisition of all permanent and temporary easements are pending. All acquisitions will be completed for each phase prior to beginning construction in each respective phase.



Project Area

Levee Footprint

Floodwall Alignment

Parcel Boundary

Acquisition Status

City Owned

Need to Acquire

Park Property

Note: Parcel acquisition status from the City of Minot, 10/09/2022.

0 300 600 1,200

Feet

BARR

Figure 5-5

RELOCATION AND BUYOUT
MREFPP Milestone 2
Minot, ND

5.6.1.3 Property Values

The RPA would permanently and substantially increase the value of properties as flood risk-reduction features are built and become operable. Not only would property values increase, but owners of protected parcels would also benefit from not having to acquire flood insurance and from having fewer restrictions on improvements that could be made.

5.6.1.4 Business Activity

Constructing, operating, and maintaining the RPA would stimulate local business activity by increasing direct, indirect, and induced expenditures. In the long term, the increased flood protection provided by the RPA would support business expansion and would attract new businesses to the area.

5.6.1.5 Employment

The RPA would create temporary jobs during construction activities. It is anticipated that the City of Minot will be responsible for ongoing maintenance activities. Construction jobs would likely be filled from the surrounding workforce, however, some construction workers might be recruited from communities outside of the area. The Project would also indirectly create and induce temporary job growth. Induced jobs are jobs created due to the increased household spending of workers who are employed for the construction of the Project. The surrounding region might also benefit from the creation of indirect and induced jobs not filled by the local labor pool.

5.6.1.6 Regional Growth

Minot is an important service center for the region, meeting the health care, service, and shopping needs of western North Dakota, eastern Montana, Canada, and the Minot Air Force Base. By reducing flood risk, the RPA would affirm Minot's capacity to function as a stable regional hub, resulting in permanent, beneficial impacts to regional growth. As noted above, workers relocating to the area would increase population in the short-term and would temporarily benefit regional growth.

5.6.1.7 Tax Revenue

The RPA would generate temporary and long-term tax revenue for both the state and local economies. Temporary tax revenue would be generated from direct expenses on goods and services linked to constructing and implementing the RPA. It is estimated that Phases MI-6 and MI-7 of the Project would cost around $100 million to construct, while the cost of Phases MI-8 and MI-9 is not yet determined but would be in addition. The Project would also permanently increase tax revenues by better protecting public and private investments, such as infrastructure and homes.

5.6.1.8 Community Cohesion (Sense of Unity)

The RPA would, overall, provide substantial and permanent benefits to community cohesion in protected areas and the community as a whole. With increased stability and security, residents and businesses would be less likely to relocate and would increase the level of commitment to the community, leading to greater involvement with community issues and needs.

5.6.1.9 Community Growth and Development

Following the 2011 flood, the Souris Basin Regional Recovery Strategy (reference [43]) was developed as a framework for identifying short- and long-term community vision and strategies for rebuilding flood-affected areas of Minot and the surrounding communities. Community members involved in developing the Souris Basin Recovery Strategy identified permanent housing policy initiatives, affordable housing zones, mortgage and rental assistance programs, and subsidized housing as top recovery priorities.

The RPA would support these housing priorities by protecting public and private investments—residences, businesses, infrastructure, and recreational resources—in the affected area. This increased protection would support existing community uses and would encourage future growth and development within the affected area and the region. This would provide a path towards more sustainable and resilient communities and would benefit long-term community growth and development within the affected area.

5.6.2 No-Action Alternative

Under the No-Action Alternative, a flood event up to 10,000 cfs would generate minimal socioeconomic impacts. Existing flood risk-reduction elements, when combined with emergency flood fighting, are generally able to contain flood flows up to 10,000 cfs.

Events greater than 10,000 cfs would overtop existing flood risk-reduction features, and portions of Minot would be inundated. This would cause damage to homes and public infrastructure, and lead to substantial and adverse effects on individuals, communities, and local economic activity.

A flood event of 27,400 cfs would result in significant adverse socioeconomic effects, with damages similar to those from the flood of 2011. Flooding would inundate a large number of parcels, temporarily or permanently affecting communities and businesses. Damages to some properties could be permanent, as the cost of clean-up might be prohibitive. This could result in permanent loss of homes and businesses in the inundated area, leading to loss of community and permanent relocation of residents and businesses.

5.7 Recreation

5.7.1 **Requester's Preferred Alternative**

Constructing, operating, and maintaining the RPA would affect the accessibility, usefulness, and layout of recreational resources within the impact area. Impacts would be similar in nature to those described in the PEIS (Section 4.7.1.1 of reference [1]).

Constructing the proposed features of the RPA within and adjacent to the Mouse River would temporarily disrupt access to Roosevelt Park and Zoo, trails, and fishing locations. Increased noise and dust could detract from outdoor activities, like running, golf, and baseball. Future operation and maintenance activities could temporarily disrupt recreational facilities and opportunities, although these adverse effects are anticipated to be temporary and minor. Ultimately, construction of the RPA would provide flood control measures to protect recreational resources in the vicinity of the Project area.

The Project would temporarily disturb Section 6(f) property during the construction of the RPA. Roosevelt Park would temporarily have limited or restricted access due to heavy equipment and construction activities. Measures to mitigate impacts would include coordinating construction activities to limit disturbances, where possible, to times when Roosevelt Park is less used. Once construction is complete the disturbed locations would be restored and would be reopened for public use.

In addition, the project will permanently impact Section 6(f) property. The permanent impacts to Section 6(f) property would occur from the conversion of existing park property to USACE ROW for construction of the expanded levees. The permanent Section 6(f) impacts would be mitigated through replacement at an off-site recreational property. SRJB is consulting with the National Park Service and North Dakota Parks and Recreation Department to identify mitigation for the loss of Section 6(f) property.

5.7.2 No-Action Alternative

Roosevelt Park and Zoo would be affected by a flood event under 10,000 cfs within and adjacent to the current 1% AEP floodplain. Flood events over 10,000 cfs would inundate and damage recreational facilities and infrastructure in portions of Minot and Nedrose Township. Use of existing recreational facilities would be restricted until flood waters receded and cleanup and restoration were completed.

A flood event of 27,400 cfs would significantly damage existing facilities and infrastructure, erode soil, and uproot vegetation. Recreational facilities such as Roosevelt Park and Zoo, Corbett Field and Rink, and trails would be unusable until cleaned up and restored, and some recreational facilities might never be fully restored to their former condition. This would permanently reduce the quality and quantity of recreational opportunities within the affected area.

5.8 Aesthetics and Visual Resources

5.8.1 **Requester's Preferred Alternative**

Aesthetic and visual impacts associated with the Project would be similar to those discussed in the PEIS (Section 4.8.1.1 of reference [1]). Changes to the aesthetic and visual resources in Minot would be expected due to the modification and expansion of the existing levee. The existing levee has an average height of between 3 and 4 feet from the ground surface to a maximum height of 5.5 to 6 feet. The proposed levees and floodwalls will have a maximum height of 17 feet. The Project area is currently influenced by the presence of the built environment due to its proximity to industrial, commercial, recreational, and residential landscapes in Minot. These environments would experience a change in viewshed as the levee is expanded. However, the RPA would also increase open spaces and allow accessibility to a new trail system, which are generally perceived as aesthetic and visual enhancements. The proposed multi-use trail would also provide a visual overview of the river corridor from the top of the embankment. The severity of visual effects are dependent on proximity to Project features and the degree to which those areas are currently blocked by existing obstructions such as trees and neighboring home and buildings, as well as user perception but overall, effects on aesthetics are expected to be negligible.

5.8.2 No-Action Alternative

While no direct changes to the aesthetic and visual resources of the Project area would occur under the No Action alternative, aesthetics and visual resources would be adversely affected by any flooding in the Project area. Even with flows contained by the No-Action Alternative, residents, walkers, and bikers with a view of the river could experience minor aesthetic impacts as the river would be at a higher stage than normal and trash and debris left after floodwaters subside could create an unappealing visual.

At flows over 10,000 cfs flood risk-reduction features would be overtopped, inundating portions of Minot. Flooding would cover public and private land and infrastructure with standing water, thus altering existing views. As water recedes, debris, sedimentation, and damaged vegetation and infrastructure would be revealed. Cleanup and restoration efforts could require an increased presence of construction or debris removal services, causing temporary displeasing sights. Viewsheds and landscapes would be restored within days to months depending on the severity of flood damages.

5.9 Historic and Cultural Resources

5.9.1 **Requester's Preferred Alternative**

As a result of the Class III intensive cultural resources investigation, 10 properties eligible for or listed in the NRHP were identified within the Project footprint: 32WD11, 32WD125, 32WD416, 32WD459, 32WD554, 32WD820, 32WD824, 32WD974, 32WD2492, and 32WD2496. Of these, sites 32WD11, 32WD554, 32WD820, 32WD824, , 32WD2492, and 32WD2496 will be avoided by Project activities. As long as avoidance measures are followed, these sites will not be affected by the Project and no additional work for these sites is recommended.

Site 32WD416 consists of a 1947 Farmers Cooperative Grain Association grain elevator. This resource is entirely within the Project footprint for MI-6 and will be removed as a result of Project activities. Consultation with the SRJB, USACE, and the North Dakota SHPO to resolve the adverse effect of the Project on site 32WD416 is ongoing.

Site 32WD125, 32ED459, and 32WD974 will also be directly impacted by the Project. The USACE, North Dakota SHPO and SRJB are developing a Memorandum of Agreement to mitigate adverse impacts to these cultural resources.

5.9.2 No-Action Alternative

Existing flood risk-reduction elements would be overtopped at flood flows greater than 10,000 cfs for the No-Action Alternative. Cultural and historic resources would be inundated to various extents depending on their location and the intensity of the flood event.

5.10 Air Quality and Noise

5.10.1 **Requester's Preferred Alternative**

Air quality and noise impacts associated with the Project would be similar to those discussed in the PEIS (Section 4.10.1.1 of reference [1]). General impacts to these resources are as follows.

5.10.1.1 Air Quality

Construction and operating the RPA would result in direct and indirect emissions of criteria air pollutants and GHGs. These impacts would be minor, temporary impacts primarily localized to areas of active construction.

5.10.1.2 Criteria Pollutants

Construction activities would temporarily increase air emissions as a result of the combustion of fossil fuels in construction equipment and vehicles and from the fugitive dust emissions associated with ground disturbance. Impacts from construction emissions would be mitigated by following the BMPs as discussed in the PEIS (Section 4.10.1.1 of reference [1]). Emissions of criteria pollutants from construction of the RPA are anticipated to be minimal.

5.10.1.3 Climate Change and GHG Emissions

It is anticipated that emissions of GHGs from operation and construction of the RPA would be minimal, limited to emissions from minor amounts of gasoline and diesel burned by construction and maintenance equipment. Currently, climate modeling is not advanced enough to evaluate the potential climate effects of GHGs from an individual project of this magnitude. However, the potential impacts of climate change on the viability and effectiveness of the RPA are an important consideration, especially given the relationship between climate change and changes in flooding.

The design of the RPA addresses potential climate-related changes in flooding. The design height of levees for the RPA is above the flood of record, and about 8 feet higher than the current 1% AEP flood elevation, exceeding the current recommendations for mitigation of climate-related changes in flooding.

5.10.1.4 Noise

During construction of the RPA, temporary, localized noise from heavy equipment and increased vehicle traffic would occur in the project area during daytime hours. Noise levels from heavy duty equipment commonly used for construction and typical noise levels of common activities are summarized in the PEIS (Section 4.10.1.1 of reference [1]). Residences located immediately adjacent to the impact areas would experience the greatest level of impact, up to 88 decibels (dBA). However, this noise impact will be intermittent and would decrease by approximately 6 dBA with each doubling of distance from active construction. Overall, noise impacts on local residences during construction is anticipated to be minor, temporary, and localized.

Two locations that would be sensitive to noise and air quality impacts, such as schools and churches, are located in the Project area. Roosevelt Park and the Roosevelt Park Zoo are located within the impact area. One school, McKinley Elementary School, is within 1,000 feet of the impact area. Impacts to these receptors vary depending on the distance to the source of the noise. When construction equipment is operating at the nearest points, noise levels could be as high as 88 dBA. However, levels this high would be limited, as construction activity would not continually occur at maximum levels near any given receptor. Intervening homes, vegetation, the Mouse River, and other structures would further mitigate noise levels potentially reaching sensitive receptors.

5.10.2 No-Action Alternative

5.10.2.1 Air Quality

Under the No-Action Alternative, there would be no change from existing air quality conditions described in the PEIS (Section 3.10 of reference [1]).

5.10.2.2 Noise

Under the No-Action Alternative, there would be no change from existing noise conditions described in the PEIS (Section 3.10 of reference [1]), except during flood fighting efforts when noise levels could be higher in localized areas to construct temporary flood risk-reduction features.

5.11 Human Health and Safety

Human health and safety impacts associated with the Project would be similar to those discussed in the PEIS (Section 4.11.1 of reference [1]). General impacts to these resources are as follows.

5.11.1 **Requester's Preferred Al**ternative

5.11.1.1 Human Health

Construction of the RPA could temporarily affect human health. Health risks associated with construction include noise, vibrations, exhaust fumes, and dust. In the long-term, the RPA would provide benefits for human health by eliminating the hazards that occur after flood events and during clean-up activities. Many health hazards occur after floods and during clean-up activities, including compromising the structural integrity of roads, bridges, houses, and other structures in the damaged areas; dispersing sewage and pathogens into residential areas; and creating unhealthy conditions (e.g., mold) in structures inundated by flood waters. Reducing flood risk to the communities along the Mouse River would reduce the potential for loss of life or injuries during flood events and would minimize the many health hazards that result from flooding of developed areas.

In addition to reducing flood risks, the RPA would include modification of the Burdick Expressway bridge (MI-9), which is identified as a critical transportation route through Minot. This bridge modification would enhance connectivity in the event of a flood. As discussed in Section 5.7.1, the RPA would permanently enhance existing recreational features and would create new recreational opportunities, making it easier for people in the community to maintain active and healthy lifestyles.

5.11.1.2 Safety

Construction of the RPA could temporarily affect human safety. Construction activities would involve the use of heavy equipment to move, place and transport materials to and from the site. Potential risks from construction would be mitigated through the use of BMPs to ensuring safe construction zones and travel routes to and from the site. The contractor would be required to develop Project Health and Safety Plans which would specify safety procedures and programs to be implemented for the safety and health of all persons and properties.

5.11.2 No-Action Alternative

5.11.2.1 Human Health

The No-Action Alternative would have adverse impacts on human health during flood events and from the resulting unhealthy conditions that are created in the flood-damaged areas. Under the No-Action Alternative, flood events would continue to occur, resulting in the health hazards described in Section 5.11.1.1. Significant clean-up and repair efforts could last for months if not years following flood events. Residents in flood-prone areas would be required to follow emergency health precautions to protect their health during and after flood events.

5.11.2.2 Safety

The No-Action Alternative would have adverse effects on human safety during floods, when flood waters, the evacuation process, and flood fighting efforts would expose residents and workers to unsafe conditions along the flooded river. The flood fighting associated with the No-Action Alternative can be an intensive endeavor, carries a high level of risk and uncertainty, and has a higher potential for failure than permanent flood risk-reduction structures. There would be continual risk of loss of life or injury during flood events under the No-Action Alternative.

Under the No-Action alternative modifications to the Burdick Expressway bridge would not be completed and the critical transition corridor would be closed during flood events over 10,000 cfs. This would negatively impact the movement of emergency vehicles through the City.

5.12 Cumulative Effects

5.12.1 Regulatory Framework and Overview

Cumulative effects are defined in the context of the action, alternatives, and effects, and are evaluated along with the Project's direct and indirect effects. The range of alternatives considered includes the No-Action Alternative as a baseline against which the cumulative effects on the environment are evaluated.

Analyzing cumulative effects requires identifying the environmentally relevant area, and the past, present, and future actions in that area that would contribute incrementally to the overall effect. The environmentally relevant area is determined by both location and time. Future actions are those that are reasonably likely to occur. A future project is only considered in this analysis if there is sufficient information on the project to understand what its incremental contribution to cumulative effects might be.

There have been numerous federal flood risk reduction projects in the Souris River Valley over the last 40 years, including upstream flood storage reservoirs, levees, channel modifications, and pump stations. For the purposes of the cumulative effects assessment, these projects are considered part of the existing landscape and affected environment. They include existing flood risk-reduction projects along the Souris River that were developed by the USACE as the Souris River Basin Project.

5.12.2 Spatially and Temporally Relevant Projects

Some projects not related to the historical flood risk reduction efforts in the region could contribute to cumulative effects in one or more resource areas. These projects are divided into two categories: projects related to flood risk reduction and other relevant projects. Projects described in detail in the PEIS (Section 4.12.2 of reference [1]) are referenced by name only. Projects that were not described in the PEIS (Section 4.12.2 of reference [1]) are described further below.

5.12.2.1 Projects Related to Flood Risk Reduction and Cleanup

Past Projects

- 1970s-1990s: The Souris River Basin Project
- 2011-2013: North Dakota Housing Rehabilitation and Citizen Retention Grant program
- 2012-2016: HUD Acquisition/Buyout Program
- 2014-2017: System-Wide Improvement Framework (SWIF)
- 2015-2017: Northern Area Water Supply; Minot Water Treatment Plant
- 2016: National Disaster Resilience Competition (NDRC) Grant
- MREFPP Burlington Phase (BU-1)
    - 2020-2021: BU-1B
    - 2021-2022: BU-1C
- MREFPP Milestone 1
    - 2018-2021: Phase MI-1 – 4th Avenue NE
    - 2018-2021: Phase MI-2 – Napa Valley
    - 2018-2021: Phase MI-3 – Forest Road

Present and Ongoing (Future) Projects

- 2015-Present: FEMA Floodplain Remapping
- 2012-Present: Review of the International Operating Plan for Souris River Basin Reservoirs
- 2016-Present: Souris River Basin Feasibility Study
- MREFPP Burlington Phase (BU-1)
    - 2022-2023: BU-1D
- MREFPP Milestone 1

- 2021-2022: Phase WC-1 – Tierrecita Vallejo, Phase MI- 4 Maple Diversion
- 2022-2023: Phase MI- 5 – 4th Avenue NE Tie Back levee

- MREFPP Milestone 3
  - 2024-2026: N. Roosevelt Park
  - 2027-2028: N. Valker Road
  - 2029-2030: 27th Street Diversion

5.12.2.2 Other Relevant Projects in the Area

Present and Ongoing (Future) Projects

Minot's website was also reviewed to identify if any present or future construction or infrastructure projects are located in the vicinity of the Project area (reference [44]). The following two projects are located in the vicinity of the Project area:

- Sanitary Sewer Rehabilitation: project is in the pre-construction phase
- Burdick Expy American Disabilities Act Ramp Upgrades; project is in the design phase

5.12.3 Assessment of Cumulative Effects

Cumulative effects for the entire MREFPP project were addressed in the PEIS. The Project specifics for Phases MI-6, MI-7, MI-8, and MI-9 (RPA) are described in this document and the potential for interaction with past, present, and future projects is summarized below.

The RPA and the past, present, and future flood risk reduction and cleanup projects identified in Section 5.12.2.1, would result in temporary cumulative effects (e.g., noise, traffic, etc.) as a result of construction activities; however, ultimately the result would consist of beneficial cumulative effects by providing long-term protection from future flood events and decreasing the number of homeowners required to purchase flood insurance.

In addition to impacts resulting from the RPA, past, present, and future pressures from urbanization, development, and agricultural practices would likely continue to adversely affect wetlands.

The Project could potentially interact with the two minor infrastructure projects (Section 5.12.2.2) to result in adverse cumulative effects on traffic should the projects be constructed at the same time. However, given the small-scale nature of these projects and their relatively short-term construction windows, cumulative effects would be minimal. There are no other projects ongoing or planned in the region that would adversely affect the MREFPP, or that would result in combinative significant adverse effects for the region. Therefore, the RPA would not result in any appreciable changes in cumulative effects to those previously described in the MREFPP PEIS.

6 Coordination

Agency and public coordination has been ongoing throughout development of the MREFPP and the PEIS, as described in the PEIS (Section 3.6.5 of reference [1]). In Minot specifically, a public input meeting was held on April 9, 2015 as part of the PEIS (reference [1]) development to show stakeholders (residents, business owners, community groups, etc.) the preliminary plans and allow them to provide input on the Project. The meeting was attended by Project officials from the USACE, consultant team, and representatives from Minot, SRJB, and the state of North Dakota, in addition to residents of Minot.

Public engagement in Minot has been ongoing throughout Project development through attendance at city Council Meetings as well as the requester's direct coordination with affected landowners. Public meetings for MI-6 and MI-7 were held on May 24, 2022 and May 4, 2022 respectively to provide information to stakeholders on the current Project design, anticipated schedule, what the community can expect as the Project progresses, and to address public comments (Appendix 2). A news release of the planned public information meetings was sent on April 27, 2022 by Ackerman-Estvold to all property owners and community members of the surrounding area. In attendance at the meeting were representatives from Minot, consultant teams, and the Roosevelt Park and Zoo, in addition to residents of Minot.

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