

Feasibility Report and
Integrated Environmental Assessment

Pool 5 Dredged Material Management Plan

Upper Mississippi River
Wabasha and Winona Counties, Minnesota
Buffalo County, Wisconsin



**US Army Corps
of Engineers**
St. Paul District

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TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	V
CHAPTER 1.INTRODUCTION.....	1
1.1 Authority	1
1.2 Scope of Study	1
1.3 Purpose and Need.....	3
1.4 Related Studies and Reports	3
CHAPTER 2.AFFECTED ENVIRONMENT.....	5
2.1 Socioeconomic Conditions	5
2.2 Commercial Navigation	6
2.3 Environmental Justice	6
2.4 Recreation	7
2.5 Natural Resources	7
2.6 Cultural Resources.....	14
CHAPTER 3.HISTORIC CHANGES	15
3.1 Early Navigation Projects.....	15
3.2 National Wildlife Refuge	15
3.3 9-Foot Navigation Channel Project.....	16
3.4 Other Projects in Pool 5	16
CHAPTER 4.PLANNING CONSIDERATIONS.....	18
4.1 Forecasting Future Conditions.....	18
4.2 Problems and Opportunities	23
4.3 Goals, Objectives, and Constraints	24
CHAPTER 5.FORMULATION OF ALTERNATIVES AND PLAN SELECTION	27
5.1 No-Action Alternative.....	27
5.2 Planning Process.....	29
5.3 Pool 5 Habitat Restoration through the Use of Dredged Material	30
5.4 On-Shore Transfer Sites	30
5.5 Permanent Upland Placement Sites.....	33
5.6 Alternative Development	34
CHAPTER 6.DETAILED DESCRIPTION OF RECOMMENDED PLAN.....	38
6.1 Rolling Prairie Site	42
6.2 West Newton Chute	47
6.3 Island Temporary Placement Sites.....	48
6.4 Selection of Potential Future Use Sites.	50

CHAPTER 7. EVALUATION OF ENVIRONMENTAL EFFECTS	51
7.1 Socioeconomic Effects.....	55
7.2 Natural Resource Effects	58
7.3 Cultural Resource Effects	63
7.4 Cumulative Effects.....	63
CHAPTER 8. ENVIRONMENTAL COMPLIANCE AND REVIEW	68
8.1 Applicable Environmental Laws and Executive Orders	68
8.2 Public Involvement	68
8.3 Coordination	68
8.4 Distribution of Draft Environmental Assessment.....	70
8.5 Comments on the Environmental Assessment.....	70
CHAPTER 9. REFERENCES.....	72

FIGURES

Figure 1. Pool 5 DMMP Study Area and Dredge Cut Locations.	2
Figure 2. Material Management Operations at West Newton Chute in Pool 5.	19
Figure 3. Conceptual Paths of Movement for Dredged Material.....	21
Figure 4. Map of Active, Evaluated, and Recommended Sites Located in Pool 5.....	40
Figure 5. Recommended Plan for Long-Term Placement Site for Dredged Material in Pool 5..	46

TABLES

Table 1. Recreation Areas Located in Pool 5.	7
Table 2. Federally Protected Species Identified in the Pool 5 Study Area.	14
Table 3. Pool 5 Historic Dredging Totals: 1981-2018.....	19
Table 4. Pool 5 Access Points Considered for On-shore Transfer Sites.....	32
Table 5. List of Pool 5 Alternative Placement Site Screening Summary and Status.....	36
Table 6. Environmental Assessment Matrix.....	54
Table 7. Minnesota Terrestrial State Protected Species with Records that could be within One Mile of the Recommended Plans New Dredge Material Placement Sites*.....	61
Table 8. Compliance Review with All Applicable Environmental Regulations and Guidelines.	71

APPENDICES

Appendix A. Coordination and Correspondence
Appendix B. Sediment Contaminant Datasheet
Appendix C. Finding of No Significant Impacts (FONSI)
Appendix D. Climate Change
Appendix E. Wetland Assessment 2018
Appendix F. Programmatic Agreement – Minnesota State Historic Preservation Office
Appendix G. Real Estate Plan
Appendix H. Agency and Public Comments with Responses

Errata Sheet (November 2021)

ACRONYMS

CEQ – Council of Environmental Quality
CFS – Cubic Feet per Second
CMMP – Channel Maintenance Management Plan
CWA – Clean Water Act
CY – Cubic Yards
DMMP – Dredged Material Management Plan
DNR – Department of Natural Resources
EA – Environmental Assessment
EIS – Environmental Impact Statement
END – Endangered
ER – Engineer Regulation
FY – Fiscal Year
GHG – Greenhouse Gas
GIS – Geographic Information System
GREAT – Great River Environmental Action Team
HTRW – Hazardous, Toxic, and Radioactive Waste
Hyd – Hydraulic
IPaC – Information for Planning Conservation
IWW – Illinois Waterway
L/D – Lock and Dam
LG – Local Group
Mech – Mechanical
MNHIS – Minnesota Natural Heritage Information System
MPCA – Minnesota Pollution Control Agency
MOU – Memorandum of Understanding
NAAQS – National Ambient Air Quality Standards
NEPA – National Environmental Policy Act
NRCS – Natural Resources Conservation Service
NRHP – National Register of Historic Places
PA – Programmatic Agreement
PAH – Polyaromatic Hydrocarbon
PCB – Polychlorinated Biphenyl
RM – River Miles
SC – Special Concern
SDS – Solid Waste Disposal Site
SHPO – State Historic Preservation Office
SRV – Soil Reference Value
SQT – Sediment Quality Target
THR – Threatened
TNC – The Nature Conservancy
T&E – Threatened and Endangered
UMR – Upper Mississippi River
USACE – U.S. Army Corps of Engineers
USEPA – U.S. Environmental Protection Agency
USFWS – U.S. Fish and Wildlife Service
USGS – U.S. Geological Survey

Executive Summary

The purpose of this Dredged Material Management Plan (DMMP) is to prepare a coordinated, long-term plan for managing material dredged in Pool 5 of the Upper Mississippi River (UMR) for the purposes of continued operation and maintenance of the 9-foot Navigation Channel Project. This plan was initiated due to a change in the availability of dredged material placement sites in Pool 5. There are nine active dredge cuts in Pool 5 where maintenance dredging has occurred since 1970, with around 4.7 million cubic yards (CY) of material dredged between 1981 and 2018.

The U.S. Army Corps of Engineers, St. Paul District evaluated the management of material dredged from the nine dredge cuts at a number of existing (historic) and potential dredged material placement sites in the vicinity of Pool 5 on the UMR. Placement sites were evaluated using factors such as cost effectiveness, environmental acceptability, and operational feasibility. The Corps assessed current local land uses and contacted land owners to develop a list of sites potentially suitable for permanent placement of dredged material. Once identified, sites were evaluated based on aspects of environmental acceptability, operational feasibility and estimated costs.

Finally, alternative plans were developed that would meet the study objectives. Historically, a limited amount of beneficial use of dredged material in Pool 5 has been part of management plans. Beneficial use of dredged material employs environmentally and economically responsible methods to use dredged material to benefit local communities and improve eroded shorelines through marsh restoration, beach nourishment, and other beneficial uses when possible (i.e. make material available to the public). The study team decided to formulate alternatives that incorporated permanent upland placement as the long-term goal for most of the material, but to include sites that could provide for some beneficial use. Between 1981 and 2018 the average amount of material dredged per year in Pool 5 was approximately 117,000 CY; however, with the addition of a new dredge cut and an increase in sedimentation, the resulting 40 year target capacity is approximately 4.7 million CY for the Pool 5 DMMP.

The Recommended Plan (RP) for the Pool 5 DMMP has been identified due to it being operationally and economically feasible and environmentally acceptable for dredged material placement. The DMMP study includes the use of the existing West Newton Chute site as a transfer site prior to hauling the material to the selected Rolling Prairie Site. The combined sites are capable of accepting material placed hydraulically and mechanically from Pool 5 for more than 40 years. Additionally, several other property locations have been identified for future dredged material placement opportunities within Pool 5.

Three island sites used in the past for temporary placement are retained in the Recommended Plan. Above West Newton, Fisher Island, and Lost Island would remain available in the future if the permanent placement sites are at capacity, become unavailable for some unforeseen reason, or if it's operationally more feasible to use the island sites.

CHAPTER 1. Introduction

1.1 Authority

The U.S. Army Corps of Engineers is authorized to maintain a navigable channel on the Mississippi River. Authority for continued operation and maintenance of the Mississippi River 9-Foot Channel project is provided in the Rivers and Harbors Acts of 1930 and 1932. Original authority for the Corps of Engineers to work on the Mississippi River was provided in the Rivers and Harbors Act of 1878. In addition, pursuant to Section 1103(i) of the Water Resources Development Act of 1986 (33 U.S.C. § 652(i)), Congress authorized the Corps to dispose of dredged material from the system pursuant to the recommendations of the Great River Environmental Action Team (GREAT) I study, which were implemented, in part, in the Channel Maintenance Management Plan (CMMP). The proposed project is authorized by the referenced legislation and its purpose is compatible with the annual Operations and Maintenance appropriation.

1.2 Scope of Study

The study addresses dredged material management for the navigation channel on the Mississippi River between Lock and Dam (L/D) 4 and L/D 5 between river miles (RM) 752.8 and 738.1 (Figure 1). This project addresses dredge cuts in Pool 5 that currently includes: Upper Zumbro, Mule Bend, West Newton Chute, Below West Newton, Above Fisher Island, Lower Zumbro, Minneiska, Above Mt. Vernon Light, and Below Mt. Vernon Light. Communities located in the project area include Buffalo City, Cochrane, and Alma in Wisconsin, and Kellogg, Minneiska, and Weaver in Minnesota. Most of the floodplain in the study area is located within the Upper Mississippi River National Wildlife and Fish Refuge. The study area includes both the plan reach in river miles defined by the dredge cut areas and the locations of the placement sites that are outside of the reach in order to support projected dredging activities for at least the next 40 years.

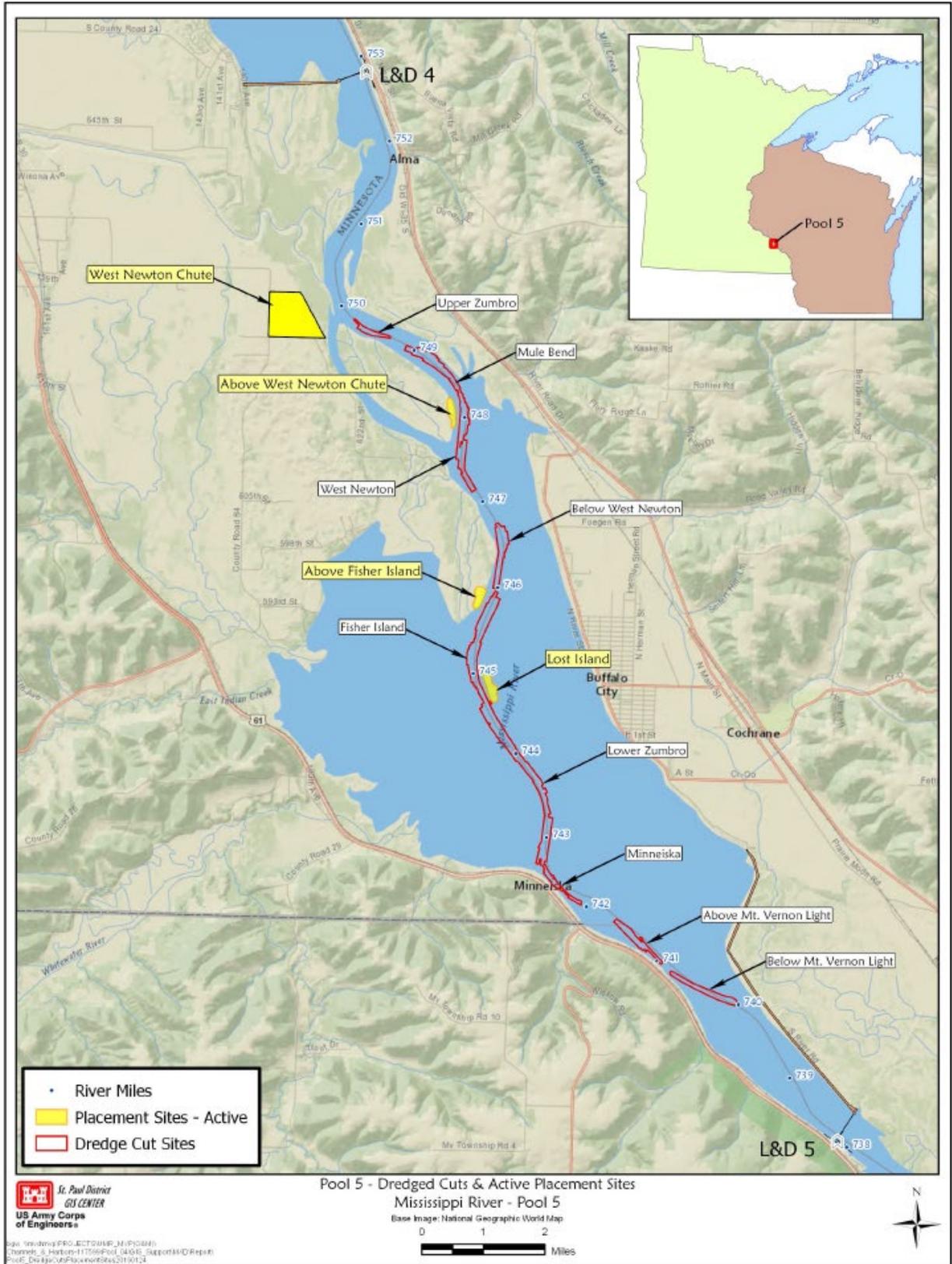


Figure 1. Pool 5 DMMP Study Area and Dredge Cut Locations.

1.3 Purpose and Need

The purpose of this Dredged Material Management Plan (DMMP) is to prepare a coordinated, long-term plan for managing material dredged in Pool 5 of the Upper Mississippi River (UMR) for the purposes of continued operation and maintenance of the 9-Foot Navigation Channel Project. This plan was initiated because permanent dredged material placement sites are nearing capacity and the increased cost associated with managing dredged material over the past 15-20 years. Dredged material placed at temporary island transfer sites will need to be offloaded to a permanent site. Therefore, additional permanent sites are needed to accommodate the Corps' dredging needs in Pool 5 over the next 40 years. The selected plan must comply with Corps policy for managing dredged material pursuant to the Federal Standard. The Federal Standard (33 CFR Part 335.7) for dredged material placement sites is defined as "the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria." The study product is a routine Operations and Maintenance document in the form of an integrated feasibility report and National Environmental Policy Act (NEPA) document in accordance with the Corps' Planning Guidance Notebook, Engineer Regulation (ER) 1105-2-100.

1.4 Related Studies and Reports

Numerous studies and reports are available for the UMR that include Pool 5. The following studies and projects addressing channel maintenance, resource management, land use, and recreational planning in Pool 5 have the most relevance to this study.

1.4.1 9-FOOT NAVIGATION CHANNEL PROJECT ENVIRONMENTAL IMPACT STATEMENT

This document, completed in 1974, assesses the environmental effects of the operation and maintenance of the 9-Foot Navigation Channel project within the St. Paul District.

1.4.2 GREAT RIVER ENVIRONMENTAL ACTION TEAM STUDY (GREAT I)

This nine-volume report (completed in 1980) documents the results of the 5-year GREAT I study for the St. Paul District reach of the Mississippi River (including the head of navigation in Minneapolis, Minnesota, downstream to Guttenberg, Iowa). The report contained numerous recommendations for improved management of the river, the most important of which was a 40 year plan for dredged material placement for all of the historic dredging locations in the St. Paul District. Many of the study's recommendations have been implemented. Most of the dredged material sites the Corps currently uses in Pool 5 were identified in the GREAT I study.

1.4.3 CHANNEL MAINTENANCE MANAGEMENT PLAN (CMMP) AND ENVIRONMENTAL IMPACT STATEMENT (EIS)

This butle CMMP and accompanying environmental impact statement is the St. Paul District's plan for management of channel maintenance (USACE 1997). Much of the plan is devoted to

the designation and design of dredged material placement sites as recommended in the GREAT I study. Included in this report is a discussion of the District's program for channel management. The Pool 5 DMMP is part of that program.

1.4.4 DREDGED MATERIAL MANAGEMENT: LOST ISLAND-WEST NEWTON TRANSFER, UPPER MISSISSIPPI RIVER POOL 5, WABASHA COUNTY MINNESOTA, BUFFALO COUNTY, WISCONSIN ENVIRONMENTAL ASSESSMENT

This 2016 document assesses the environmental effects of offloading the stored dredged material from the Lost Island Temporary Placement Site in Pool 5 to the West Newton Chute Placement Site for permanent placement and beneficial use (USACE 2016a). The project involves transferring up to 1,300,000 CY of material from 2016 to 2019. The project provides future capacity at the Lost Island Temporary Placement Site for dredged material to ensure the continued availability of the 9-foot navigation channel for commercial navigation for the 9-Foot Navigation Channel project within the St. Paul District.

CHAPTER 2.

Affected Environment

A description of components of the nearby environment is discussed here to provide a measure of the current state of the project location. The goal of this chapter is to provide an understanding and context of the resources that may be affected by the alternative actions under consideration. A discussion of the effects of the alternatives under consideration can be found in Chapter 7.

2.1 Socioeconomic Conditions

The cities or communities of Buffalo City and Alma, Wisconsin, and Kellogg, Minneiska and Weaver, Minnesota are located within the study area. Buffalo City is located on the Wisconsin mainland off the main channel at river mile 744, while Alma is located at the upstream end of the study area near river mile 752 at L/D 4. Minneiska is located on the Minnesota mainland at river mile 742 and Kellogg is located approximately 3.5 miles east of river mile 751, south of the Old Zumbro River. There is considerable residential development along the Wisconsin shorelines in Pool 5.

State Hwy 35 parallels the floodplain on the Wisconsin side of the river. The major highway on the Minnesota side, U.S. Hwy 61, is set back from the river a few miles from L/D 4 to Weaver, Minnesota where it parallels the river shoreline southward to L/D 5. Networks of secondary, county, and township roads connect with the primary roads to service the areas adjacent to the pools and to provide access from outlying areas.

Railroads are located along both sides of the valley. On the Wisconsin side, the Burlington Northern railroad tracks lie riverward of State Hwy 35. On the Minnesota side, the Canadian Pacific railroad tracks lie riverward of U.S. Hwy 61 and are set back from the river between L/D 4 and Weaver, MN. South of Weaver, the railroad tracks parallel the Pool 5 shoreline.

The John P. Madgett Station is a coal fired electrical power station located on the river near Alma, Wisconsin in Buffalo County, near river mile 751. The plant burns blended coal that arrives by barge, train and truck from Wyoming and Utah. The barge coal moves by train to St. Louis and then up the Mississippi River about 575 miles to Alma.

There are no interstate bridge crossings in Pool 5. The closest upstream crossing is the Wabasha-Nelson Bridge in Pool 4. It spans the navigation channel between Minnesota and Wisconsin at approximate river mile 760.2 and carries vehicular traffic on two lanes of Minnesota State Hwy 60/Wisconsin State Hwy 25.

The closest crossing downstream of Pool 5 is the Minnesota State Hwy 43/Wisconsin State Hwy 54 bridge at Winona, Minnesota at approximate river mile 725.9.

Alma, Buffalo City and Cochrane, Wisconsin have populations of 781, 1,023, and 450, respectively. Minneiska and Kellogg, Minnesota have populations of approximately 456 and 110, respectively. All populations were derived from the 2010 census.

2.2 Commercial Navigation

Pool 5 is a portion of the Upper Mississippi River–Illinois Waterway (UMR-IWW), which is an important component of the U.S. inland navigation system. The navigation channel in Pool 5 serves as a link for commercial barge traffic moving between ports upstream as far as the St. Paul, Minnesota metropolitan area, downstream as far as New Orleans, Louisiana, and to points east and west on the Ohio and Missouri Rivers. Major types of commercial cargo shipped on the UMR include grain (downstream), fertilizer (upstream), coal (both upstream and downstream), and petroleum products. Between 1997 and 2016, annual barge freight through L/D 5 ranged from 5.7 to 12.7 million tons per year, and averaged 9.2 million tons per year during that period. In 2018 just over 9 million tons of commodities were transported in up-bound and down-bound tows through L/D 5.

Waterway transportation keeps our nation's commerce on the move in the safest, most fuel-efficient, and environmentally sound way. One barge can hold 1,750 tons, 58,333 bushels, or 1,555,000 gallons; whereas one rail car can only handle up to 110 tons, 4,000 bushels, and 33,870 gallons and one large semi can transport up to 25 tons, 910 bushels, and 7,865 gallons. One 15-barge tow carries the equivalent of 6 locomotives and 216 rail cars or 1,050 large semi-trucks. On average, farmers save \$0.97/bushel of corn and \$1.01/bushel of soybeans using barges to transport crops (USACE 2016b).

2.3 Environmental Justice

The U.S. Environmental Protection Agency (USEPA) on-line EJScreen mapping tool (Version 2019) was used to characterize existing conditions for minority and low-income groups. The project broadly occurs across multiple block groups identified through the tool, and includes areas on both sides of the Mississippi River (Wabasha, Co. Minnesota and Buffalo Co. Wisconsin). A block group is a geographical unit used by the United States Census Bureau. It is the smallest geographical unit for which the bureau publishes sample data. The percent minority population within these block groups ranged between 1 and 13%. The percent low income within these block groups ranged from 15 to 41%.

2.4 Recreation

The natural character of this portion of the river and the relatively good water quality in Pool 5 contribute to its recreational and aesthetic desirability. Recreation activities include fishing, recreational boating, hunting, trapping, camping, bird watching, canoeing, island beach use, and sightseeing. There are fourteen public boat landings in Pool 5, with six in Wisconsin and eight in Minnesota (Table 1). The islands and sloughs throughout the pool are popular with recreational boaters.

The Upper Mississippi River National Wildlife and Fish Refuge provides high quality wildlife habitat in this reach. The backwater areas of Pool 5 provide good waterfowl hunting. Backwater and channel habitats provide for a variety of fishing opportunities. Weaver Bottoms is a popular location for watching waterfowl during the migration season.

Table 1. Recreation Areas Located in Pool 5.

Pool 5 Recreation Areas							
River Mile	Name	Manager	State	Ramp	Camping	Toilets	Tables
752.8 R	Lock 4 Dike Walk-In	COE	MN	No	No	No	No
752.7 R	Pioneer Landing	MN	MN	Yes	No	No	No
751.6 L	Alma Landing	LG/WI	WI	Yes	No	Yes	No
749.8 R	Upper West Newton Landing	COE/MN	MN	Yes	No	Yes	No
748.0 L	Great River Harbor	PVT	WI	Yes	Yes	Yes	Yes
747.5 R	Halfmoon Landing	FWS	MN	Yes	No	Yes	Yes
747.3 R	Halfmoon Canoe Landing	FWS	MN	No	No	Yes	Yes
746.9 L	Belvidere Slough Landing	WI	WI	Yes	No	No	No
746.8 R	Goose Lake Landing	MN	MN	Yes	No	Yes	No
744.6 R	Weaver Landing	FWS	MN	Yes	No	Yes	No
744.3 L	Buffalo City Landing	LG	WI	Yes	No	No	No
742.4 L	Upper Spring Lake Landing	LG	WI	Yes	No	No	No
741.8 R	Minneiska Public Access	MN	MN	Yes	No	Yes	No
741.2 L	Lower Spring Lake Landing	FWS	WI	Yes	No	No	No

2.5 Natural Resources

2.5.1 PHYSICAL SETTING

Pool 5 is part of the Upper Mississippi River system. It was created in 1936 by the completion of L/D 5 and the filling of the pool. The entire pool is about 14.6 miles long, extending from river mile 738.2 to river mile 752.8. The target pool elevation is 660.0 ft above mean sea level.

The river valley varies in width from about one mile at L/D 4 to about 3.5 miles in the Weaver Bottoms area. The bluffs are steep on both sides and highly dissected, with a maximum relief of around 700-ft. The navigation channel parallels the Wisconsin shoreline at L/D 4 and Alma, and it parallels the Minnesota shoreline at West Newton Chute, Minneiska, and at L/D 5. The navigation channel otherwise follows a sinuous route through the center of Pool 5.

Sediment and Substrate. Sediment quality is generally good in Pool 5. Main channel sediments are primarily medium to coarse sands with only trace amounts (generally less than 3% by weight) of silts and clays. Sand, silt, and clay sediments are found within defined sloughs, while finer silt, clay, and organic substrate materials are found in marshy backwater areas.

Historic sediment test data going back to the 1970s in Pool 5 have shown that levels of pesticides and other chlorinated hydrocarbons are generally below detection limits in all main channel sediments and detected at low levels in backwaters. Since 2013, 18 samples have been collected throughout the main channel of Pool 5 at USACE dredge cuts. At all sites, samples were obtained using a 9-inch Ponar dredge, which represents approximately the top 10 centimeters of sediment. Each sample was collected from a single location or was a composite sample from two to three sub-samples. The sampling was accomplished by Corps' St. Paul District staff or through a sampling contract. Samples were immediately put on ice after collection and shipped overnight to ARDL, Inc., Mt. Vernon, IL for testing. Each sample was analyzed for metals, PCBs, pesticides, polycyclic aromatic hydrocarbons (PAHs) and grain size.

To characterize the sediment quality in Pool 5 dredge cuts, results of sediment samples collected since 2013 (Appendix B) were compared to the Minnesota Pollution Control Agency's (MPCA) soil reference values (SRVs) and sediment quality targets (SQTs). The MPCA's SRVs are limits on pollutant concentrations for material being placed at two types of upland sites, either recreational/residential or commercial/industrial. In 2016, the MPCA proposed updated values for SRVs. The proposed updated values are not yet finalized, but are being used for analysis in this report. The SQTs (level I and level II) are guidelines used to identify contaminant concentrations that cause harmful effects on sediment-dwelling organisms. Level I SQTs are the concentrations that will provide a high level of protection for benthic invertebrates. Level II SQTs are the concentrations that will provide a moderate level of protection for benthic invertebrates. As shown in Appendix B, there were no exceedances of MPCA's SRVs or SQTs in samples collected since 2013.

Hydrology. The drainage area of Pool 5 totals 58,845 square miles in Minnesota and Wisconsin. At project pool elevation of 660.0 ft (1912 adjustment), the pool has a total surface area of 12,580-acres. Except for several small creeks, the only major tributary that flows into Pool 5 is the Zumbro River, with a total drainage area of 1,380 square miles and typical summer discharge of 5,500 cubic ft per second (cfs). The Zumbro River enters the pool from the Minnesota side of the Mississippi River about three miles below L/D 4. Approximately two-thirds of the watershed is agricultural use; the rest is primarily forested lands and urban areas. Annual precipitation in the area is about 32 inches per year. The Whitewater River is a 16.6-mile-long tributary of the Mississippi River that enters the lower end of Pool 5 at Weaver Bottoms. Typical summer discharges are variable and dependent on precipitation but are generally around 250 cfs.

Pool 5 is approximately 14.6 river miles long with a surface area covering approximately 12,580-acres, 7,565-acres of which are Corps-owned. The U.S. Fish and Wildlife Service manages 7,192-acres, most of it Corps-owned land.

Early summer (June) discharges at L/D 5 generally range from 48,000 to 64,000 cfs. By late summer, discharges usually decrease to 18,000 to 32,000 cfs. Winter low flows are generally in the range of 13,000 to 22,000 cfs.

Pool 5 is regulated in a manner typical for navigation pools in the St. Paul District. When river discharges are greater than 116,000 cfs, the gates are removed from the water at L/D 5 and the pool is unregulated. When discharges are between 28,000 and 116,000 cfs, the pool is in “secondary control”; i.e., a pool elevation of 659.5 ft is maintained at the dam. The pool upstream of the dam rises and falls with river discharge. Due to the slope on the pool, the range of fluctuation under secondary control is greater the farther upstream from the dam one progresses.

At a discharge of 28,000 cfs, regulation of the pool shifts to “primary control” whereby a water surface elevation of 660.0 ft is maintained at the primary control point at river mile 749.4. As discharges decline below 28,000 cfs, the water surface elevation at L/D 5 rises from 659.5 toward 660.0. If river discharges were to decline to zero, the pool water surface would (in theory) be flat at elevation 660.0.

Weaver Bottoms. The Weaver Bottoms area is a 5,500-acre habitat complex within Pool 5 dominated by open water, but also includes flowing channels, backwater lakes, isolated wetlands, and forested islands.

Water Quality. This section of the river has relatively high water quality because Lake Pepin is a sink for sediment and contaminants from the Minnesota River and the Twin Cities Metropolitan Area. This section of the river does not appear on Minnesota’s impaired waters list, which identifies pollutants, stressors or indicators (such as turbidity, polychlorinated biphenyls (PCBs), fecal coliform) that would affect aquatic life and/or recreation. Except for isolated sloughs and backwater lakes, the dissolved oxygen content of the water remains above levels required to sustain a quality fishery. However, for phosphorus and mercury levels, Pool 5 of the Mississippi River is listed as an 303d impaired water in the state of Wisconsin with contaminated fish tissue impairment for mercury and PCBs.

2.5.2 BIOLOGICAL RESOURCES – AQUATIC HABITAT

Pool 5 has good, diverse habitat for both fish and wildlife. The most prevalent aquatic habitats include the main channel, channel border, and the river lakes. The important characteristics of these habitat types, relative to fish and wildlife uses are described below.

Main Channel. The main channel usually conveys the majority of the river discharge and in most reaches includes the navigation channel. It has a minimum depth of 9-ft and a minimum width of 300-ft. A current always exists, varying in velocity with water stages. The bottom type

is mostly a function of current. The upper pool section usually has a sand bottom, changing to silt over sand in the lower section. Patches of gravel are present in a few areas. No rooted vegetation is present.

Main Channel Borders. Main channel borders are the areas between the navigation channel and the riverbank. Channel borders contain the channel training structures (wing dams, closing dams, revetted banks) and thus a diversity of depths, substrates, and velocities can be found in this habitat type. The bottom is sandy in the upper section of the pool and siltier in the lower. Definable plant beds are frequently absent, but single species clusters of submersed plant vegetation are sparsely scattered in areas of reduced current.

Secondary Channels. Secondary channels are large channels that carry less flow than the main channel. Undercut or eroded banks are common where secondary channels depart from the main channel. The bottom type usually varies from sand in the upper reaches to silt in the lower. In areas with swifter current there is no root vegetation, but vegetation is common in the shallower areas having silty bottoms and moderate to slight current.

River Lakes and Ponds. River lakes are distinct lakes formed by fluvial processes or are artificial (excavated or impounded). They may or may not have a slight current, depending on their location. Most of the bottoms are mud or silt, often consisting of a layer two or more feet thick. Aquatic vegetation in these bodies of water can be highly variable. Emergent vegetation is generally restricted to the perimeter of these water bodies.

Fish. The continuum of aquatic habitats in Pool 5 ranges from fast flowing main channel to lentic backwaters which provides for a great diversity and abundance of fish. Common sport fish include walleye (*Sander vitreus*), sauger (*Sander canadensis*), yellow perch (*Perca flavescens*), white bass (*Morone chrysops*), bluegill (*Lepomis macrochirus*), black crappie (*Pomoxis nigromaculatus*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), northern pike (*Esox Lucius*), and channel catfish (*Ictalurus punctatus*). The most common rough fish include common carp (*Cyprinus carpio*), shorthead redhorse (*Moxostoma macrolepidotum*), spotted sucker (*Minytrema melanops*) and freshwater drum (*Aplodinotus grunniens*). The most common forage fish include gizzard shad (*Dorosoma cepedianum*) and spottail shiner (*Notropis hudsonius*).

Aquatic Invertebrates. There is a large assemblage of invertebrate species within the pool. The varied invertebrate fauna is due to the wide variety of habitats in the area. Lake forms of invertebrates find suitable habitat in the lentic portions of the pools. Organisms that require running water find a wide range of water velocities in the main channel, along the wing dams, and in side channels. Rocks associated with wing dams and shoreline protection provide a suitable habitat for specialized invertebrates.

Mussels. Zebra mussels first arrived in in Pool 5 in 1991 and after initial period of dramatic increases in the 1990's, densities have leveled and become more cyclic in nature with annual die offs followed by subsequent recruitment events. Historically, 35 native mussel species have occurred within Pool 5 with 30 species extant (Kelner 2018). According to the U.S. Fish and Wildlife Service (USFWS), the Higgins' eye pearl mussel (*Lampsilis higginsii*), spectacle case

(*Cumberlandia monodonta*), and sheepnose (*Plethobasus cyphus*) are Federally-listed endangered mussel species that may be present in Pool 5.

Insects. Burrowing mayflies are abundant along much of the Mississippi River. They are efficient detritivores and an important food organism for many species of fish. Two species listed for federal protection occur within the UMR Pool 5 vicinity, the rusty patched bumble bee (*Bombus affinis*) was listed as endangered on January 10, 2017 and the Karner blue butterfly (*Lycaeides melissa samuelis*) is listed as endangered.

Wildlife. The numerous backwaters interspersed with forested islands provide good habitat for a variety of wildlife species. Relatively abundant species include white-tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), river otters (*Lontra Canadensis*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), mink (*Neovision vision*), and cottontail rabbit (*Lepus sylvaticus*). Shrews, moles, bats, rabbits, and squirrels and numerous varieties of mice are common in the area. The Upper Mississippi River National Wildlife and Fish Refuge provides high quality wildlife habitat in this reach.

Backwater areas and lake-type habitats provide important habitats for bald eagles and significant numbers of waterfowl each year. They are important waterfowl breeding areas for the wood duck (*Aix sponsa*), blue-winged teal (*Anas discors*), mallard (*Anas platyrhynchos*), hooded merganser (*Lophodytes cucullatus*), and Canada goose (*Branta canadensis*).

The great variety of bird species that use the Pool 5 area can be attributed to its location within the Mississippi flyway. At least 300 species of birds, about 60% of the total number of species in the conterminous United States, are known to use the UMR. The UMR valley is a major bird migration corridor for the mid-continental United States through which an estimated 40% of the continent's waterfowl migrate. The Mississippi Flyway also provides migration habitat for songbirds, colonial nesting birds, secretive marsh birds, and raptors. Notable species include the bald eagle (*Haliaeetus leucocephalus*), red-shouldered hawks (*Buteo lineatus*), prothonotary warblers (*Protonotaria citrea*), black terns (*Chlidonias niger*), great blue heron (*Ardea Herodias*), egret (*Ardea alba*), osprey (*Pandion haliaetus*), double-crested cormorant (*Phalacrocorax auritus*), and pileated woodpecker (*Hylatomus pileatus*).

The floodplain of Pool 5 provides habitat for a wide variety of amphibians and reptiles. Species found in the floodplain and adjacent sand prairies include the snapping turtle (*Chelydra serpentina*), map turtle (*Graptemys geographica*), false map turtle (*Graptemys pseudogeographica*), Blanding's turtle (*Emydoidea blandingii*), painted turtle (*Chrysemys picta*), smooth softshell (*Apalone mutica*), spiny softshell (*Apalone spinifera*), northern water snake (*Nerodia sipedon*), eastern garter snake (*Thamnophis sirtalis*), bullsnake (*Pituophis catenifer sayi*), fox snake (*Pantherophis gloydi*), eastern tiger salamander (*Ambystoma tigrinum*), American toad (*Anaxyrus americanus*), gray tree frog (*Hyla versicolor*), western chorus frog (*Pseudacris triseriata*), green frog (*Rana clamitans*), and leopard frog (*Lithobates sp.*).

2.5.3 TERRESTRIAL HABITAT

Terrestrial habitats within the floodplain include areas of forest, brush and shrub areas, wet and upland meadows, areas disturbed by commercial, agricultural, and residential development and areas previously disturbed by past dredged material placement. Each of these areas can support a diversity of species and are important parts of the overall ecosystem.

The 900-acre Kellogg-Weaver Dunes Minnesota State Natural Area located in Wabasha County is a significant sand prairie grassland ecosystem. Also within the area is the 3,129 acre McCarthy Lake Wildlife Management Area. Many of the surrounding bluffs and valleys in Minnesota are part of the Richard J. Dorer Memorial State Forest, which covers 43,000 acres in Wabasha County.

2.5.4 WETLANDS

Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas, and are frequently found within the floodplain of the Mississippi River. However, wetlands occur less frequently in the main channel and main channel border habitats because high flows, elevated suspended sediment concentrations, and deeper water often preclude vegetative growth.

2.5.5 THREATENED AND ENDANGERED SPECIES

Federally-Threatened and Endangered Species. Federally-listed endangered species are known to occur in Buffalo County, Wisconsin and in Wabasha and Winona Counties, Minnesota. The USFWS Information for Planning and Conservation (IPaC) website was used to identify Federally-listed threatened or endangered species known to occur in the study area (on-line search conducted February 8, 2019). They include the following freshwater mussels: the Higgins' eye pearl mussel, spectaclecase, and sheepsnout. Two insect species, the rusty patched bumble bee (*B. affinis*) was listed as endangered on January 10, 2017 and the Karner blue butterfly (*L. m. samuelis*) is listed as endangered. Two species, the northern long-eared bat (*Myotis septentrionalis*) and the eastern massasauga rattlesnake (*Sistrurus catenatus*) are Federally-listed as threatened. These species and their Federal listing status as of February 2019 are listed in Table 2.

Suitable habitat for the Higgins' eye pearl mussel includes areas of various stable substrates in large streams and rivers (USFWS 2004). Higgins' eye are most commonly associated with high-density and diverse mussel beds.

Suitable habitat for the sheepsnout is similar to that for the Higgins' eye (Ohio River Valley Ecosystem Team 2002). The spectaclecase is typically found in large rivers in a variety of substrates, but particularly within microhabitats sheltered from strong currents (Butler 2002).

As described by USFWS (IPaC February 2019): “Rusty patched bumble bees once occupied grasslands and tallgrass prairies of the Upper Midwest and Northeast, but most grasslands and prairies have been lost, degraded, or fragmented by conversion to other uses. Bumble bees need areas that provide nectar and pollen from flowers, nesting sites (underground and abandoned rodent cavities or clumps of grasses), and overwintering sites for hibernating queens (undisturbed soil).”

Suitable habitat for the northern long-eared bat is variable depending on the season and the life stage of the individual. In the summer, these bats often roost under the bark of tree species such as maples and ashes within diverse mixed-age and mixed-species tree stands, commonly close to wetlands. They are also known to occupy areas under bridges during the roost season. In the winter, the northern long-eared bat hibernates in caves and abandoned mines. During periods of migration and foraging, these bats tend to use the ‘edge habitat’ where a transition between two types of vegetation occurs (Wisconsin DNR 2013b).

The eastern massasauga rattlesnake is Federally-listed as threatened. It is typically found in open-canopy and forested wetlands, and adjacent uplands. They are particularly associated with emergent wetlands, shrub wetlands, and lowland hardwood habitats, and tend to avoid disturbed areas (Wisconsin DNR 2013a).

While the bald eagle (*Haliaeetus leucocephalus*) is no longer Federally-listed as Threatened or Endangered, it remains protected under the Bald and Golden Eagle Protection Act and is known to occur in Pool 5, especially during the winter. The open water area maintained at the confluence of the Chippewa River with the Mississippi River attracts large numbers of bald eagles during the winter.

Table 2. Federally Protected Species Identified in the Pool 5 Study Area.

Common Name	Scientific Name	Federal Status
Higgins Eye Pearly Mussel	<i>Lampsilis higginsii</i>	END
Sheepnose Mussel	<i>Plethobasus cyphus</i>	END
Spectaclecase Mussel	<i>Cumberlandia monodonta</i>	END
Rusty Patched Bumble Bee	<i>Bombus affinis</i>	END
Northern Long-Eared Bat	<i>Myotis septentrionalis</i>	THR
Eastern Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	THR

(END = Endangered; THR = Threatened)

State-listed Rare Species. A number of species that are listed by the states of Minnesota and Wisconsin as endangered or threatened have been historically documented in the vicinity of Pool 5. These species include plants, freshwater mussels, fish, reptiles, and amphibians. To adequately evaluate effects to state listed species, a resource search of the Minnesota Natural Heritage Information System (MNHIS) was conducted January 2019 within a one mile radius of all of the potential alternative placement site locations. The entirety of Pool 5 was not evaluated because of the much greater number of state-recognized species of significance as compared to Federally-listed species and the site location being in Minnesota.

2.5.6 AIR QUALITY

The U.S. Environmental Protection Agency (USEPA) is required by the Clean Air Act to establish air quality standards that primarily protect human health. These National Ambient Air Quality Standards (NAAQS) regulate six major air contaminants across the United States. When an area meets criteria for each of the six contaminants, it is called an ‘attainment area’ for that contaminant; those areas that do not meet the criteria are called ‘nonattainment areas.’ Wabasha, Winona, and Buffalo Counties are classified as attainment areas for each of the six contaminants and therefore they are not regions of impaired ambient air quality (USEPA 2019). This designation means that the project area has relatively few air pollution sources of concern.

2.6 Cultural Resources

The upper Pool 5 locality contains numerous cultural resources indicating continual human occupation over approximately the last 13,000 years. Cultural resources include precontact burial mounds and habitation sites, and historic standing structures. These resources are situated across a variety of landforms, such as terraces, high bottoms, and dunes. Several cultural resource sites within this locality have been listed on the National Register of Historic Places (NRHP) or are eligible to be listed on the Register.

CHAPTER 3.

Historic Changes

This section summarizes changes to Pool 5 brought about by various navigation projects and other Federal activities. The purpose is to provide a background for the current conditions. It is not intended as a detailed description of all the changes that have occurred to the Mississippi River and its basin since European settlement.

3.1 Early Navigation Projects

The first navigation modifications and maintenance on the UMR were legislated by Congress in 1824, when the Corps was authorized to remove snags, shoals, and sandbars, and to close sloughs and backwaters so that flows were confined to the main channel to maintain depths for navigation.

The first comprehensive modification of the river for navigation was authorized by the Rivers and Harbors Act of 1878. This legislation authorized a 4.5-ft channel from the mouth of the Missouri River to St. Paul, Minnesota. The 4.5-ft channel was maintained by constructing dams at the headwaters of the Mississippi River to impound water for low flow supplementation, bank revetments, closing dams, and longitudinal dikes. The 6-ft navigation project was authorized by the River and Harbor Act of 1907. The additional depth for the 6-ft channel was obtained by increased construction of wing dams supplemented by limited dredging. Usually the banks opposite a wing dam field were protected with rock revetments to prevent erosion.

3.2 National Wildlife Refuge

The UMR National Wildlife and Fish Refuge was established in 1924 as a refuge for fish, wildlife, and plants and a breeding place for migratory birds. The Refuge encompasses one of the largest blocks of floodplain habitat in the lower 48 states, and stretches through four states along the Mississippi River: Minnesota, Wisconsin, Iowa, and Illinois. Bordered by steep wooded bluffs that rise 100 to 600-ft above the river valley, the Mississippi River corridor and refuge offer scenic beauty and productive fish and wildlife habitat unmatched in the heart of America. The Refuge covers just over 240,000-acres and extends 261 river miles from north to south at the confluence of the Chippewa River in Wisconsin to near Rock Island, Illinois.

3.3 9-Foot Navigation Channel Project

The Rivers and Harbors Act of 1930 authorized the 9-Foot Navigation Channel project and led to the construction of a series of locks and dams to provide the necessary water depths. Land that would be affected by the increased water levels in Pool 5 was purchased by the Corps. Much of that land is managed as part of the UMR National Wildlife and Fish Refuge under a cooperative agreement between the Corps and the USFWS.

The authorized navigation channel was created by both constructing the system of locks and dams and by dredging locations where water depths are less than 9-ft. In Pool 5, the navigation channel is typically dredged to a width of 300-ft (up to 600-ft in the bends or corners) and a depth of 12-ft in order to maintain adequate dimensions for commercial traffic between dredging events.

The effects of creation of the navigation pools have been described in many other studies. They can be synopsisized as follows. Creation of the navigation pools created thousands of acres of new aquatic habitat, benefiting those forms of fish and wildlife adapted to this habitat. Major beneficiaries were lentic fish species, waterfowl, marsh and other water birds, and small mammals. Adversely affected were terrestrial wildlife and lotic fish species. The period from creation of the locks and dams through the late 1950s could be termed an “era of plenty” due to the abundant fish and waterfowl resources generated by the newly created aquatic habitats.

As soon as the navigation pools were created, natural processes began to transform them. These transformations either were not noticed, or were not given much concern by the public. In the 1960s, resource managers and the public began to take more notice of these changes, most specifically the filling of backwater habitats with sediments. Sedimentation was probably the most significant resource concern in the 1960s and 1970s, and it remains an important concern.

3.4 Other Projects in Pool 5

Railroads. While railroads parallel both sides of the river, there are no railroad bridge crossings of the Mississippi River in Pool 5. On the Wisconsin side, a pair of Burlington Northern and Santa Fe railroad tracks lie riverward of State Hwy 35. On the Minnesota side, a pair of Canadian Pacific railroad tracks are set back from the river and generally follow along U.S. Hwy 61. Both rail lines were constructed prior to 1890 and have been operational to this day.

Construction of the Commercial and Recreational Harbors. Great River Harbor is a small marina and campground located near Belvedere Slough on the Wisconsin shoreline. There are no other commercial marinas in the study area.

Dairyland Power Cooperative. A barge mooring and unloading facility was constructed adjacent to the main channel in the late 1940s at the retired Alma Station power plant located just south of Alma, Wisconsin in Buffalo County near river mile 751. The John P. Madgett coal fired electrical power station was constructed on the site in the 1970s and continues to utilize the Alma Station barge mooring and unloading facility.

Weaver Bottoms. In the mid-1980s the Corps constructed two new islands (Swan and Mallard) and stabilized others in Weaver Bottoms under the Channel Maintenance program. The Corps has modified and maintained the islands since initial construction. The project resulted in improved floodplain habitat, redirected flows, reduced impacts of wind-generated wave action, and enhanced and protected vegetation. Trees were planted on the islands for future eagle nesting, sand areas were developed for turtle nesting, and mud flats were developed to promote vegetation growth for waterfowl and shorebird loafing and feeding areas. Backwater dredging was performed to increase connectivity and bathymetric diversity for fisheries.

CHAPTER 4.

Planning Considerations

4.1 Forecasting Future Conditions

Planning for the future requires projecting future conditions under various scenarios, including the No-Action scenario. Corps planning regulations (ER 1105-2-100) provide the following guidance concerning this subject. Future without plan conditions are the most probable based on:

- a) Existing Conditions and Trend Information.
- b) Available Related Forecasts (e.g. land use plans, population projections).
- c) Established Institutional Objectives and Constraints and Local Customs and Traditions (e.g. Authorized Projects, Refuge Master Plans, and Local Recreational Preferences).
- d) Reasonably Foreseeable Actions of People in the Absence of Any Proposed Action.
- e) Reasonably Foreseeable Natural Occurrences (e.g. Annual High Water, Natural Succession, and Climate Change).

The Corps regulation providing guidance for the conduct of Civil Works Planning Studies is ER 1105-2-100. Dredged material management plans are to be developed to meet dredging needs for a minimum of 20 years. The St. Paul District has opted to consider a planning horizon of 40 years of dredged material capacity in order to maximize the usefulness of the planning process.

4.1.1 EXISTING CONDITIONS

Dredged Material Management History in Pool 5. There are nine active dredge cuts in Pool 5 with recorded maintenance dredging since 1970. Between 1981 and 2018 nearly 4.0 million CY of material has been dredged from the Upper Zumbro, Mule Bend, West Newton, Below West Newton, Fisher Island, Lower Zumbro, Minneiska, Above Mt. Vernon Light, and Below Mt. Vernon Light dredge cuts (Table 3). Information on the nine dredge cuts in Pool 5 is summarized in the following table.

Table 3. Pool 5 Historic Dredging Totals: 1981-2018.

Pool 5 Dredge Cuts	River Mile	Dredging Total: 1981-2018	Avg. Per Year	Avg. Per Job	Freq. (%)	Projected Average Quantity for 40 years
Upper Zumbro	749.2-749.8	33,240	898	11,080	8%	35,920
Mule Bend	747.8-749.2	780,406	21,092	45,906	42%	843,680
West Newton	747.2-747.8	161,541	4,366	20,193	21%	174,640
Below West Newton	746.0-746.8	332,589	8,989	17,505	50%	359,560
Fisher Island	744.8-746.0	1,451,337	39,225	50,046	71%	1,569,000
Lower Zumbro	743.0-744.6	750,603	20,287	35,743	50%	811,480
Minneiska	742.7-743.0	280,156	7,572	28,016	26%	302,880
Above Mt. Vernon Light	741.2-741.5	157,988	4,270	22,570	16%	170,800
Below Mt. Vernon Light*	740.0-741.0	10,732	10,732	10,732	20%	429,280
Total		3,958,592	117,431			4,697,240

* Below Mt. Vernon Light dredge cut was established in 2018.

Note: All dredging totals and projected dredging averages were taken from St. Paul District Channels and Harbors project office.

Note: Numbers will be rounded for the remainder of the report.



Figure 2. Material Management Operations at West Newton Chute in Pool 5.

The various dredge cuts in Pool 5 need to be dredged on a frequent basis, generally once every one to three years. Dredging in Pool 5 has historically been done in a two-step process. Material from the routine dredging events is placed on temporary island placement sites adjacent to the dredge cuts. The island sites used in the past include Above West Newton, Fisher Island, and Lost Island. Placement at these sites is limited to the existing boundaries and elevations defined in the Channel Maintenance Management Plan (CMMP). When the islands reach their capacity, once every 10 to 50 years depending on the site, the material is moved to a permanent upland placement site. West Newton Chute is the only land-based site currently used for permanent placement of dredged material in Pool 5 (Figure 2). It is owned by the Corps and is available to the public for beneficial use removals. It will continue to be used for hydraulic and mechanical placement of material from dredge cuts and temporary island site unloading in Pool 5, as capacity allows.

The various conceptual paths dredged material can follow are displayed in Figure 3.

Dredging in Pool 5 generates approximately 117,000 CY of material each year (on average). The current practice for the Pool 5 dredge cuts upstream of RM 744.6 is to hydraulically dredge and place on a temporary island site. Cuts that are downstream of RM 744.6 (Lower Zumbro, Minneiska, Above Mt. Vernon Light, and Below Mt. Vernon Light) all get dredged mechanically, and the material is either barged directly to West Newton Chute or placed on Lost Island.

Temporary Placement Sites in Pool 5. The use of island temporary placement sites allows dredging operators to work quickly with minimal setup time, since the island sites are very close to the dredge cuts. This is particularly important at times when the navigation channel is blocked and time is critical because it is not a viable nor legal option to stop barge traffic within the UMR.

When capacity is reached at the temporary placement sites, they are excavated and material is transferred to upland placement sites. Hydraulic dredging equipment with long discharge lines and additional pumping plants have typically been used to unload up to 1.4 million CY at one time, although other methods have also been used efficiently. At least four different one-time upland placement sites in Pool 5 have accepted material from these island transfer sites over the years. In 2017-2018, approximately 1.5 million CY was offloaded from Lost Island mechanically, barged to West Newton Chute, and then placed onto the site hydraulically.

Temporarily storing the material on islands saves initial cost because the cost of moving the material to a final placement site is deferred to the future. However, managing dredged material in this manner is very costly long term due to “double-handling” of the material. Placing dredged material on an island site and later moving it to a permanent site (“double handling”) significantly increases the life-cycle cost of the operation. Additionally, many of these temporary island sites are permitted by WIDNR and MNDNR. Per the conditions of the permit, if island sites are no longer being used then material needs to be removed and the island needs to be restored to the appropriate condition. Thus relying on these sites as permanent storage sites would violate the conditions of the permit. Dredging operations must carefully balance cost with the need to keep the navigation channel open, using mechanical dredging as much as possible

and hydraulic dredging when necessary keeps project costs down since mechanical dredging is often times a more cost-effective method for routine dredging.

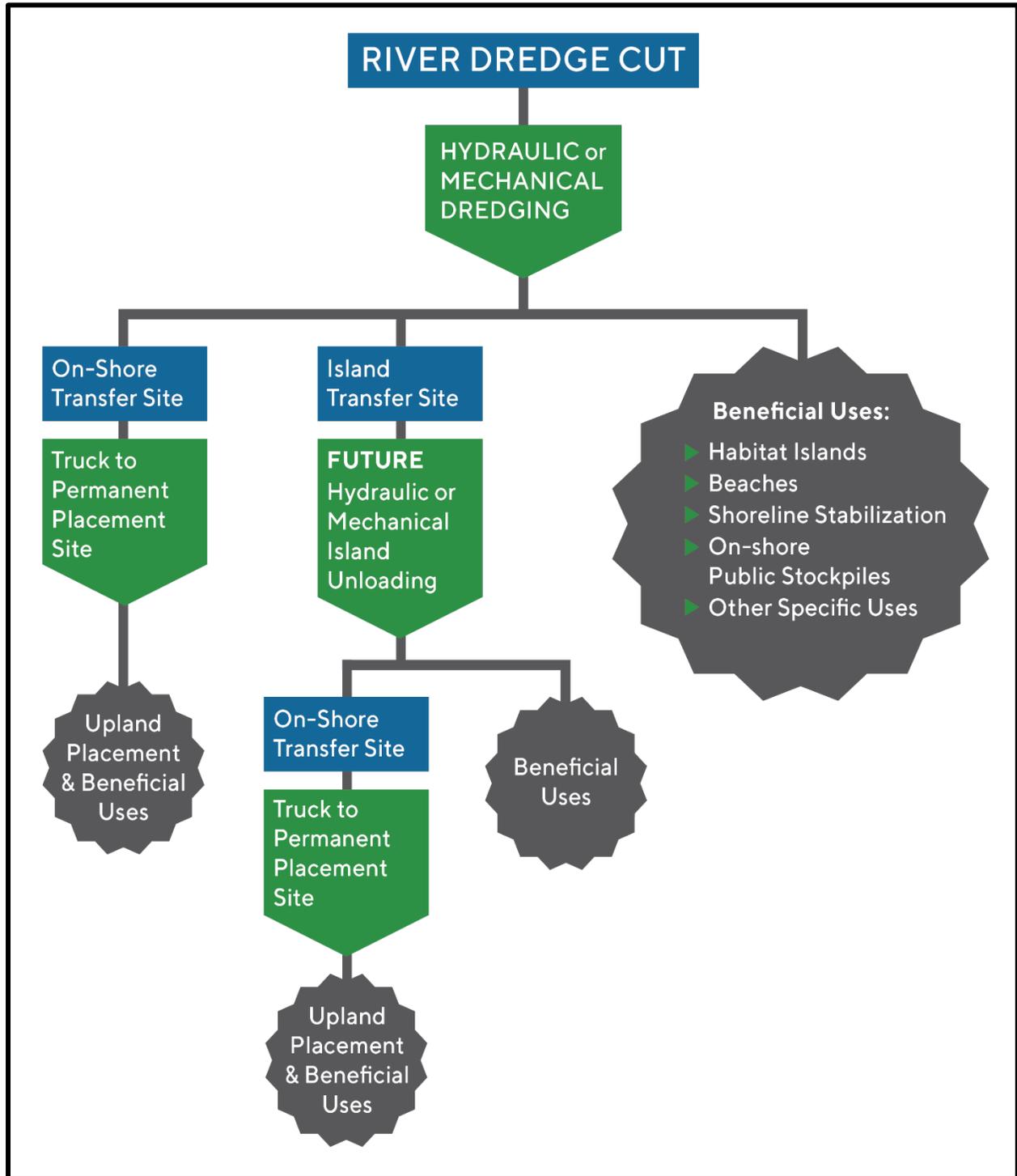


Figure 3. Conceptual Paths of Movement for Dredged Material.

On-Shore Transfer Sites. On-shore transfer sites are needed to remove dredged material from the river and put it onto trucks for hauling to a permanent placement site. Dredged material could arrive at on-shore transfer sites from either mechanical or hydraulic dredging from dredge cuts or the island transfer sites. West Newton Chute is the only active site in Pool 5 that could serve as an on-shore transfer site. On-shore transfer sites must be located near the dredge cuts and support a variety of activities, depending on the type of dredging:

- Unloading Barges
- Stockpiling Dredged Material
- Loading Dredged Material onto Trucks
- Containing and Dewatering Hydraulically Dredged Material

Permanent Placement Sites. West Newton Chute is the only active permanent upland placement site in Pool 5.

4.1.2 CLIMATE CHANGE

The Corps performed a qualitative climate change analysis in accordance with Engineering and Construction Bulletin, 2018-14 *Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Work Studies, Designs, and Projects* (USACE 2018). The full analysis is presented in Appendix D: Climate Change, and includes a literature review, a discussion of results from the USACE Watershed Climate Vulnerability Tool, and results from an analysis on the relevant components of river discharge that affect sediment transport.

The USACE Watershed Climate Vulnerability Tool indicates that the Upper Mississippi-Black-Rock watershed is not highly vulnerable to the impacts of climate change on navigation projects relative to other HUC4 watersheds in CONUS. However, it is still vulnerable in an absolute sense. The climate change literature review concluded that an increased average annual precipitation in the region may lead to variation in the flow regime, which could affect dredging in the area. An increase in precipitation and annual discharge volumes would promote erosion and increased sediment transport, also affecting dredging activity and future planning for dredged material placement. Available literature suggests a warmer and wetter climate in the future. Observed increases in air temperature could impact durations of future frost-free seasons.

Relevant components of river discharge that affect sediment transport and engineering resilience include its magnitude, frequency, and duration. Average annual discharge and the number of days that discharge exceeds a bank full flood event were evaluated to explain the potential for increased sediment loading in Pool 5. This data is available for the Mississippi River at Winona, Minnesota, the Chippewa River at Durand, Wisconsin, and the Trempealeau River at Dodge, Wisconsin. The gauge located at Durand represents hydrologic conditions on the primary source of sediment to Pool 5. The gauge at Winona is located near River Mile 726 at the upstream end

of Pool 6, 13 miles downstream of Pool 5, and only separated by Pool 5A. It adequately represents flow conditions in Pool 5.

Observed trends in average annual discharge of the Mississippi River at Winona, MN were analyzed for statistical significance and concurred with findings in the literature review. Over the period of record (1928-2018), a statistically significant positive trend was identified in average annual discharge. An analysis was also done for the years 1941-2018 to exclude the dry years of the 1930s and 1940s, as well to account for regulation within the basin. A statistically significant positive trend line was observed for discharge for this time period as well. This positive trend line was also observed on the Chippewa River at the Durand gauge, as well as on the Trempealeau River gauge. Changing flow conditions will likely have effects on future dredging efforts in Pool 5, although the extent of those effects cannot be known with great accuracy.

Based on this assessment, the recommendation is to treat the potential effects of climate change and long-term natural variability in climate as occurring within the uncertainty range calculated for the current hydrologic analysis.

4.1.3 PROJECTED FUTURE CONDITIONS

The basis for projecting future dredging quantities in Pool 5 over the next 40 years is the dredging record from 1981-2018. Although there appears to be a long-term upward trend in discharge in Pool 5, recent dredging experience has not shown a similar trend in dredging volumes from 1981 to present. Assuming that dredging volumes remain consistent with recent history, it is estimated that 4.7 million CYs of dredged material will be generated over the 40-year period of analysis.

4.2 Problems and Opportunities

One of the critical steps performed early in the planning process is the identification of problems and opportunities associated within the geographic scope of the study area. Problem statements are concise characterizations of the broad issue that will be addressed with the project.

Opportunities can be directly related to solving the problem at hand, but can also be ancillary to the identified problem. From the list of problems and opportunities, objectives for the project are drafted. The success of the project planning is determined by the fulfillment of the objectives through identified alternative measures.

4.2.1 PROBLEMS

Sedimentation in the navigation channel is a continuing problem leading to the necessity for dredging and subsequent placement of the dredged material. The majority of sediments entering Pool 5 are those carried by the Chippewa River into Pool 4 and then moved downstream in the Mississippi River. Some of these sediments deposit within the designated navigation channel of Pool 5, reducing the available clearance for commercial vessels such as barges. Periodic

removal of this material (dredging) and placement of the material elsewhere is used to maintain the channel to dimensions suitable for commercial vessels.

There are few suitable locations on shore to support dredging operations. On-shore transfer sites and permanent placement sites are critical to maintaining the navigation channel.

4.2.2 OPPORTUNITIES

Opportunities exist for the potential use of dredged material for productive purposes, referred to as “beneficial use” of dredged material. The material from Pool 5 consists of medium to coarse sand and is suitable for a number of applications such as construction fill material, frac material, and winter road maintenance. Because it meets all applicable sediment quality criteria, it can be placed in the water for such purposes as island construction or other ecosystem restoration projects. The material is also highly suitable for beach nourishment and/or recreation.

Placement sites owned by the Corps can be made available to the public for utilization of the material. The St. Paul District has a number of dredged material placement sites where members of the public can remove material from the site for their use. This benefits the Corps because it creates additional capacity at placement sites.

4.3 Goals, Objectives, and Constraints

4.3.1 GOALS

Planning goals are broad, conceptual statements that describe the ultimate and over-arching purposes for the study. The overarching national goal of water resources planning is to contribute to national economic development while protecting the nation's environment. The Corps' mission includes maintaining a commercially navigable channel in the UMR. The goal of this study is to identify an acceptable method of managing the estimated 4.7 million CYs of material that will be dredged from Pool 5 during the 40-year planning period.

4.3.2 OBJECTIVES

Based on the project's problems and opportunities, specific objectives were established and are listed below. Many of these objectives are interrelated and will assist in meeting the over-arching goal. The guidance for developing objectives specifies that objectives must be clearly defined, must provide information on the effect desired, the subject of the objective, the location where the effect will occur and the timing and duration of the effect. For the purpose of this report, the timing or duration of the objectives is assumed to be the 40-year period of analysis. Clear objectives are used to identify measures and formulate alternatives that will achieve the project's goals.

The objectives for the proposed project are:

- Secure sufficient on-shore dredged material capacity for a minimum of 40-years of maintenance dredging.
- Secure river access to support the transfer of dredged material to permanent upland placement sites.
- Identify future properties within Pool 5 that could provide an additional dredged material capacity.
- Maximize beneficial use of dredged material for general public use, for gravel pit or mine reclamation and other specific upland uses, and for the construction or enhancement of authorized projects.
- Based on the GREAT I study recommendation, identify and give preference to properties that will be made available via a willing seller.

4.3.3 CONSTRAINTS

Planning constraints are temporary or permanent limits imposed on the scope of the planning process and the choice of solutions. These limits can be related to ecological, economic, engineering, legal and administrative aspects of a project. Some constraints are states of nature, whereas others are based on the design of built structures and other engineering considerations. Legislation and decision makers can impose other constraints; such human-imposed constraints are possible to change. The following planning constraints were established to guide and set boundaries on the formulation and evaluation of alternatives.

- ***Operational Feasibility.***

Placement sites must have dredged material capacity based on existing conditions and anticipated future conditions. Ideally, sites would be suitable for both hydraulic and mechanical dredging and placement methods.

Island sites cannot be used as permanent placement sites per conditions of the use permit signed with Minnesota and Wisconsin DNR.

The charge presented by the Corps Planning Guidance for Dredged Material Management Plans (ER 1105-2-100) is that plans should ensure material placement needs are met for a minimum of 20 years. In order to meet this criteria, the Corps will likely need to obtain a long-term real-estate interest (e.g. easement, ownership in-fee, etc.) in any property that will be planned for long-term use.

- ***Social Acceptability.***

Avoid or minimize, to the extent practicable, any sites that would have a negative impact on the surrounding community.

- ***Cultural Resources.***

Avoid or minimize, to the extent practicable, any impacts to cultural resource areas.

- ***Environmental Acceptability.***

Plan must avoid and minimize to the extent practicable any impacts to the 1 Percent Annual Exceedance Probability (“100-Year”) Flood Stage.

Avoid impacts to high value habitat and threatened and endangered species.

Avoid or minimize any impacts to wetlands.

CHAPTER 5.

Formulation of Alternatives and Plan Selection

This chapter details site identification, alternative development, comparison of alternatives, and plan selection. The Corps developed a list of potential dredged material placement sites based on publically available aerial imagery and property records. Consideration has been given to the full range of measures for dredged material management including: Federally-owned islands and shoreline placement sites, new sites, and potential future placement sites that could be made available for both mechanical and hydraulic placement.

5.1 No-Action Alternative

The No-Action Alternative for this DMMP represents no change in the current management plan. Under a normal feasibility study seeking authorization for a new project, the No-Action Alternative would mean that no action is to be taken. However, in the instance of an ongoing program, the No-Action Alternative refers to no change in program direction. According to Council on Environmental Quality (CEQ) guidance (1981):

“There are two distinct interpretations of “No Action” that must be considered, depending on the nature of the proposal being evaluated. The first situation might involve an action where ongoing programs initiated under existing legislation and regulations will continue, even as new plans are developed. In these cases “no action” is “no change” from current management direction or level of management intensity. To construct an alternative that is based on no management at all would be impractical. Therefore, the “no action” alternative may be thought of in terms of continuing with the present course of action until that action is changed.”

Accordingly, the No-Action Alternative represents continuing with dredging operations as it is currently being implemented. Truly taking “no action” in this case and, thereby, not maintaining the navigation channel in Pool 5 is not a viable or legal option and was not considered. However, the impacts of the No-Action Alternative still need to be considered and evaluated.

The No-Action Alternative considers what would happen in the absence of preparing and implementing a new plan for the management of dredged material in Pool 5 of the UMR. Under the No-Action Alternative, the 9-Foot Navigation Channel Project and congressional authorization for the Corps to maintain a commercial navigation channel in Pool 5 would remain in place. The No-Action Alternative does not imply that maintenance of the 9-Foot Navigation

Channel within Pool 5 would cease. However, there is uncertainty in how dredged material would be managed under this scenario, so several potential outcomes follow.

In the best case, no dredging would be required in order to maintain a functioning navigation channel in this stretch of river. This scenario has potential to occur for short periods of time (i.e., one dredging season at a minimum), but is extremely unlikely to persist based on the history of dredging requirements in this stretch of river. For instance, dredging has been conducted in Pool 5 to facilitate navigation traffic every year since 1981. The navigation channel is normally maintained to 12.0-ft deep and 300-ft wide (up to 600-ft wide in the bends and corners) to support commercial traffic.

Most dredging activity is conducted proactively to some degree. Channel conditions are monitored by the Corps to identify areas that are or will soon become problematic for navigation traffic. This allows the Corps to better prioritize efforts and most efficiently maintain the channel when equipment is mobilized in the area. Historically, material was dredged from the navigation channel and placed temporarily on island transfer sites adjacent to the dredge cuts. When island sites are nearly full, the Corps moves the dredged material to permanent placement sites to restore island capacity.

If acceptable dredged material placement sites in Pool 5 are not available or have limited capacity, the focus would likely shift towards dredging only when absolutely necessary to allow traffic to pass. The current plan for managing dredged material is the Channel Maintenance Management Plan (CMMP). The CMMP has identified the following order of priority for selecting placement sites for dredged material:

- (1) CMMP-Identified Permanent or Transfer Placement Sites.
- (2) CMMP-Identified Emergency Placement Sites.
- (3) Non-CMMP-Designated Placement Sites.

The following critical channel conditions are defined in the CMMP:

“Imminent Closure” is defined as a scenario when the actual water depth is projected by the District Engineer to be 10-ft or less within 14 days or less, or the channel width is less than 85% of the normally maintained width. Even though USACE has a 9-Foot Channel Navigation project, the Corps typically maintains a depth of at least 12-ft in most locations (some even greater than 12-ft), but typical dredging operations begin where there is 10.5-ft or less water depths project within 14 days.

“Emergency Dredging” is defined as dredging required to free a grounded vessel or remove shoals (submerged bars) in the channel as a result of a vessel freeing itself. The emergency will continue only until an adequate channel depth and width, as determined by the Corps of Engineers, is restored to allow vessel passage. Once these conditions are reached, the Corps would need to dredge the channel, regardless of placement site availability. Under this scenario, dredged material may need to be placed at non-designated placement sites where environmental review has not been completed. These may include in-water or shoreline placement sites, or other practicable alternatives as identified. (For example, in 2014 the Corps found it necessary

to place dredged material directly into the river during a channel closure at the Grand Encampment dredge cuts in Pool 4. Other placement sites were not readily available, and the navigation channel was closed. The material was temporarily placed in the river and removed later in 2014). Any material that is placed in water, under the no-action alternative, would need to be removed to another site as soon as practicable.

Under the No-Action Alternative, the Corps would work to secure short-term solutions, but in the long-term, it would be likely that the need would arise to utilize areas for placement without adequate time to fully evaluate the consequences of site use or search for other viable alternatives. This may lead to greater environmental or social impacts.

With the current available capacity of 1,300,000 CY at Lost Island, 740,000 CY available at Above West Newton, 380,000 CY available at Fisher Island, and the approximate 1,700,000 CY additional capacity available at West Newton Chute (if maximum height of dredged material placement to an elevation 720'), the No-Action Alternative has the ability to provide at least 25 years of dredged material placement. However, it is neither efficient nor cost effective (i.e. transporting and "double-handling" of dredged material) to fill the three island sites to capacity without having permanent placement sites secured for the material. Island sites are often used to place material from routine and emergency dredging operations, so maintaining placement capacity at these sites is critical to maintaining the 9-foot navigation channel. Additionally, all identified island sites are permitted by WIDNR and MNDNR as temporary transfer sites, which are defined as interim holding locations until the site is filled and the material can be economically removed and transferred to designated permanent sites. Per the conditions of the permit, if island sites are no longer being used then material needs to be removed and the island needs to be restored to the appropriate condition. Thus relying on these sites as permanent storage sites would violate the conditions of the permit. Finding suitable placement sites near the river is optimal for placement due to the reduced transportation costs; however, land availability near the river is seldom available so when there is an opportunity to pursue land that is for sale it is necessary for the Corps to explore the acquisition of the property.

In summary, under the No Action alternative, currently approved and available placement sites in Pool 5 would not be expected to accommodate material placement needs for the next 40 years. If approved CMMP sites are not available when dredging is required in Pool 5 due to navigation emergency situations, dredged material may need to be placed at non-CMMP designated placement sites. Non-designated placement sites can include temporarily placing dredged material in the aquatic main channel border areas (in-water placement). The use of non-designated placement sites may result in higher costs and greater environmental or social impacts. Presumably though, these instances would be short-term, and a new planning effort would occur to identify the most acceptable dredged material management methods for the pool.

5.2 Planning Process

Planning in Pool 5 began with an evaluation of the current dredging practices and expected future capacity needs, as described above. Next, a range of alternatives were developed to identify opportunities for beneficial use and locate suitable lands to support dredging operations

and long-term placement of dredged material. The Corps coordinated with Federal and State natural resource agencies as well as local governments early in the process to solicit input and ideas. Later in the process, the Corps issued press releases to notify landowners that USACE was seeking to buy land from willing sellers. The Corps sent letters to landowners in the areas of interest and asked them to contact USACE if they were willing to sell their land.

5.3 Pool 5 Habitat Restoration through the Use of Dredged Material

Dredged material has periodically been used for habitat improvement on the Upper Mississippi River. Locally, dredged material has been used to create islands (e.g., Spring Lake Island, Swan Island and Mallard Island in Pool 5), as well as raise floodplain elevations to create topographic diversity and conditions favorable for floodplain forest (L/D 4 Embankment). Indirect benefits also occur as other construction materials, such as fine material used to cap dredged sand, can be obtained from the river. This benefits aquatic backwater habitats via increased water depth. Beneficial use of dredged material for habitat purposes can be performed if the project costs are generally similar to other methods for permanent placement of dredged material. This presents a unique opportunity to benefit river habitat without use of traditional funds for river restoration.

The potential to improve habitat in Pool 5 by the use of dredged material is always being considered; however, this is a partial solution to managing dredged material within the project area and a more comprehensive long term solution is needed. Currently, dredged material is available at numerous beneficial use facilities up and down the river if there is an immediate need to use material to build and improve habitat. In cooperation with agency partners, Wisconsin and Minnesota Departments of Natural Resources as well as the USFWS Refuge offices, the use of dredged material to rebuild and improve habitat within the Pool 5 project area could be a possibility in the future. Funding from the Upper Mississippi River Habitat Rehabilitation and Enhancement Program (HREP) or via a cost share agreement through the Corps' Continuing Authorities Program (CAP) for feasibility planning and construction are funding options to use material for habitat restoration if cooperating agencies agree to such a project.

5.4 On-Shore Transfer Sites

Table 4 lists existing river access points in Pool 5 that were considered as potential on-shore transfer sites for dredging operations. Typical dredging operations in Pool 5 is either done by a mechanical or hydraulic dredge. Sites that are capable of handling material via a mechanical dredge is based on the capacity to manage the material on site, access to the site from the river, and how the operations are compatible with the surrounding area. Sites capable of handling dredged material hydraulically are sites that are in close proximity to the river, sites that have an existing containment berm or have room to construct a containment berm (containment berms are typically 10' tall and 15' wide at the base), and sites that are capable of handling return water after the material is dredged. Upper West Newton Landing was evaluated for access to potential placement sites in Minnesota. The Martin Access and Belvidere Slough sites were considered

for access to potential placement sites in Wisconsin near Buffalo City. The remaining sites were not pursued after initial consideration due to implementability (i.e. ability to carry out the action without restriction) concerns, land use and aesthetic concerns, capacity limitations, and adverse effects to natural resources, public safety, and recreation.

Only Upper West Newton Landing was carried forward for further evaluation at this time. The site is an existing Federally-owned river access point adjacent to the West Newton Chute.

Table 4. Pool 5 Access Points Considered for On-shore Transfer Sites.

Access Point	Location (River Mile &	Current Land Use	Comments/Status
Pioneer Landing	752.7 R	Public Access	Not on main stem of river. Recreation only. Not suitable for dredging ops.
Alma Landing	751.6 L	Public Access	Located at local power plant. Possible mechanical access--not suitable for hydraulic. Used for recreational access.
Upper West Newton Landing	749.9 R	Public Access & Dredging	Federally-owned existing USAACE access point. Suitable for offloading barges and supporting hydraulic and mechanical dredging operations. Adjacent to existing West Newton Chute placement site. MNDNR boat landing supports recreational access when dredging is not occurring.
Great River Harbor	748.0 L	Public Access	Commercial campground. Significant recreational use. Access dredging would be required. Tight access. Not likely useful to us.
Halfmoon Landing	747.5 R	Public Access	Not on main stem. Shallow recreation access only.
Martin Access	746.9 L	Public Access/Privatey Owned Property	Property was vacant until a house was built in 2017. Site is privately owned and no longer considered suitable as an on-shore transfer site.
Belvidere Slough Landing	746.9 L	Public Access	Possible access. Would need coordination with state of Wisconsin. Access dredging needed. Could support either hydraulic or mechanical ops. Best existing access for placement sites north of Buffalo City. If sites in Wisconsin are needed in the future, this site could be reevaluated for use.
Goose Lake Landing	746.8 R	Public Access	Not on main stem. Shallow recreation access only.
Weaver Bottoms Landing	744.6 R	Public Access	Not on main stem of river. Recreation only. Not suitable for dredging ops. No room for staging or material stockpiles.
Buffalo City Landing	744.3 L	Public Access	Residential area. Recreation only. No room for staging or material stockpiles.
Upper Spring Lake Landing	742.4 L	Public Access	Unimproved access. Recreation only. Near to residential properties. No room for staging or material stockpiles.
Minneiska Public Landing	741.8 R	Public Access	Tunnel under Hwy 61 blocks access for barges. Not suitable for ops.
Lower Spring Lake Landing	741.2 L	Public Access	Would need significant access dredging to get barges there.
Dairyland Power Cooperative Power Plant Site	751.4 L	Private	Corps considered acquiring and/or utilizing capacity within this site. Site was eliminated due to restrictions placed on filling the site due to the testing of dredged material.

5.5 Permanent Upland Placement Sites

The Corps considered the following to determine the most suitable sites for dredged material placement:

- The life-cycle cost to use each site, including real estate acquisition, site development and hauling cost from the identified on-shore transfer sites.
- Operational considerations and site capacity, including proximity to the dredge cuts and potential to use the site for hydraulic dredging, as well as proximity to potential on-shore transfer sites for mechanical dredging, and highways for hauling and beneficial use.
- The environmental acceptability of each site using established criteria, including endangered species present, water quality, wetland impacts, flood stage impacts and other natural resources as appropriate.
- The social acceptability of each site was also considered when determining which site(s) should be included in the Recommended Plan. It was important to prioritize sites that wouldn't negatively impact the community. Site comparisons were made by looking at the disturbance caused by hauling, handling, and placement of dredged material.

Estimated Site Capacities. The capacities of potential placement sites were estimated so that sites could be compared for screening and site selection. Capacity estimates were based on the useable acreage and assumptions about the average depth of placement at each site. In general, an average of 15-ft placement depth was assumed, based on a maximum depth of 20-ft with 10% side slopes and 2% top slope to allow drainage without causing erosion. No setback distances were taken into account for the quantity calculations presented in this report. Actual setbacks will vary based on local codes and coordination will take place prior to the placement of dredged material. The intent was to blend in with adjacent elevations to minimize visual impacts to the landscape as much as practicable. No detailed site layout was developed as part of the screening and site selection in this DMMP. The actual placement depth will be determined during implementation of the management plan.

Costs. A parametric cost estimate was prepared for acquiring and using the recommended plan site. The same basic assumptions were applied to each site, and the estimates were intended only for purposes of making comparisons. The cost/CY includes the physical handling of the dredged material by means of hydraulically or mechanically dredging the material out of the river, barging the material to a transfer site, unloading the material from the barge, temporary stockpiling, trucking the material, if required, and placing the material in its final placement site. The estimate also includes indirect costs such as real estate and development costs for the placement sites.

Trucking. The cost of trucking is primarily a function of the travel distance and the number of trucks needed to achieve an efficient production rate. With a constant production rate for each alternative, travel distance is the main factor. Therefore, the greater distance the placement site

is from the transfer site, the higher the trucking cost. The potential impacts of trucking dredged material within the project area can be found in section 7.1 below.

Dredging. The cost of dredging varies depending on the type of dredging operations used, i.e. mechanical or hydraulic methods, mobilization and demobilization of equipment, distance the material will travel to a temporary or permanent placement site, and the convenience of access from the dredge cut to onshore placement sites.

Placement. This cost includes the work of a dozer to spread the dredged material after it is dumped by a truck.

Acquisition. Acquisition costs include costs for real estate needed to place material on the site.

Development. Development costs includes access improvements, site clearing, stripping and re-spreading topsoil, erosion control and screening.

5.6 Alternative Development

5.6.1 IDENTIFICATION OF PLACEMENT SITES

The Corps assessed current local land uses and contacted land owners to develop a list of sites potentially suitable for permanent placement of dredged material. Once identified, sites were evaluated based on aspects of environmental acceptability, operational feasibility and estimated costs. Several potential permanent placement sites were evaluated throughout Pool 5. Areas considered were south of the Zumbro River (near Kellogg, Minnesota) and east of Hwy 61 on the Minnesota side of the Mississippi River. On the Wisconsin side, parcels were identified in the area north of Buffalo City and south of Cochrane along River Road Drive. Three island transfer sites and one inland placement site, all owned by the Corps, were also evaluated.

5.6.2 EVALUATION AND COMPARISON OF ALTERNATIVES

The permanent placement sites that were evaluated for feasibility were assessed based on their ability to meet the planning objectives and long-term material capacity needs. In addition, sites were evaluated to determine whether selection would be cost effective, environmentally acceptable, and operationally feasible among other pertinent considerations (Table 5).

In regards to long-term material capacity, sites were evaluated for their capacity to hold dredged material. Multiple sites could be used if no single site had sufficient capacity for 40 years. In addition, potential areas were compared to determine whether or not access to an onshore transfer site or direct hydraulic placement was available. The capacity of each location was also determined. The goal was to identify a set of sites that could accept 4.7 million CY of dredged material in the next 40 years at the least cost. The criteria used to judge environmental acceptability included consideration of natural resources, wetlands present, flood stage impacts, contamination of the site, and other considerations under Section 404(b)(1) of the Clean Water

Act. With regards to operational function, general implementability of the site and whether material placement in the area would constitute a beneficial use or if sites would be available for public beneficial use of the material were considered. Cost was used in determining whether or not a site was cost effective versus other sites considered as part of the long-term plan.

Based on the GREAT I Study recommendations, social acceptability was considered in determining which site(s) should be included in the Recommended Plan. It was important to prioritize sites that wouldn't negatively impact the community. Site comparisons were made by looking at the disturbance caused by hauling, handling, and placement of dredged material. One goal was to avoid sites near a community or a residential area where hauling operations could affect people. Seeking out willing sellers within the project area was an important component of social acceptability. The GREAT I Study recommendations highlight the importance of working with willing sellers and condemning land only when necessary. As such, public notices and letters seeking willing sellers were distributed throughout the community to determine if suitable land was available to the Corps for purchase.

Future use sites for dredged material management were also identified and were confined to three general areas within Pool 5. These selected areas were southeast of Kellogg, Minnesota, south of Cochrane, Wisconsin, and north of Buffalo City, Wisconsin. Currently these sites, identified in orange on the Wisconsin side in Figure 4, were screened out due to social impacts, unavailability of onshore transfer sites, inconvenient access to placement sites, and cost as compared to our Recommended Plan. Future use sites were also screened out on the Minnesota side due to social impacts and cost. When there is a need for future capacity, property within these areas will likely be further evaluated for use as a placement site. Additionally, any site that would be potentially used as a future placement site would need to have a full NEPA assessment and fulfill all USACE real estate requirements prior to being acquired and incorporated into this dredged material management plan.

The comparison and status of all of the potential permanent placement sites are listed in Table 5. The Rolling Prairie site was selected as the recommended permanent placement site for dredged material. The difference in cost between using each one of the potential permanent placement sites was primarily a function of trucking costs. Due to the Rolling Prairie site meeting the objectives and evaluation criteria (i.e. cost, operational feasibility, and environmental acceptability) it was selected as part of the Recommended Plan. In addition to selecting the Rolling Prairie Site as part of the Recommended Plan, West Newton Chute (currently the only Corps owned onshore transfer/permanent placement site in Pool 5) was also selected as part of the plan. The three Corps owned islands in Pool 5 (Above West Newton, Above Fisher Island, and Lost Island) would also be retained as part of the Recommended Plan. The combination of the sites selected meet the planning objectives for the Pool 5 DMMP.

Table 5. List of Pool 5 Alternative Placement Site Screening Summary and Status.

Placement Site	Estimated Maximum Capacity (KCY)	Current Land Use	Summary of Screening	Current Status
West Newton Chute	3,200	USACE Owned Transfer and Beneficial Use Site	<p>Operationally Feasible: Onshore placement site capable of accepting dredged material placed hydraulically and mechanically. Site is approved to have material placed to the elevation of 720’.</p> <p>Environmentally Acceptable: Site has gone through the NEPA approval process. Contains no wetland acreages.</p> <p>40-Year Capacity: Site can be used as a temporary placement site or transfer site.</p> <p>Socially Acceptable: Site is already Federally-owned and deemed acceptable.</p> <p>Cost Effective: Site is an existing Federally-owned site.</p>	Retained due to site meeting objectives and screening criteria.
P Sites: 1A, 1B, 2B, 3, 4	9,000	Agriculture	<p>Operationally Feasible: These sites are well-suited for both mechanical and hydraulic placement of dredged material from Pool 5 due to their proximity to river access through the West Newton Chute landing area</p> <p>Environmentally Acceptable: Sites contain approximately 100 acres (22%) of wetland signatures.</p> <p>40-Year Capacity: Capable of handling 40 years of capacity.</p> <p>Socially Acceptable: Not socially acceptable due to land acquisition issues.</p> <p>Cost Effective: Close to transfer site and short haul distance (Avg. 1.3 miles) makes this site cost effective. Average costs are approximately \$27.79/CY.</p>	Eliminated sites due to environmental and social acceptability.
L1	7,500	Agriculture	<p>Operationally Feasible: Site is well-suited for mechanical placement of dredged material from the West Newton Chute landing area.</p> <p>Environmentally Acceptable: Site contains approximately 50 acres (14%) of wetland signatures.</p> <p>40-Year Capacity: Site is capable of handling 40 years of Pool 5 dredged material</p> <p>Socially Acceptable: Not socially acceptable due to land acquisition issues.</p> <p>Cost Effective: A verage hauling distance from West Newton Chute to this site is 2.0 miles. Average costs are approximately \$28.16/CY.</p>	Eliminated site due to socially acceptability issues.
B1	4,700	Agriculture	<p>Operationally Feasible: Site is well-suited for mechanical placement of dredged material from the West Newton Chute landing area.</p> <p>Environmentally Acceptable: Site contains approximately 130 acres (39%) of wetland signatures.</p> <p>40-Year Capacity: Site is not capable of handling 40 years of dredged material.</p> <p>Socially Acceptable: Not socially acceptable due to land acquisition issues.</p> <p>Cost Effective: A verage hauling distance from West Newton Chute to this site is 2.5 miles. Average costs are \$28.80/CY</p>	Eliminated sites due to environmental and social acceptability.

Placement Site	Est. Max Capacity (KCY)	Current Land Use	Summary of Screening	Current Status
Rolling Prairie Site	18,500	Agriculture	<p>Operationally Feasible: Site is well-suited for placement of dredged material. Its close proximity to West Newton Chute makes it practical as a permanent placement site for Pool 5 material. The site can be used via the County Road 84 trucking route to transfer dredged material to the property.</p> <p>Environmentally Acceptable: Site contains approximately 160 acres (16%) of wetland signatures.</p> <p>40-Year Capacity: Site is capable of handling more than 40 years of dredged material.</p> <p>Socially Acceptable: Site will be acquired via willing seller.</p> <p>Cost Effective: Haul distance from West Newton Chute to this site ranges from 1.5 to 2.5 miles. Average costs are \$28.66.</p>	Retained site because it meets all objectives and screening criteria.
Sites Near Kellogg, MN	N/A	Agriculture	<p>Operationally Feasible: Proximity to the West Newton Chute site makes sites in this area practical as permanent placement sites for material placed at West Newton Chute. Material could be trucked to various sites but they have been deemed less advantageous than other options at this time.</p> <p>Environmentally Acceptable: It is anticipated that many of the sites would contain significant wetland signatures.</p> <p>40-Year Capacity: Many sites were not capable of handling 40 years of capacity.</p> <p>Socially Acceptable: Not socially acceptable due to land acquisition issues.</p> <p>Cost Effective: Not cost effective due to the extra haul distance to these sites.</p>	Eliminated sites due to not meeting objectives and screening criteria.
Sites Near Buffalo City, WI	N/A	Agriculture	<p>Operationally Feasible: Lack of onshore transfer sites, difficulty accessing this area for hydraulic offloads.</p> <p>Environmentally Acceptable: It is anticipated that many of the sites would contain significant wetland signatures.</p> <p>40-Year Capacity: Many sites were not capable of handling 40 years of capacity.</p> <p>Socially Acceptable: Social impacts of placing and trucking material close to the community. Not socially acceptable due to land acquisition issues.</p> <p>Cost Effective: Not cost effective due to the extra haul distance to these sites.</p>	Eliminated sites due to not meeting objectives and screening criteria.
Sites Near Cochrane, WI	N/A	Agriculture	<p>Operationally Feasible: Lack of onshore transfer sites, difficulty accessing this area for hydraulic offloads.</p> <p>Environmentally Acceptable: It is anticipated that many of the sites would contain significant wetland signatures.</p> <p>40-Year Capacity: Many sites were not capable of handling 40 years of capacity.</p> <p>Socially Acceptable: Social impacts of placing and trucking material close to the community. Not socially acceptable due to land acquisition issues.</p> <p>Cost Effective: Not cost effective due to the extra haul distance to these sites.</p>	Eliminated sites due to not meeting objectives and screening criteria.

Note: The cost/CY includes the physical handling of the dredged material by means of hydraulically or mechanically dredging the material out of the river, barging the material to a transfer site, unloading the material from the barge, temporary stockpiling, trucking the material, if required, and placing the material in its final placement site.

Note: All **Eliminated** sites will not be included as part of the Recommended Plan but will be retained for potential future use opportunities.

CHAPTER 6.

Detailed Description of Recommended Plan

The Recommended Plan represents sites that have plenty of capacity, contain minimal social impacts, are operationally feasible and are an environmentally-acceptable method of managing the estimated 4.7 million CY of material that would be dredged from Pool 5 during the 40 year period of the DMMP. The need for a large permanent placement site is due to the favorable circumstances that would accompany land acquisition (i.e land would be acquired via willing sellers). The components of the Recommended Plan consist of permanent placement sites, transfer sites, temporary island placement site, and future use sites (Figure 4).

The minimum interest deemed necessary for the project has been determined to be fee. All lands associated with the project will be acquired in Fee-Simple Absolute title. However, if the minimum interest cannot be acquired, the District Chief of Real Estate may propose to deviate from the required minimum interest and/or standard estate. A formal request to HQUSACE to deviate from established policy and/or standard estate language would be required. When a policy deviation or Non-Standard Estate has been proposed for a project, HQUSACE approval will be secured before landowner negotiations resume.

Components of the plan are:

- 1) **Permanent Placement Site:** One upland placement site where dredged material would be permanently placed after it is transferred from a temporary site via trucks.
- 2) **Transfer Site:** One land-based placement and transfer site with river access where dredged material would be temporarily placed for transfer to adjacent permanent placement sites.
- 3) **Temporary Island Placement Sites:** Three island placement sites that have been historically used by the Corps.
- 4) **Evaluated Future Use Sites:** Three selected areas have been identified for potential dredged material placement sites in the future.

1. *Permanent Placement Site*

<i>Permanent Upland Placement Sites</i>	<i>Maximum Capacity</i>	<i>Cost/CY</i>	<i>Placement</i>
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Rolling Prairie Site	18,500,000 CY	\$28.66	Haul to Site via Truck
Total	18,500,000 CY		

The permanent placement site was selected as part of the Recommended Plan because the site has enough material capacity, minimizes social impacts, is operationally and environmentally feasible, is cost effective, and can be purchased via willing sellers, which will meet the objectives of the Pool 5 DMMP. The site allows for permanent placement of approximately 18.5 million CY of dredged material that will be hauled from the West Newton Chute onshore transfer site. The \$28.66 per CY is the average total cost from dredge cut to final placement. The total costs includes dredge cuts, handling of the material, barging, and trucking the material from transfer sites, real estate acquisition, site preparation, and placing the material on the final Rolling Prairie permanent placement site.

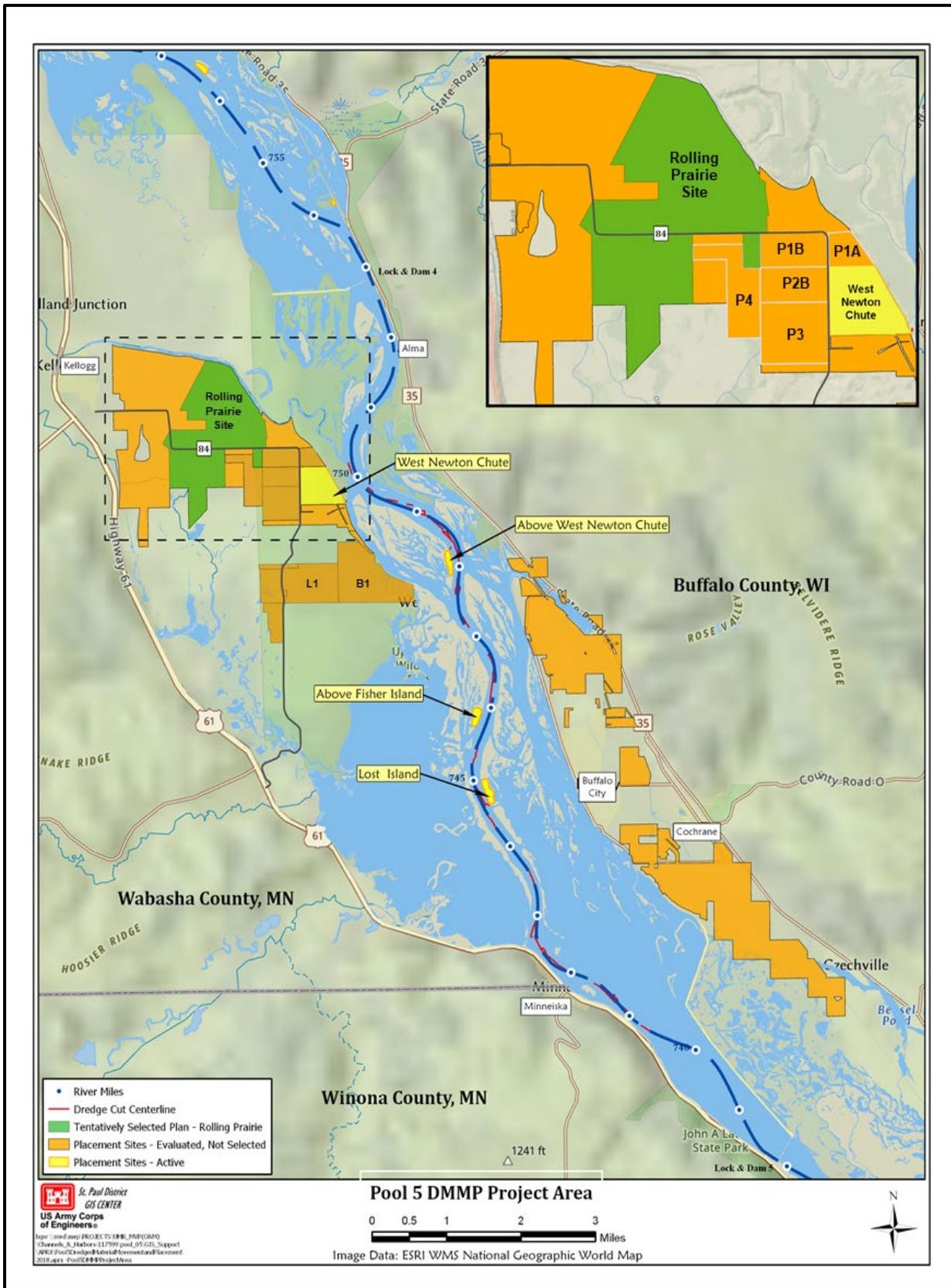


Figure 4. Map of Active, Evaluated, and Recommended Sites Located in Pool 5.

2. *Temporary Upland Placement and Transfer Site*

West Newton Chute is the only Federally-owned temporary land-based placement and transfer site with river access that was selected for the Recommended Plan. It allows for placement of material directly from the dredge cuts where material can be hauled away over time. While the maximum permanent capacity is listed, the site is currently very active and recently received dredged material from the Lost Island offload. Capacity will vary as material is placed and removed in the future. The current available capacity, after the completion of the Lost Island offload, is approximately 500,000 CY. Additionally, while the site is capable of having material stacked to the elevation of 720' (i.e. estimated at 3,200,000 CY), its desired operational capacity is approximately 2,000,000 CY. Its value in the plan is to provide river access to adjacent permanent placement sites, allow for temporary placement of material dredged mechanically, eliminate the current practice of conducting periodic offloads from island placement sites, provide opportunities for public beneficial use, and to provide for some additional storage contingency in the plan.

<i>Temporary Upland Placement Site</i>	<i>Desired Maximum Capacity</i>	<i>Placement</i>
West Newton Chute	2,000,000 CY	Hyd., Mech.
Total	2,000,000 CY	

3. *Temporary Island Placement and Transfer Sites*

Above West Newton, Above Fisher Island, and Lost Island are the three Federally-owned island placement sites that have been used historically by the Corps are retained in the plan for contingency operational flexibility purposes. The islands would be utilized for mechanical or hydraulic placement only if the land-based placement/transfer sites identified in the Recommended Plan become unavailable, are at capacity, if it's operationally more feasible to use the island sites or would need to be used during emergencies in the future. The maximum capacities listed are those for the pre-filled condition.

<i>Island Placement Sites</i>	<i>Maximum Capacity</i>	<i>Placement</i>
Above West Newton	1,300,000 CY	Hyd., Mech.
Above Fisher Island	1,000,000 CY	Hyd., Mech.
Lost Island	1,300,000 CY	Hyd., Mech.
Total	3,600,000 CY	

Estimated costs for island placement are similar to land-based placement costs, but temporary island placement requires an additional deferred expense for hydraulic offloads to land-based sites when capacity is reached. Island offloads occur approximately every 10-years or as needed.

4. *Evaluated Future Use Sites*

Potential future sites for Pool 5 dredged material management have been identified in both Minnesota and Wisconsin. When needed, the Corps has identified areas that have sites that will be acquired to fulfill the long-term dredged material placement sites.

<i>Future Upland Placement Sites</i>	<i>Capacity</i>	<i>Placement</i>
Southeast of Kellogg, Minnesota	Unknown	Hyd., Mech.
North of Buffalo City, Wisconsin	Unknown	Hyd., Mech.
South of Cochrane, Wisconsin	Unknown	Hyd., Mech.

6.1 Rolling Prairie Site

The Rolling Prairie Site is an upland placement site located in Section 26, T110N, R10W in Wabasha County, Minnesota. This placement site is located approximately 1.5 miles west of West Newton Chute along the north and south sides of County Road 84. The site is a multi-parcel mixed agricultural and upland placement site located on a sandy terrace of the Mississippi River Valley. Capacity at this site provides more than 40 years capacity (approximately 18,500,000 CY) of dredged material placement. To satisfy the requirements of the plan, the Corps is working towards the acquisition of up to 962 acres from willing sellers. The final acquired acreage may vary as determined by the willing sellers. Landowners within the Pool 5 project area approached USACE about acquiring their property. These landowners are only interested in selling their property in a one-time payment. Parsing out the land and buying it in piecemeal was not an option at this site.

Of the approximately 962 acres, approximately 830 acres can be used for permanent placement of dredged material to avoid filling of wetlands of the acquired property. The site has been used for agricultural purposes on the northern and southern portions with most of the wetlands located on the very southern portion. The use of the site would convert up to 830 acres of row crop agricultural land use to a dredged material placement site use over the life of the project. Within the acquired sites it is anticipated that smaller sub areas (40-80 acre) will be filled incrementally until desired capacity is reached. If land is not being used for placement, it will remain in the same state that the land is currently in (i.e agricultural row crop and wetland). The entire 990 acre site is located north and south of County Road 84 (Figure 5).

Ownership. Private

Size and Capacity.

Site Area:	962 acres
Est. Unit Cost:	\$28.66 per CY
Maximum Capacity:	18,500,000 CY
Remaining Capacity:	18,500,000 CY
Beneficial Use Removal:	Yes

Operation and Beneficial Use. Dredged material placed at the Rolling Prairie Site will be made available to the public for beneficial use as needed. A portion of the site will be deemed a “beneficial use area” where material is made available to the public. Access, site preparation, and proper signage will be required.

Pool 5 dredged material typically consists of clean sand, which is a useful commodity for general construction fill, winter road maintenance, landscaping, and other applications. Dredged material will be placed hydraulically and/or mechanically on the West Newton Chute placement site. Material will then be loaded onto trucks and trucked to its permanent Rolling Prairie placement site. Therefore, placement at the Rolling Prairie site would be exclusively done by mechanical means.

Cost. The unit cost per CY of dredged material placement ranges from \$26.00 per CY for material coming from the Upper Zumbro River sites to \$32.02 for material coming from the Lower Zumbro site. The Cost/CY includes the physical handling of the dredged material by means of mechanically or hydraulically dredging the material out of the river, barging the material to a transfer site, unloading the material from the barge, temporary stockpiling, trucking material, if required, acquiring real estate, preparing the site, and placing the material in its final placement site.

Site Preparation. The site could be accessed from County Road 84 for beneficial use removal. Material placed in areas that would impede water drainage patterns will be graded and new culverts added to facilitate run off and avoid pooling. Existing culverts will not be blocked and will remain functional. Placement of material near the levee bordering the Zumbro River along the northeast portion of the site will be set back sufficiently so that the levee can be maintained and existing drainage patterns are not disturbed. Dredged material designated for the Rolling Prairie site will be placed on the property in such a manner that it will not cause drainage issues on any adjacent properties. Material would be shaped to provide some topographic relief mimicking the nearby Weaver Dunes area similar to how the Corps has managed the West Newton Chute site. Over time as the maximum elevation for placement is reached at the site, the dredged material (minus the material within the beneficial use area) will be covered with topsoil and planted with native prairie grasses.

Site Layout and Usage. It is anticipated that the location identified for initial placement of dredged material at the Rolling Prairie site would be within the northern portions of the parcels located immediately south of and abutting County Road 84. While we intend to start placing material initially on an approximately 75 acre parcel south of County Road 84, the intent is to evaluate the long-term placement of dredged material on entire 962 acres. It is anticipated the 75 acre parcel will be filled to capacity before other parcels are used; however, other areas within the Rolling Prairie site may need to be considered for initial placement of material. It is anticipated that over the life of the plan most of the upland area identified at Rolling Prairie will be used for dredged material placement. Remaining acreage not designated for initial placement will remain in its current state (i.e agricultural row crop, wetlands, etc.) until it is needed for placement. The unused agricultural row crop land will be available to lease until it is needed for

dredged material placement. If a new site is identified for the placement of dredged material, the following actions will take place, to the extent practicable, before using:

1. Prioritize sites that were previously used as agricultural row crops.
2. Avoid sites with significant tree cover.
3. Avoid wetlands if upland areas are present. If no upland acreages are available, wetland mitigation sequencing will take place prior to placement.
4. Avoid sites that would negatively impact cultural resources. Prior to placement, USACE will follow the guidelines set-forth by the Pool 5 DMMP Programmatic Agreement (see Appendix F).

Transportation. The use of the new Rolling Prairie placement site will require trucking a substantial amount of dredged material approximately 1.5-2.5 miles from West Newton Chute via County Road 84 to the site. Given the close proximity of the sites, trucking could occur year round to include during winter months. During trucking operations, it is estimated that 200 or more additional heavy truck round trips per day could occur on County Road 84 over an extended period of time. The described trucking activities would likely occur once every 5 to 10 years on average, over a duration of several weeks or months, with large scale island offloads determining the schedule. Small scale hauling efforts could occur on an annual basis. These trucking operations are subject to operational flexibility by the Corps of Engineers, and will be briefed in advance via public notice to the general public and local government leadership.

Implementability. No railroad crossing or highway improvements would be needed to allow for safe beneficial use access. If access is needed within a different section of the property then the appropriate roads, culverts, and necessary improvements would be made. There are no HTRW concerns on this site.

Access Improvements. Minimal improvements such as signage and shoulder work would be necessary to open the site for public removal of dredged material. A small access road and culvert would likely need to be added just off of County Road 84. Beneficial use removal from the site can occur via County Road 84. If improvements are needed on the property then the appropriate roads, culverts, and necessary improvements would be made.

Natural Resources. Wetlands and wooded areas are present on the very southern portion of the Rolling Prairie Site but are largely absent in the majority of the site. Wetland areas would be avoided as part of the permanent placement of dredged material within the 830 acre area of proposed use. However, if avoiding wetlands later becomes impracticable due to capacity needs, the District will prepare a Section 404(b)(1) evaluation before the wetland is filled. The District would mitigate for any unavoidable wetland impacts according to current policy at that time. Material placed in areas that would impede water drainage patterns will be graded and new culverts added to facilitate run off and avoid pooling. Existing culverts will not be blocked and will remain functional.

Socioeconomics. Use of this site for the placement of dredged material would result in a land use change from agricultural production to a permanent dredged material management site. To the extent practical, the District plans to offer leases that would allow farming operations to occur on areas of the Rolling Prairie placement site until such time that they are needed for

dredged material placement. The site would be made available for public beneficial use of the material if needed.

Cultural Resources. While there is a high probability for portions of the site to have historic properties, there are none known at this time as the area has not yet been surveyed. However, a Programmatic Agreement has been developed to ensure potential concerns and to ensure compliance with the National Historic Preservation Act. Furthermore, within the 962 acres identified, historic sites could be avoided while still ensuring sufficient area is available for dredged material placement to meet the project need.

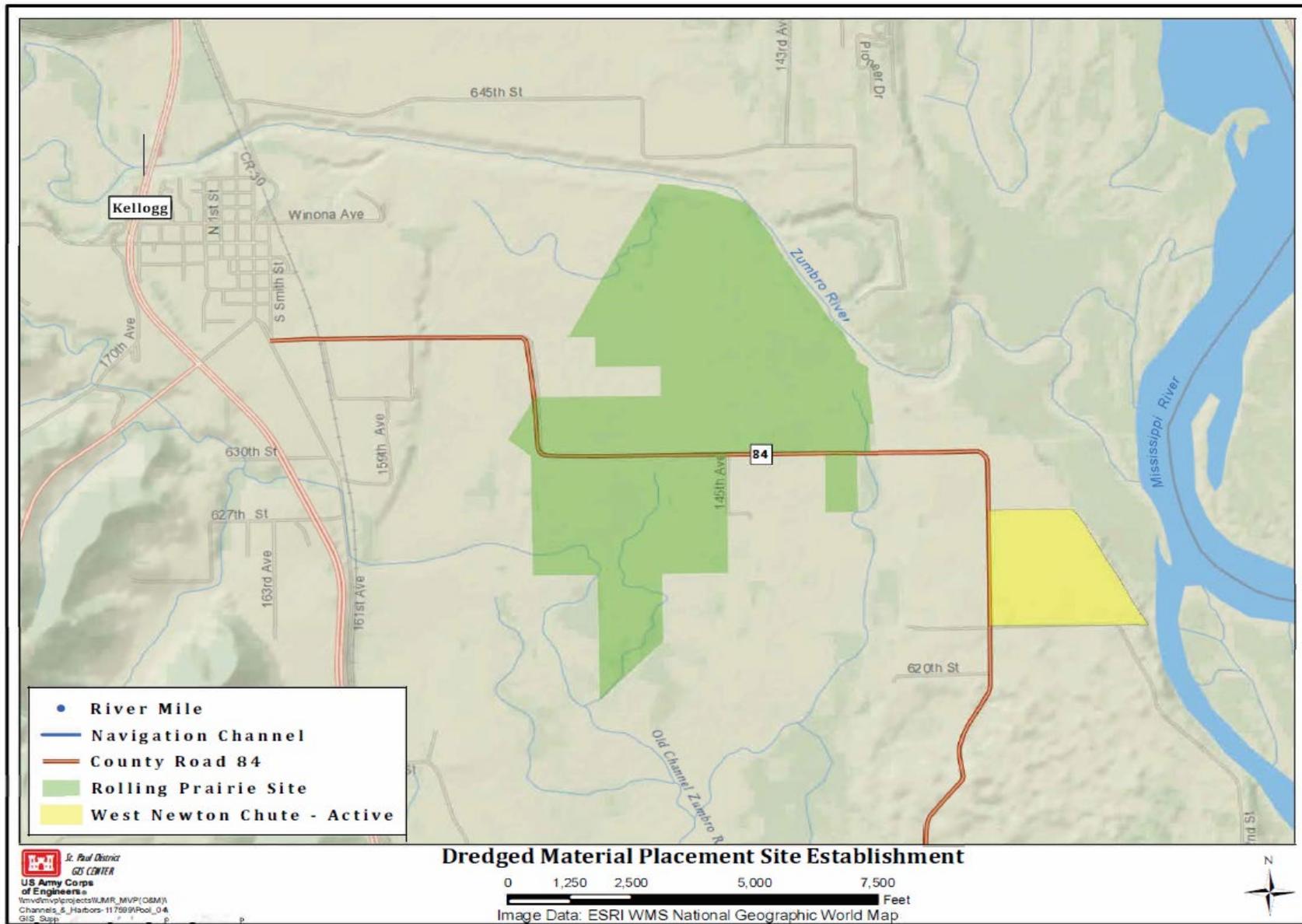


Figure 5. Recommended Plan for Long-Term Placement Site for Dredged Material in Pool 5.

6.2 West Newton Chute

West Newton Chute is an upland placement and transfer site located in Section 31, T110N, R9W, Wabasha County, Minnesota (Figure 5) as identified in the District's CMMP. The site is a former agricultural field and an active dredged material placement site owned by the Corps.

General Description. West Newton Chute is an existing USACE placement site capable of accepting dredged material placed hydraulically and mechanically. The site has a desired operational capacity of approximately 2,000,000 CY; however, material can be stacked to the elevation of 720' (i.e. 3,200,000 CY). It provides mechanical and hydraulic access with return water management through USFWS property.

Ownership. USACE

Size and Capacity.

Site Area:	158 Acres
Maximum Fill Elevation:	720.0 feet
Remaining Capacity:	1,700,000 CY
Maximum Capacity:	3,200,000 CY
Beneficial Use Removal:	Yes

Operation and Beneficial Use. West Newton Chute is a permanent placement site for the storage of dredged material unloaded from the 3 temporary island placement sites in Pool 5, most recently hydraulically offload of Lost Island. Currently, the material is available for beneficial use. The West Newton Chute landing area provides access from the main channel to the Rolling Prairie Site for mechanical placements from the dredge cuts in Pool 5. The southeastern corner of the site abuts the Mississippi River which allows for immediately access to the river. The landing area also provides a land-based mechanical placement option for transfer to the Rolling Prairie Site for permanent placement. When the landing area is used for dredging operations, the Corps coordinates with the MNDNR, which manages and maintains the Upper West Newton Landing boat landing. The West Newton Chute site would still continue to provide an important on-land placement option and transfer site to other nearby permanent placement sites even after it is filled to capacity for permanent placement. Under the proposed Recommended Plan, dredged material will be placed at West Newton Chute and trucked approximately 1.5 miles to the Rolling Prairie permanent placement site. The trucks will use the rural County Road 84 route. This portion of County Road 84 is not heavily travelled and trucks will only travel past three rural residences that are located 500 to 1,500 ft from the route.

Natural Resources. West Newton Chute is an active dredged material placement site. Adjacent land use is mostly agricultural with some residential properties along the river. There appears to be no wetlands, historic properties, or HTRW concerns at this site.

Socioeconomics. Continued use of the site would not change existing land use or be expected to result in adverse impacts to the surrounding area. Material placed at the site would be available for beneficial use by the public.

Site Layout and Preparation. The site is accessible from County Road 84. No site preparation is required since it is an active placement site that is at or near capacity. Alternative site layouts may be used.

Access Improvements. No access improvements are required.

6.3 Island Temporary Placement Sites

The three Federally-owned island placement sites (Above West Newton, Above Fisher Island, and Lost Island) identified in the Recommended Plan have been used historically by the Corps and are retained for contingency purposes. They will be utilized if the land-based temporary, transfer, or placement sites become unavailable, are at capacity or if it's operationally more feasible to use the island sites or would need to be used during emergencies in the future. Additionally, dredge cuts downstream of RM744 would be placed on Lost Island or barged straight to West Newton Chute. The island placement sites provide no beneficial use option. Hydraulic and mechanical placement methods that have been conducted in the past would be used in the future only if the sites are needed.

6.3.1 ABOVE WEST NEWTON

General Description. The island is an existing temporary management and transfer site located in the floodplain and floodway of the Mississippi River and is identified as such in the District's CMMP. There is no land access to this site. Dredged material has been placed on the site in the past and containment berms have been constructed. Rock groins were constructed in 1990 to reduce shoreline erosion.

Ownership. USACE

Size and Capacity.

Site Area:	14 Acres
Maximum Fill Elevation:	696.0 ft
Maximum Capacity:	1,300,000 CY
Remaining Capacity:	740,000 CY
Beneficial Use Removal:	No

Operational Feasibility. This is a temporary placement site suitable for both mechanical and hydraulic placement of material from Pool 5. Past practice has been to use the site for direct hydraulic and mechanical placement from nearby dredge cuts until capacity is reached and it is practical to move. Island offloads occur approximately every 10 years; however, the current capacity is about 740,000 CY.

Natural Resources. The site is bound by bottomland forest and the main navigation channel. There is no vegetation located within the diked containment and material placement site. There are no known Federally-listed T&E species within the placement and containment areas of the site.

Socioeconomics. There is no access to the site by road which prevents beneficial use, but offloaded material has been used beneficially for landfill. Use of the site requires a future offload step that increases dredged material management costs over the 40 year period of the DMMP.

6.3.2 Above Fisher Island

General Description. The island is an existing temporary management and transfer site located in the floodplain and floodway of the Mississippi River and is identified as such in the District's CMMP. There is no land access to this site. Dredged material has been placed on the site in the past and containment berms have been constructed. Rock groins were constructed in 1990 to reduce shoreline erosion.

Ownership. USACE

Size and Capacity.	Site Area:	14 Acres
	Maximum Fill Elevation:	700.0 ft
	Maximum Capacity:	1,000,000 CY
	Remaining Capacity:	380,000 CY
	Beneficial Use Removal:	No

Operational Feasibility. This is a temporary placement site suitable for both mechanical and hydraulic and mechanical placement of material from Pool 5. Past practice has been to use the site for direct hydraulic placement from nearby dredge cuts until capacity is reached and it is practical to move. Island offloads occur approximately every 10 years; however, the current capacity is about 380,000 CY.

Natural Resources. The site is bound by bottomland forest and the main navigation channel. There is no vegetation located within the diked containment and material placement site. There are no known Federally-listed T&E species within the placement and containment areas of the site.

Socioeconomics. There is no access to the site by road which prevents beneficial use, but material from the site has been used beneficially for island construction in Weaver Bottoms. Use of the site requires a future offload step that increases dredged material management costs over the 40 year period of the DMMP. The containment site is also used beneficially for recreation.

6.3.3 LOST ISLAND

General Description. The island is an existing temporary management and transfer site located in the floodplain and floodway of the Mississippi River as is identified as such in the District's

CMMP. There is no land access to this site. Dredged material has been placed on the site in the past.

Ownership. USACE

Size and Capacity.

Site Area:	18 Acres
Maximum Fill Elevation:	700.0 ft
Maximum Capacity:	1,300,000 CY
Remaining Capacity:	1,300,000 CY
Beneficial Use Removal:	No

Operational Feasibility. This is a temporary placement site suitable for both mechanical and hydraulic placement of material from Pool 5. Past practice has been to use the site for direct hydraulic and mechanical placement from nearby dredge cuts until capacity is reached and it is practical to move. Island offloads occur approximately every 10 years; however, it will have nearly full available capacity after the 2019 island offload.

Natural Resources. The site is bound by bottomland forest and the main navigation channel. There is no vegetation located within the disturbed area of the placement site. There are no known Federally-listed T&E species within the placement and containment areas of the site.

Socioeconomics. There is no access to the site by road which prevents beneficial use, but material from the site has been used beneficially for island construction in Weaver Bottoms. Use of the site requires a future offload step that increases dredged material management costs over the 40 year period of the DMMP. The containment site is also used beneficially for recreation.

6.4 Selection of Potential Future Use Sites.

Potential future sites for Pool 5 dredged material management have been identified in both Minnesota and Wisconsin indicated by their orange coloring (Figure 4). These areas were identified from aerial imagery and are large parcels of land that could be used for placement of dredged material. If these additional permanent dredged material placement sites are needed in the future, the following steps will be taken to acquire the property.

1. Identify potential sites that are adequate enough to handle dredged material placement capacity needed at the time.
2. Seek out property from willing sellers, if possible, in the Pool 5 area.
3. Conduct a full environmental review – NEPA, Wetland Delineation, and evaluate sites for any potential contamination.
4. Fulfill all USACE real estate requirements.
5. Choose least-cost, operationally feasible, environmentally acceptable property for the long-term placement of dredged material.
6. If additional sites are needed in the future, appropriate USACE policy and guidance will be followed.

CHAPTER 7.

Evaluation of Environmental Effects

This environmental analysis has been conducted to address compliance with the National Environmental Policy Act (NEPA). This document is tiered off of the Final Environmental Impact Statement for the 9-Foot Navigation Channel Project CMMP EIS published June 6, 1997¹. The tiering off of EIS documents for environmental assessments is appropriate as described in CEQ guidelines 40 CFR 1502.20 and 1508.28.

The Pool 5 DMMP was initiated in 2014 when uncertainty of the future availability of dredged material placement sites in the area and rising dredging costs prompted an effort to identify the best strategy for long-term management of dredged material within the pool. A detailed analysis of potential placement sites, documented in this report, identifies the Recommended Plan as a product of 1) cost effectiveness, 2) close proximity to the river for operational feasibility, and 3) relatively low environmental and social impacts. The Recommended Plan consists of using the existing approved West Newton Chute beneficial use and permanent dredged material placement site as a transfer site prior to hauling the material to the newly selected Rolling Prairie site, also to be used for beneficial use and permanent placement. The Recommended Plan also retains three island placement sites used for temporary placement of dredged material for contingency purposes. The active beneficial use and permanent and temporary sites (Chapter 1; Figure 1) in the Recommended Plan considered and reviewed within previous NEPA documentation include:

- *Beneficial use and permanent placement (West Newton Chute); Temporary placement (Above West Newton; Fisher Island, and Lost Island): Final Environmental Impact Statement, 9-foot Navigation Channel Project, Channel Maintenance Management Plan, Upper Mississippi River, Head of Navigation to Guttenberg, Iowa. St. Paul District, USACE. (June 1997).*
- *West Newton Chute expansion (beneficial use and permanent placement): Environmental Assessment. Dredged Material Management: Lost Island Offload – West Newton Chute Placement. St. Paul District, USACE. (June 2016).*

This analysis has been prepared to assess the environmental consequences of the No-Action Alternative and the Recommended Plan. The discussion below focuses on the environmental effects of impacts associated with transferring dredged material from the West Newton Chute beneficial use and permanent placement site to the newly acquired Rolling Prairie site. To satisfy the requirements of the plan, the Corps is working towards the acquisition of up to 962

¹ As of February 2016, the CMMP EIS is available at:

<http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA328184>

acres from willing sellers which will satisfy the desired 40 years of dredged material placement capacity need. To minimize environmental effects, specific areas within the approximately 962 acres available for, beneficial use and permanent placement of dredged material will be limited as practicable to approximately 830 acres of agricultural upland sites with no wetlands and limited tree cover. However, if avoiding wetlands becomes impracticable due to capacity needs, the District would at that time follow all wetland mitigation sequencing procedures (avoid, minimize, compensate) and prepare a Section 404(b)(1) evaluation needed. To ensure cultural resource are adequately considered, prior to placement USACE will follow the guidelines set forth by the Pool 5 DMMP Programmatic Agreement (see Appendix F) to address potential impacts to cultural resources.

Within the project area, it is anticipated that smaller sub areas (40-80 acre) will be filled incrementally until desired capacity is reached. If land is not being used for placement, it will remain in the same state that the land is currently in (i.e. agricultural row crop and wetland). Upon filling sub areas to capacity, the dredged material will be covered with topsoil and planted with native prairie grasses. The location identified for initial placement of dredged material at the Rolling Prairie site is approximately 75 acres and lies in the northern portion of the parcels located immediately south of and abutting County Road 84. It is anticipated this area will be filled to capacity before other parcels are used; however, other areas within the Rolling Prairie site may need to be considered for initial placement of material as needed. Over the life of the plan most of the 830 acres of upland area identified at Rolling Prairie will be used for dredged material placement. Environmental effects of placing dredged material apply throughout the entire Rolling Prairie placement site under the constraints identified (i.e. upland agricultural land lacking wetlands). If over the course of the project it is determined that the impacts of placing dredged material differ from what is described here, those affects will be reevaluated and additional environmental compliance documentation will be prepared and coordinated as required.

This environmental assessment evaluates the impacts associated with acquiring the approximately 962 acres from willing sellers for the purpose of placing dredged material over the course of the next 40 years. This assessment does not focus on environmental effects to existing sites (i.e. Lost Island, Above Fisher Island, Above West Newton, and West Newton Chute) as they already have completed NEPA documentation. Other sites identified but not selected as part of the Recommended Plan would be need to undergo environmental compliance review, likely including an environmental assessment, prior to their use for dredged material placement. Those sites are identified in Figure 4 and in Section 7.5. The Recommended Plan provides adequate capacity for anticipated dredged material placement for the next 40 years.

The No-Action Alternative, discussed in Section 5.1 of this report, serves as the base condition against which the Recommended Plan is compared for evaluating effects. Existing sites that have already been addressed through previous NEPA documentation are assumed to be part of the No-Action Alternative. The effects of the Recommended Plan are the results of the expected differences in conditions short-term and into the future between the No-Action and the Recommended Plan. The environmental effects of both alternatives are summarized in Table 6.

The effects evaluated under both alternatives are specific to the action of material placement, and do not incorporate the effects of the main channel dredging itself. The effects of the channel dredging were evaluated in the 1997 CMMP EIS. No substantial changes to the Corps' channel dredging operations have occurred since 1997 that are relevant to this assessment. In addition, there are no significant new circumstances or information related to the environmental effects of channel dredging. This evaluation is based on acquiring up to 962 acres, of which up to 830 acres that are available for material placement, to provide an additional 40 year period of channel maintenance and dredged material placement. The environmental effects in this evaluation should apply throughout the entire site under the constraints for placement identified. Environmental effects are expected to be less if the entire 962 acres of land identified in the Recommended Plan is not acquired.

Table 6. Environmental Assessment Matrix.

No Action Alternative				Symbol: X = Long-Term Effects				Recommended Plan						
BENEFICIAL		ADVERSE		PARAMETER				BENEFICIAL		ADVERSE				
SIGNIFICANT	SUBSTANTIAL	MINOR	NO EFFECT	MINOR	SUBSTANTIAL	SIGNIFICANT	X = Long Term Effects ST = Short Term Effects ? = Not Enough Info. Available	SIGNIFICANT	SUBSTANTIAL	MINOR	NO EFFECT	MINOR	SUBSTANTIAL	SIGNIFICANT
A. Social Effects														
				X			Noise Levels					X		
				X			Aesthetic Values					X		
			X				Recreational Opportunities					X		
				?			Transportation					X		
			X				Public Health and Safety				X			
			X				Community Cohesion (Sense of Unity)				X			
			X				Community Growth and Development				X			
			X				Business and Home Relocations				X			
			X				Existing/Potential Land Use						X	
			X				Controversy					X		
B. Economic Effects														
			X				Property Values				X			
			X				Tax Revenue					X		
			X				Public Facilities and Services				X			
			X				Regional Growth				X			
			X				Employment				X			
			X				Business Activity				X			
			X	?			Farmland/Food Supply						X	
				?			Commercial Navigation		X					
				?			Flooding Effects				X			
			X				Energy Needs and Resources				X			
C. Natural Resource Effects														
				X			Air Quality					X		
				?			Terrestrial Habitat		X			ST		
				?			Wetlands				X			
				?			Aquatic Habitat				X			
			X				Habitat Diversity and Interspersion				X			
				X			Biological Productivity		X			ST		
				?			Surface Water Quality				X			
			X				Water Supply				X			
			X				Groundwater				X			
			X				Soils				X			
			X				Threatened and Endangered Species				X			
D. Cultural Resource Effects														
			X				Historic Architectural Values				X			
			X				Prehistoric & Historic Archeological Values				X			

7.1 Socioeconomic Effects

Commercial Navigation. The No-Action Alternative could have adverse effects on commercial navigation that are unknown. Overall, the navigation channel would still be maintained and closures would be unlikely but the inefficiencies of maintaining the channel would result in higher overall costs. However, deteriorated channel conditions (narrower or shallower than would typically be maintained) may result from the just-in-time dredging that would be likely when it is difficult to find material placement locations. The no-action alternative would likely cause an increase in costs incurred by the Federal Government in operating and maintaining the channel in Pool 5 but remains unknown as to the extent. In instances where placement sites are not available when dredging is required, temporary placement sites are sought, which often leads to double-handling the dredged material. Double-handling can nearly double the expense of managing the material. Future unknown costs may be incurred for use of placement sites not owned by the Federal Government. Restoration of additional temporary placement sites may also be necessary, further increasing future unknown costs.

The use of the Rolling Prairie placement site under the Recommended Plan would have minor beneficial effects on commercial navigation by providing sufficient dredged material placement capacity to maintain the navigation channel and ensure reliable navigation.

Noise and Aesthetics. The No-Action Alternative would continue to have a recurring minor adverse impact on noise and aesthetics as dredging and near-by material placement would continue as identified in the 1997 CMMP EIS. The magnitude of the effects is unknown because currently-approved CMMP placement sites will provide dredged material capacity for nearly 40 years; however, using these sites only is extremely costly and the need for a cheaper long-term plan is needed. Noise impacts from dredged material placement typically include noise created by machinery used to place and manipulate the material at the placement site, which could include dozers, loaders, and trucks. Trucks would also be expected at the West Newton Chute beneficial use placement site which offers material free for public use. The impact of this noise is related to what noise receptors are present in the placement area. Aesthetic effects typical of dredged material placement are changes in the way a site looks compared to its present state. Following placement of dredged material, sites usually maintain a sandy characteristic for a long-time. Similarly, the impacts of these aesthetic changes are relative to the visual receptors near the chosen placement site.

The Recommended Plan would include a recurring minor adverse impact on recreation, noise, and aesthetics at the Rolling Prairie and West Newton Chute sites. The degree of impact at the West Newton Chute site would be greater than under the No-Action Alternative. The site is currently active with material placement and excavation on a routine basis for beneficial use annually and material placed on a periodic basis every 10-15 years. Under the Recommended Plan the boat ramp at West Newton Chute would be closed periodically to facilitate offloading of dredged material via the boat ramp. The ramp would be inaccessible to recreational users when in use for dredge material offloading but attempts would be made to open the ramp for weekends and holidays during the open water boating season. Under the Recommended Plan activities would increase to include offloading dredged material with up to 200 round trips taken, half of which would be fully loaded with dredged material per day annually including winter months,

for transport to and from the Rolling Prairie and West Newton placement sites. Trucks would travel the approximate 1.5 mile route fully loaded along County Road 84 to the Rolling Prairie site to offload material. Trucks would travel past three rural residences located 500 to 1,500 ft from County Road 84. Noise would increase during transfer and placement activities as a result of mechanical equipment and increased vehicle traffic. However, the noise levels would return to baseline once placement activities are complete. The described trucking activities would likely occur once every 5 to 10 years on average, over a duration of several weeks or months, with large scale island offloads determining the schedule. Small scale hauling efforts could occur on an annual basis. These trucking operations are subject to operational flexibility by the Corps of Engineers, and will be briefed in advance via public notice to the general public and local government leadership.

The plan for dredged material placement at the Rolling Prairie site would to have the placed material shaped to provide some topographic relief mimicking the nearby Weaver Dunes area similar to how the Corps has managed the West Newton Chute site. As with the West Newton Chute site under the No-Action Alternative, over time as the maximum elevation for placement is reached at the Rolling Prairie placement site, the sand (minus the beneficial use area) would be covered with topsoil and planted with native prairie grasses. Thus, the severity of aesthetic impacts may be more substantial during the period when the prairie is disturbed and topsoil removed at the West Newton Chute site for transfer and when the Rolling Prairie site is partially filled to capacity and placement activities are active. Ultimately, the level of impact for aesthetics is highly subjective and dependent upon the individual.

Agriculture, Land use, and Controversy. The No-Action Alternative may impact agricultural land. However, the magnitude of the effects is unknown because additional placement areas are unidentified under this alternative. Impacts would appear likely given the abundance of agricultural lands in the Pool 5 floodplain, and the comparatively less environmental regulations associated with placing dredged material on agricultural land compared to other sensitive environmental areas. Impacts to agriculture stems from the complete conversion of land-use from agricultural to unusable, barren sand.

There may be some controversy with the Recommended Plan relating to the conversion of agricultural land to a dredged material placement site at Rolling Prairie. Currently, approximately 650 of the 962 acre Rolling Prairie site is used for row crop agricultural use which would be converted to dredged material placement site use over the next 40-years. This equates to approximately 0.5% of the total 128,000 acres of row crop agriculture present in Wabasha County. Conversion of the land from private agricultural to Federally-owned land could result in a loss of property tax revenue to Wabasha County. Impacts to agriculture land would potentially be substantially greater under the Recommended Plan compared to the No-Action Alternative. To the extent practical, the District will consider measures to minimize impacts over time. For example, the District plans to offer leases that would allow farming to occur on areas of these placement sites until such time that they are needed for dredged material placement. Thus conversion would occur incrementally over the forty year life of the project as the site is filled to capacity. With the identification of specific agricultural areas under the Recommended Plan, the District has coordinated with the U.S. Department of Agriculture Natural Resources Conservation Service (USDA/NRCS) to convey impacts, including those to

potential prime farmland (see Appendix A: Coordination and Correspondence). The USDA/NRCS determined that if prairie restoration as planned of the site following dredged material placement occurs, there will be no irreversible conversion of important farmland to nonagricultural uses.

Transportation. The No-Action Alternative may impact transportation. The magnitude of the effects is unknown because placement areas and associated movement of material to those sites are unidentified under this alternative. Impacts would appear likely given the increased challenges of floodplain placement of dredged material in Pool 5. Placement of material outside the floodplain would likely involve truck movement, which may strain infrastructure and exacerbate traffic concerns.

The use of the new Rolling Prairie placement site under the Recommended Plan will require a substantial amount of dredged material to be moved by truck over a 1-2 mile stretch of County Road 84 between the West Newton Chute and Rolling Prairie placement sites. Given the short travel route in a rural area with only three rural residences along the County Road 84 travel route, there should be minor adverse effects to traffic. Given the close proximity of the sites, trucking could occur year round to include during winter months. During trucking operations, it is estimated that 200 or more additional heavy truck round trips per day could occur on County Road 84 over an extended period of time.

Additional truck traffic on County Road 84 is unlikely to increase congestion on area streets and highways given low number of rural residence present, thus there should be no increased risk of vehicle collisions. Increase truck traffic would likely increase wear and tear on County Road 84. Impacts would occur during periods when material is being relocated from one placement site to another, and likely would not be more than 180 days per year.

Environmental Justice. It is unlikely the No-Action Alternative would significantly impact minority, low-income or other groups. Although the long-term placement areas and associated movement of material to those sites are unidentified under this alternative, it appears unlikely such an action would disproportionately affect disadvantaged groups.

The use of the Rolling Prairie placement site under the Recommended Plan would occur within a single block group identified through the EPA Environmental Justice Mapping tool (2018). While social and economic effects would occur under the Recommended Plan, it appears unlikely these effects would be disproportionately applied to low-income, minority or other groups. Given the close proximity of the Rolling Prairie and West Newton placement sites, and localized activity, the greatest effects would occur at the individual level (affected landowners) and not among broader socioeconomic groups.

7.2 Natural Resource Effects

7.2.1 PHYSICAL SETTING

Hydrology. The No-Action Alternative may temporarily impact the one-percent flood profile. The magnitude of such an effect, if it would occur, is unknown because placement areas are unidentified under this alternative. Emergency side-cast placement of material adjacent to the channel may increase flood heights as long as that material persisted. However, the effects would be temporary because the dredged material would be moved to a location either outside of the floodplain or to an area already considered within the current flood map. Maintenance dredging usually follows high water or flood flow events.

The use of the Rolling Prairie placement site under the Recommended Plan would have no effect on the one-percent flood profile. The proposed new placement site within the Recommended Plan is outside of the 100-year floodplain and would not impact flood heights for a 100-year event. Existing drainage patterns within the site following placement of dredged material may be interrupted. However, material placed in areas that would impede water drainage patterns will be graded and new culverts added to facilitate run off and avoid pooling. Existing culverts will not be blocked and will remain functional. Placement of material near the levee bordering the Zumbro River along the northeast portion of the site will be set back sufficiently so that the levee can be maintained and existing drainage patterns are not disturbed. If the swale along the northwest portion of the site is filled with material, a new ditch along the toe of the material will be established and flap gated culvert installed in the existing levee to route run off.

7.2.2 AQUATIC HABITAT/WETLANDS

Under the No-Action alternative, there may be adverse impacts to aquatic habitat or wetlands of an unknown magnitude. The magnitude of the effects is unknowable because both the dredging quantities and placement areas are unidentified under this alternative. Placement of materials in aquatic habitats or wetlands is typically avoided, if at all possible, but may be necessary under certain conditions and if no alternative, practicable placement sites can be identified. Impacts typical of dredged material placement in aquatic areas include the smothering of any substrate-dwelling macroinvertebrates present at the site and conversion of the area to a sandy substrate (or conversion to land, if enough material is placed). Ultimately, the risk for undesirable effects to biological resources is greater under this alternative relative to the Recommended Plan.

The Recommended Plan would have no impacts to wetlands in the near-term. Approximately 160 of the 962 acres of the Rolling Prairie placement site contains wetland and would be avoided during dredged material placement to the extent practicable for the duration of the plan. Appendix E contains results of a wetland assessment which identify wetland signatures that strongly correlate with concave and flat landscape positions and elevations at 670' and lower. However, if avoiding wetlands later becomes impracticable due to capacity needs, the District will prepare a Section 404(b)(1) evaluation before the wetland is filled. In addition, the District would mitigate for any unavoidable wetland impacts according to current policy at that time.

At this time, it is assumed that the only means of placement at the Rolling Prairie site would be by mechanical means. Therefore, no carriage water nor associated run off would result from the Recommended Plan.

7.2.3 TERRESTRIAL HABITAT

Under the No-Action Alternative, there may be adverse impacts to terrestrial habitat of an unknown magnitude. The magnitude of effects is unknowable because the placement areas are unidentified under this alternative.

Placement of materials in native or valuable terrestrial habitats is typically avoided, if possible, but may be necessary under certain conditions and if no alternative, practicable placement sites can be identified. There is an increased risk that without pre-identified sites the Corps would have to do emergency placement in terrestrial habitat. While undesirable, this could happen in the event of an emergency closure of the navigation channel. Impacts typical of dredged material placement in terrestrial areas include the clearing of trees and smothering of understory vegetation. Any terrestrial areas used for dredged material placement would be transformed into relatively barren sandy areas. Mobile biota would temporarily avoid the area during disturbance, and could avoid the area longer if habitat is substantially altered. Ultimately, the risk for undesirable effects to terrestrial habitat is greater under this alternative relative to the Recommended Plan.

The Recommended Plan would have a minor short term adverse effect but a minor long term beneficial effect on terrestrial habitat and associated wildlife. Under this alternative, the majority of placement would be on existing agricultural land, which has limited value as terrestrial habitat. Wildlife using the new Rolling Prairie placement site for feeding or other uses would be disturbed during and displaced following placement of dredged material. However, other agricultural lands found throughout the area would provide similar functions. These temporary impacts would occur yearly to meet the long-term needs for dredged material placement. Tree clearing to facilitate access is not anticipated. The Rolling Prairie site will be restored to native prairie after dredged material is placed providing minor long term beneficial effects to terrestrial habitat and associated wildlife at the site.

7.2.4 THREATENED AND ENDANGERED SPECIES

Under the No-Action Alternative, the effects to threatened and endangered species are unknown because both the dredging quantities and placement areas are unidentified. If possible, the Corps would avoid placing dredged material in areas where endangered species have been found or where they may have a likelihood of occurring. However, there is an increased potential risk that without pre-identified sites the Corps would have to do emergency placement in potentially sensitive areas such the main channel border. While extremely rare, the endangered Higgins eye is present in Pool 5 and could be impacted by unplanned side cast placement. Similarly, unplanned emergency placement in adjacent floodplain areas could disrupt bald eagles.

Although the bald eagle (*Haliaeetus leucocephalus*) is no longer protected under the Endangered Species Act, it remains protected under the Bald and Golden Eagle Protection Act. Although typically required for preparation of dredge material placement activities at newly acquired sites,

tree clearing to facilitate placement of dredged material will likely not be required for the Recommended Plan, thus no effects to northern long-eared bats are anticipated.

The Corps has determined that no Federally-listed threatened or endangered species would be impacted under the Recommended Plan. The following paragraphs describe the rationale for this determination:

- No suitable habitat for freshwater mussels, including the Higgins eye, sheepsnose, or spectaclecase, as described in Chapter 2.5.5, would be impacted under the proposed project.
- The proposed action would not include wide-spread clearing of forest or individual trees. Therefore, impacts to roosting or rearing areas are not anticipated and no effects to northern long-eared bat are expected.
- No suitable habitat for eastern massasauga rattlesnake would be expected in the newly acquired Rolling Prairie site. The newly proposed sites are upland and are largely agricultural lands or otherwise disturbed areas. No effects to this species would be expected from the proposed action.
- No suitable habitat for rusty patch bumblebee would be expected in the newly proposed placement areas. The newly acquired Rolling Prairie site is largely agricultural land or otherwise disturbed areas. No effects to this species would be expected from the proposed action.
- If an eagle nest is discovered within proximity to the placement site, measures to avoid and minimize impacts to the eagles would be evaluated and incorporated into the project as necessary (in accordance with the National Bald Eagle Management Guidelines), and the action would be coordinated with the USFWS.

State-Listed Rare Species. Under the No-Action Alternative, the effects to State Listed rare species are unknown because both the dredging quantities and placement areas are unidentified.

Because the Recommended Plan sites are terrestrial, the assessment of State Listed rare species will focus on terrestrial and wetland species. No suitable aquatic habitat for freshwater mussels or fish would be impacted under the Recommended Plan. No suitable terrestrial or wetland habitat would be impacted by the acquisition and use of the Rolling Prairie site. The site is primarily agricultural land or previously disturbed and would not be expected to serve as primary habitat for State Listed species. No effects are expected to State Listed species from the use of the West Newton Chute site and transfer of material. The site is an active disturbed dredged material placement site that doesn't provide suitable terrestrial or wetland habitat.

Potential State of Minnesota-listed species were identified from information available in the Minnesota Natural Heritage Database (MNHD). Locations of the new proposed placement sites were compared to available MNHD data within ArcView GIS to identify the presence of potential State listed species. This list was filtered to those species that could potentially be present at the proposed new placement areas. Minnesota species of concern are listed in Table 7.

Table 7. Minnesota Terrestrial State Protected Species with Records that could be within One Mile of the Recommended Plans New Dredge Material Placement Sites*.

Common Name	Scientific Name	Status in Minnesota**
Plants		
Clasping Milkweed	<i>Asclepias amplexicaulis</i>	THR
Davis' Sedge	<i>Carex davisii</i>	THR
Gray's Sedge	<i>Carex grayi</i>	SC
Green Dragon	<i>Arisaema dracontium</i>	SC
Rhombic Evening Primrose	<i>Oenothera rhombipetala</i>	SC
Seaside Three-Awn	<i>Aristida tuberculosa</i>	SC
Swamp White Oak	<i>Quercus bicolor</i>	SC
Sweet-Smelling Indian Plantain	<i>Hasteola suaveolens</i>	END
Yellow-Fruit Sedge	<i>Carex annectens</i>	SC
Reptiles/Amphibians		
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR
Gophersnake	<i>Pituophis catenifer</i>	SC
Wood Turtle	<i>Glyptemys insculpta</i>	THR
Birds		
Bell's Vireo	<i>Vireo bellii</i>	SC
Lark Sparrow	<i>Chondestes grammacus</i>	SC
Red-Shouldered Hawk	<i>Buteo lineatus</i>	SC

*Copyright 2019, State of Minnesota, Department of Natural Resources (DNR). Rare Features Data included here were provided by the Division of Ecological and Water Resources, Minnesota DNR, and were current as of January, 2019. These data are not based on an exhaustive inventory of the state. The lack of data for any geographic area shall not be construed to mean that no significant features are present.

** (END = Endangered; THR = Threatened; SC = Special Concern).

Prior to placement of dredged material at the Rolling Prairie site when specific areas identified for material are known, best management practices and avoidance measures for impacts to state listed turtle species, Blanding's turtle and wood turtle, will be coordinated with MNDNR Environmental Review Coordinator.

7.2.5 AIR QUALITY

Both the No-Action and the Recommended Plan would have a temporary, recurring, minor adverse effect on air quality, both of a similar scope, but likely in different locations within the pool.

Construction air quality effects would consist primarily of emissions from construction equipment, including the dredge, barges, skiffs, excavators, dozers, and dump trucks. The area surrounding the proposed project is in attainment for all criteria pollutants, meaning air quality in the area is relatively good.

Under the No-Action Alternative, effects to air quality would be as described in the CMMP EIS for as long as capacity remains at available placement sites in Pool 5. If material placement

needs exceed capacity, effects would depend on the options chosen for material placement, which are currently unknown.

The Recommended Plan would result in recurring, minor adverse effects to air quality. Emissions would be generated by increased truck traffic in the study area during periods when trucks are transporting sand to and from the two placement sites. The Recommended Plan has been reviewed for compliance with the rules provided by the Federal Clean Air Act and for potential impacts of project-generated greenhouse gas emissions and their effect on climate change.

The 1990 Federal Clean Air Act Amendments dictate that a conformity review be performed when a Federal action generates air pollutants in a region that has been designated a non-attainment area for one or more of the six NAAQS criteria pollutants. Wabasha County is in “attainment” of the NAAQS for each of the criteria pollutants, so no conformity review is required for the proposed project.

Greenhouse gas (GHG) emissions and their effect on climate change are global issues resulting from numerous and varied sources, with each source making a relatively small addition to global atmospheric GHG concentrations, but which collectively have a large impact on a global scale. Although climate changes in the past have been caused by natural factors, human activities are now the dominant agents of change. Human activities are affecting climate through increasing atmospheric levels of heat-trapping gasses, including those emitted by the combustion of fossil fuels (e.g., Mellilo et al. 2014). The proposed project would be expected to produce greenhouse gasses during project activities in the form of exhaust from various types of machinery used for material transport and material placement. The Council for Environmental Quality (CEQ) released final guidance in August 2016 recommending that agencies use projected GHG emissions associated with proposed actions as a proxy for assessing proposed actions’ potential effects on climate change, along with a qualitative summary discussion of the impacts of GHG emissions to present the environmental and public health impacts of the proposed action.

The amount of greenhouse gas emissions can vary widely due to many variables, including (but not limited to) the type and condition of equipment used, and the distance the material is moved. Approximately 35 additional heavy trucks per day could be on local roadways annually. The distance traveled would be approximately a 3.0 mile round-trip distance between the West Newton Chute and Rolling Prairie sites, this equates to 37,800 miles of hauling annually. Using reported figures for the average fuel usage of typical dump trucks (DOE 2015) and the life-cycle GHG emissions associated with production, transport, and consumption of diesel fuel, it is estimated that transport and placement associated with this level of truck traffic would result in the release of between 79-189 metric tons of CO₂-equivalent greenhouse gas emissions per year.

Project activities would comply with applicable Federal, state, and local laws regarding pollution control mechanisms on equipment.

7.3 Cultural Resource Effects

Under the No-Action Alternative, the effects to cultural resources are unknown because both the dredging quantities and placement areas are unidentified. If possible, the Corps would avoid placing dredged material in areas where cultural resources have been found or where they may have a likelihood of occurring. However, there is an increased potential risk that without pre-identified sites the Corps would have to do emergency placement in potentially sensitive areas harboring cultural resources.

The proposed project has the potential to impact cultural resources. The project area has not yet been surveyed for cultural resources. Portions of the project area contain a high probability to contain precontact archaeological sites, namely topographic high spots (e.g., elevations above 670 feet above mean sea level) adjacent to former channels of the Zumbro River, along terraces and relict dunes. Aerial photographs and historic maps indicate that at least three farmsteads occupied the area since the early 20th Century. Eleven precontact sites (burial mound groups, lithic and artifact scatters) are documented within one mile of the project area.

Because cultural resource surveys have not been completed it is unknown if any cultural resources that may be identified in the project area are significant and eligible for listing on the NRHP. It is unknown if human burials, both precontact and historic, are located within the project area. If significant sites and human remains are identified, portions of the project area may be precluded from dredged material placement activities. In this eventuality, development of appropriate cultural resources management plans in consultation with various partners (e.g., Native American groups, U.S. Fish and Wildlife Service, Office of the State Archaeologist, State Historic Preservation Office [SHPO], etc.) will be necessary.

Because it is not possible to assess effects to cultural resources at this point in the project, the Corps has developed a Programmatic Agreement (PA) with the Advisory Council on Historic Preservation, the SHPO, Native American groups and other parties (Appendix F). The PA outlines procedures to identify, evaluate, and manage cultural resources within the project area prior to any dredged material placement activities.

7.4 Cumulative Effects

The Recommended Plan is a component of the much larger set of plans and actions undertaken as maintenance of the 9-Foot Navigation Channel on the UMR. The cumulative effects of the Recommended Plan would include those discussed in the 1997 CMMP EIS (USACE 1997), as well as additional impacts that would come with use of the newly acquired Rolling Prairie dredged material placement site including handling and transport of material from the existing West Newton Chute placement site.

7.4.1 SCOPE OF CUMULATIVE EFFECTS ANALYSIS

Cumulative effects are defined by the Council on Environmental Quality as, “[T]he impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” 40 CFR § 1508.7.

7.4.2 ACTIONS IDENTIFIED WITHIN THE PROJECT IMPACT ZONE

Chapter 3 discusses past and ongoing projects that have been identified in the vicinity of UMR Pool 5 that also impact local resources. These include a designated wildlife refuge and habitat improvement project; and a number of transportation related activities including the UMR navigation channel, commercial and recreational boat harbors, barge mooring facility at a coal fired power plant, and three railroads. In addition to assessing the cumulative effects for past and ongoing projects, future foreseeable projects in the vicinity of the UMR Pool 5 also need to be addressed.

The following past, present, and reasonably foreseeable future actions were identified as having the potential to interact with or have impacts related to those of the proposed project.

PAST ACTIONS

MODIFICATIONS TO THE UPPER MISSISSIPPI RIVER FOR NAVIGATION

The floodplain geomorphology, stream hydraulics, and water levels of the Upper Mississippi River have been modified by impoundment and other navigation features since the 1820s. The most relevant navigation improvement actions within the project impact area are likely the construction of hundreds of channel training structures placed between 1866 and 1907 as part of the 4-foot, 4.5-foot, and 6-foot navigation channel projects. Following the construction of these structures was the construction of Lock and Dam Number 5 in 1935, which raised water levels by several feet in the immediate project area and allowed for a 9-foot-deep navigation channel. The cumulative effect of these actions has played a large role in the development of the habitat that currently exists in the project area.

NATIONAL WILDLIFE REFUGE

The UMR National Wildlife and Fish Refuge was established in 1924 as a refuge for fish, wildlife, and plants and a breeding place for migratory birds. The Refuge encompasses one of the largest blocks of floodplain habitat in the lower 48 states, and stretches through four states along the Mississippi River: Minnesota, Wisconsin, Iowa, and Illinois. Bordered by steep wooded bluffs that rise 100 to 600-ft above the river valley, the Mississippi River corridor and refuge offer scenic beauty and productive fish and wildlife habitat unmatched in the heart of

America. The Refuge covers just over 240,000-acres and extends 261 river miles from north to south at the confluence of the Chippewa River in Wisconsin to near Rock Island, Illinois.

RAILROADS.

While railroads parallel both sides of the river, there are no railroad bridge crossings of the Mississippi River in Pool 5. On the Wisconsin side, a pair of Burlington Northern and Santa Fe railroad tracks lie riverward of State Hwy 35. On the Minnesota side, a pair of Canadian Pacific railroad tracks are set back from the river and generally follow along U.S. Hwy 61. Both rail lines were constructed prior to 1890 and have been operational to this day

CONSTRUCTION OF THE COMMERCIAL AND RECREATIONAL HARBORS.

Great River Harbor is a small marina and campground located near Belvedere Slough on the Wisconsin shoreline. There are no other commercial marinas in the study area.

DAIRYLAND POWER COOPERATIVE.

A barge mooring and unloading facility was constructed adjacent to the main channel in the late 1940s at the retired Alma Station power plant located just south of Alma, Wisconsin in Buffalo County near river mile 751. The John P. Madgett coal fired electrical power station was constructed on the site in the 1970s and continues to utilize the Alma Station barge mooring and unloading facility.

WEAVER BOTTOMS.

In the mid-1980s the Corps constructed two new islands (Swan and Mallard) and stabilized others in Weaver Bottoms under the Channel Maintenance program. The Corps has modified and maintained the islands since initial construction. The project resulted in improved floodplain habitat, redirected flows, reduced impacts of wind-generated wave action, and enhanced and protected vegetation. Trees were planted on the islands for future eagle nesting, sand areas were developed for turtle nesting, and mud flats were developed to promote vegetation growth for waterfowl and shorebird loafing and feeding areas. Backwater dredging was performed to increase connectivity and bathymetric diversity for fisheries.

MCCARTHY LAKE WILDLIFE MANAGEMENT AREA

The Minnesota DNR has established and manages the 3,129 acre McCarthy Lake WMA which lies immediately adjacent to the southern border of the Rolling Prairie site. The site is managed with an emphasis on maintaining a rich, diverse interspersed of numerous communities throughout the wildlife area. Timber management, prescribed burning, nesting cover development and maintenance practices are utilized. The WMA contains mixed upland and lowland hardwoods of oak, maple, ash, birch, cottonwood and willow. Upland fields consist of native warm and cool season grasses. The former channel of the Zumbro River dissects the unit and has created numerous wetlands including wild rice. Recreation is dominated by hunting, trapping, fishing and general wildlife observations. Sandhill cranes, eagles, tundra swans and numerous shore birds may be commonly observed.

WEAVER DUNES PRESERVE AND KELLOGG WEAVER DUNES SCIENTIFIC AND NATURAL AREA

The Nature Conservancy (TNC) established the 1,516 acre Weaver Dunes Preserve near Kellogg, MN near the Rolling Prairie site. In 1982, TNC sold the northern 697 acres of the site to the MNDNR which established the Kellogg Weaver Dunes SNA. TNC currently manages the remaining 819 acres as the Weaver Dunes Preserve. Collectively the sites contain a unique prairie and sand dune and terrace ecosystem that offers important habitat for many rare plants, insects, and animal species. The site is an Audubon Important Bird Area and provides primary nesting habitat for the Blanding's turtle, one of the most significant populations of the species throughout its limited range in the U.S. and Canada.

CONCURRENT AND ONGOING ACTIONS

NAVIGATION ON THE UMR

The operation, maintenance, and navigation use of the main channel of the UMR at its current authorized level is expected to continue into the future.

DREDGED MATERIAL MANAGEMENT : LOST ISLAND OFFLOAD – WEST NEWTON CHUTE PLACEMENT

The offloading of the stored dredged material from the Lost Island Temporary Placement Site to the West Newton Chute Placement Site for permanent and beneficial use is currently being conducted. The project involves transferring up to 1,300,000 CY of material from 2016 to 2019. The project provides future capacity at the Lost Island Temporary Placement Site for dredged material to ensure the continued availability of the 9-foot navigation channel for commercial navigation for the 9-Foot Navigation Channel project within the St. Paul District.

REASONABLE FORESEEABLE FUTURE ACTIONS

To satisfy the requirements of the plan for placement of material over 40 years, property needed to be acquired from willing sellers within the Pool 5 project area interested in selling all of their property in a one-time payment. Parsing out the land and buying it in piecemeal was not an option at this site. Approximately 4,700,000 CY of dredged material will be placed over 40 years out of a total capacity of 18,500,000 CY available at the Rolling Prairie site. This leaves an area capable of holding 13,800,000 CY of material unused for the foreseeable future. Smaller sub areas within the site will be filled incrementally until desired capacity is reached. Land not being used for placement will remain in the same state that the land is currently in (i.e. agricultural row crop and wetland). Land adjacent to the site is primarily row crop agricultural with lesser amounts owned and managed by the MNDNR and TNC as wildlife and natural areas. Likewise, it's anticipated these land uses will continue to be used in their present state into the foreseeable future.

CONSEQUENCES OF CUMULATIVE EFFECTS

The proposed action includes the continued use of an existing and active placement site (West Newton Chute) and the use of newly acquired placement site (Rolling Prairie) of which the

majority is upland and in active agricultural production with ongoing disturbance and limited natural resources. The proposed action will not have an adverse significant impact to natural resources when added collectively to the other past, present and reasonably foreseeable actions in Pool 5. The Rolling Prairie site will be restored to native prairie after dredged material is placed providing minor beneficial effects to natural resources in the area. The proposed project would have no significant cumulative adverse or beneficial effects.

TRANSPORTATION AND COMMERCIAL NAVIGATION

The transportation related projects (including the Recommended Plan) provide a cumulative benefit of maintaining and improving transportation routes and modes in the project area, including commercial navigation on Pool 5. The outcome of the future disposition study would affect commercial navigation in the upper pools, but the effect on navigation in Pool 5 would likely be limited and there would be no cumulative adverse effect from the proposed action.

NATURAL RESOURCES.

Many of the identified projects have had both positive and negative impacts on natural resources in the region. The transportation projects such as the railroads, harbors, and existing navigation channel likely impacted terrestrial and aquatic habitat and wetlands in the Mississippi River floodplain when they were constructed. The National Wildlife Refuge, Weaver Bottoms project, McCarthy Lake WMA, and the Weaver Dunes Preserve in the area preserve and protect thousands of acres of terrestrial, aquatic, and wetland habitat. The proposed project is not anticipated to impact aquatic habitat or wetlands and will only have a marginal short term adverse impact to terrestrial habitat and associated wildlife and biological productivity but would be temporary and expected to have no long term appreciable impacts regionally.

At the Rolling Prairie site, land not being used for placement of dredged material would be left in its current state and after placement of material would be restored to native prairie. Upon filling sub areas within Rolling Prairie to capacity, the dredged material will be shaped to topographically mimic adjacent natural areas, covered with topsoil, and planted with native prairie grasses. Restored prairie within Rolling Prairie should remain into the foreseeable future thus restoring row crop agricultural land to its previous state and providing a long term benefit to natural resources by increasing the extent and connectivity of natural prairie and wetlands within the area.

CHAPTER 8.

Environmental Compliance and Review

8.1 Applicable Environmental Laws and Executive Orders

The proposed action would comply with Federal environmental laws, EOs and policies, and applicable state and local laws including but not limited to the Clean Air Act, as amended; the Clean Water Act, as amended; the Endangered Species Act of 1973, as amended; the Fish and Wildlife Coordination Act of 1958, as amended; the Land and Water Conservation Fund Act of 1965, as amended; the National Historic Preservation Act of 1966, as amended; the National Environmental Policy Act of 1969, as amended; EO 11990, Protection of Wetlands; EO 12898, Environmental Justice; the Farmland Protection Policy Act of 1981; and EO 11988, Floodplain Management.

8.2 Public Involvement

A public notice of availability of the Draft Report was published on 13 September 2019 on the Corps website (www.mvp.usace.army.mil/Home/PublicNotices.aspx). A public meeting was held at the St. Agnes Church in Kellogg, MN on 26 September 2019 to discuss the project and obtain public input. The 30 day public review period of the Draft Report ended 18 October 2019. The results of the meeting and comments obtained from the review period are documented in Appendix H, *Agency and Public Comments with Responses*.

8.3 Coordination

Planning for the overall project has been coordinated with the public, state and Federal agencies, and other interested parties. Descriptions of compliance efforts for certain regulations are found in Table 8 and as follows:

8.3.1 CLEAN WATER ACT

Discharges of dredged or fill material into waters of the United States must comply with Section 404 of the CWA. The Recommended Plan is not anticipated to impact any wetlands. Impacts to wetlands will be avoided during dredged material placement at the Rolling Prairie site to the extent practicable for the duration of the plan. However, if avoiding wetlands later becomes impracticable due to capacity needs, the District will conduct an evaluation in accordance with Section 404(b)(1) of the Clean Water Act, prior to placing any fill in wetlands. When hydraulic dredging methods are used to place material at the West Newton Chute site, excess carriage

water would be returned to the river. This discharge is addressed in Nationwide Permit 16, which also includes Section 401 Water Quality Certification from the MPCA

8.3.2 RIVERS AND HARBORS ACT

Compliance with Section 10 of the Rivers and Harbors Act of 1899 is required for activities conducted below the Ordinary High Water elevation of navigable waters of the United States (33 U.S.C. 403). The proposed action would be in compliance with Section 10. Use of these new placement sites would not result in any appreciable differences with dredging operations as it relates to Section 10 compliance, relative to existing dredging activities.

8.3.3 ENDANGERED SPECIES ACT

In compliance with the Endangered Species Act of 1973 (16 U.S.C. § 1531), project plans have been coordinated with the USFWS (Appendix A). USFWS also will have the opportunity to review this report and Environmental Assessment.

8.3.4 FISH AND WILDLIFE COORDINATION ACT

In compliance with the Fish and Wildlife Coordination Act (16 U.S.C. 661-667), project plans have been coordinated with the USFWS and the Minnesota and Wisconsin DNRs (Appendix A). These agencies also will have the opportunity to review this report and Environmental Assessment.

8.3.5 STATE PERMITS

No fill of material, carriage water return or associated run off, or work in state of Minnesota waters is anticipated as dredged material will involve upland mechanical transfer and placement of material from the West Newton Chute site to the Rolling Prairie site, thus no 401 Water Quality Certification or Public Waters Works Permit from Minnesota is required for use of the Rolling Prairie site. The Rolling Prairie site will be added to the Minnesota Pollution Control Agency (MPCA) Solid Waste Disposal Site (SDS) programmatic permit for Corps dredged material placement sites prior to dredged material placement activities.

8.3.6 CULTURAL RESOURCES

The Recommended Plan is a Federal undertaking which may have the potential to cause adverse effects on historic properties. Therefore, it is subject to the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. § 306108, et seq.) (NHPA) and its implementing regulations 36 CFR Part 800 - Protection of Historic Properties.

Development and execution of a programmatic agreement (PA) is appropriate and has been executed pursuant to 36 CFR § 800.14(b)(1)(ii) (Appendix F). Consulting parties include the Advisory Council on Historic Preservation, the Minnesota State Historic Preservation Office, various Native American groups and possibly other parties.

8.3.7 FARMLAND PROTECTION POLICY ACT

In compliance with the Farmland Protection Policy Act (FPPA) of 1981, the United States Department of Agriculture Natural Resources Conservation Service (USDA/NRCS) has been coordinated with regarding irreversible conversion of prime and important farmland to non-agricultural uses. Although Prime Farmland occurs on the Rolling Prairie site, it's the USDA/NRCS determination that if prairie restoration as planned of the site following dredged material placement occurs, there will be no irreversible conversion of important farmland to nonagricultural uses.

8.4 Distribution of Draft Environmental Assessment

This EA has been provided via computer on the following website:

<http://www.mvp.usace.army.mil/Home/PublicNotices.aspx>. A notice of availability was sent to interested citizens and the following agencies:

FEDERAL

U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Geological Survey
U.S. Coast Guard
U.S. Department of Agriculture

OTHERS

Libraries and City Hall Offices of Kellogg and Wabasha, Minnesota; Buffalo City and Alma, Wisconsin

Property Owners

STATE OF WISCONSIN

Department of Natural Resources

Adjacent Property Owners

RAILROADS

STATE OF MINNESOTA

Department of Natural Resources
Pollution Control Agency

Canadian Pacific Railroad
Burlington Northern Santa Fe Railroad

8.5 Comments on the Environmental Assessment

Comments were requested and welcomed on the draft report and environmental assessment from September 16, 2019 to October 18, 2019. All public comments were carefully considered and are addressed in Appendix H: Agency and Public Comments with Responses. If there are additional inquiries and questions, please send them to the St. Paul District, U.S. Army Corps of Engineers, ATTN: Mr. Dan Kelner, CEMVP-PD-C, 180 Fifth Street East, Suite 700, St. Paul, MN 55101, or by email to: Daniel.E.Kelner@usace.army.mil.

Table 8. Compliance Review with All Applicable Environmental Regulations and Guidelines.

Environmental Requirement	Compliance¹
<i>Federal Statutes</i>	
Archaeological and Historic Preservation Act	Full
Bald and Golden Eagle Protection Act of 1940, as amended	Full ²
Clean Air Act, as amended	Full
Clean Water Act, as amended	Full
Coastal Zone Management Act, as amended	N/A
Endangered Species Act of 1973, as amended	Full
Federal Water Project Recreation Act, as amended	Full
Fish and Wildlife Coordination Act, as amended	Full
Land and Water Conservation Fund Act of 1965, as amended	Full
Migratory Bird Treaty Act of 1918, as amended	Full
National Environmental Policy Act of 1969, as amended ³	Full
National Historic Preservation Act of 1966, as amended ⁴	Full
National Wildlife Refuge Administration Act of 1966	Full
Noise Pollution and Abatement Act of 1972	Full
Watershed Protection and Flood Prevention Act	N/A
Wild and Scenic Rivers Act of 1968, as amended	N/A
Farmland Protection Policy Act of 1981	Full
<i>Executive Orders, Memoranda</i>	
Floodplain Management (EO 11988)	Full
Protection and Enhancement of Environmental Quality (EO 11514)	Full
Protection and Enhancement of the Cultural Environment (EO 11593)	Full
Protection of Wetlands (EO 11990)	Full
Analysis of Impacts on Prime and Unique Farmland (CEQ Memorandum, 30 August 1976)	Full

¹ The compliance categories used in this table were assigned according to the following definitions:

- a. Full - All requirements of the statute, EO, or other policy and related regulations have been met for the current stage of planning.
- b. Partial - Some requirements of the statute, EO, or other policy and related regulations remain to be met for the current stage of planning.
- c. Noncompliance (NC) - Violation of a requirement of the statute, EO, or other policy and related regulations.
- d. Not Applicable (N/A) - Statute, EO, or other policy and related regulations not applicable for the current stage of planning.

² No bald eagles currently reside in the study area.

³ Full compliance of National Environmental Policy Act of 1969, as amended will be achieved with the District Engineer's signing of the Finding of No Significant Impact (Appendix C).

⁴ A Programmatic Agreement has been signed and compliance satisfies the Corps' Section 106 responsibilities for all individual undertakings of the program covered by the agreement, see 36 CFR 800.14(b) (Appendix F).

CHAPTER 9. References

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Wisconsin Department of Natural Resources. 2013a. Wisconsin Eastern Massasauga Species Guidance. Bureau of Natural Heritage Conservation, WI Department of Natural Resources, Madison, WI. PUB-ER-713.

Wisconsin Department of Natural Resources. 2013b. Wisconsin Northern Long-Eared Bat Species Guidance. Bureau of Natural Heritage Conservation, WI Department of Natural Resources, Madison, WI. PUB-ER-700.

Appendix A

Coordination & Correspondence

Pool 5 Dredged Material Management Plan

Upper Mississippi River

Wabasha and Winona Counties, Minnesota

Buffalo County, Wisconsin



**US Army Corps
of Engineers**

St. Paul District

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REPLY TO
ATTENTION OF

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

November 15, 2016

Regional Real Estate Division North
Planning & Acquisition

RE: Public Meeting at VFW Post 4086, Wabasha, MN, on December 15, 2016

The U.S. Army Corps of Engineers is required by law to maintain a nine foot channel in the Mississippi River. In order to meet this requirement, the Congress has mandated that we provide for the storage of any dredged materials and provide a forty (40) year plan for such storage.

To meet those requirements, the St. Paul District Corps of Engineers has identified certain lands in Pool 5 that would be suitable for the purpose of such storage of dredged materials. We are currently in the planning process and want to share with all concerned property owners in the area our needs, processes and procedures.

To do this, we have set up a public meeting on December 15, 2016 at 6:00 PM, at the VFW Post 4086, located at 138 2nd Street E, Wabasha, Minnesota 55981. At this meeting, we will fully explain the laws and Congressional requirements for the channel maintenance and storage of the dredged material, the real estate selection process and the procedures once a final site is selected. We will have Corps personnel present from project management, operations and river management and real estate to explain the project and to answer questions.

Please join us and learn about this project and be prepared to ask questions about how it will proceed.

A handwritten signature in cursive script that reads "Ronald E. Silver".

Ronald E. Silver, Chief
Planning & Acquisition Branch
MVD, Regional Real Estate Division North



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ATTENTION OF

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

November 15, 2016

Regional Real Estate Division North
Planning & Acquisition

RE: Public Meeting at VFW Post 10406, Cochrane, WI, on December 14, 2016

The U.S. Army Corps of Engineers is required by law to maintain a nine foot channel in the Mississippi River. In order to meet this requirement, the Congress has mandated that we provide for the storage of any dredged materials and provide a forty (40) year plan for such storage.

To meet those requirements, the St. Paul District Corps of Engineers has identified certain lands in Pool 4 that would be suitable for the purpose of such storage of dredged materials. We are currently in the planning process and want to share with all concerned property owners in the area our needs, processes and procedures.

To do this, we have set up a public meeting on December 14, 2016 at 6:00 PM, at the VFW Post 10406, located at 100 Michaels Street, Cochrane, Wisconsin 54622. At this meeting, we will fully explain the laws and Congressional requirements for the channel maintenance and storage of the dredged material, the real estate selection process and the procedures once a final site is selected. We will have Corps personnel present from project management, operations and river management and real estate to explain the project and to answer questions.

Please join us and learn about this project and be prepared to ask questions about how it will proceed.

A handwritten signature in cursive script that reads "Ronald E. Silver".

Ronald E. Silver, Chief
Planning & Acquisition Branch
MVD, Regional Real Estate Division North



US Army Corps
of Engineers®

News Release

Corps of Engineers seeks land from willing land owners near Mississippi River

Published Aug. 22, 2018

ST. PAUL, Minn. –The U.S. Army Corps of Engineers, St. Paul District, continues seeking land from willing landowners near the Mississippi River.

The Corps is actively seeking land suitable for use as a permanent dredged material placement site. On average, the St. Paul District dredges 1 million cubic yards of material each year. This is roughly enough material to fill up US Bank Stadium or Lambeau Field.

In order to ensure the navigation channel remains open for commerce, the Corps needs to find permanent placement sites. To keep costs down for the tax payer, the Corps looks for sites that are in close proximity to where they are dredging (to save in transportation costs) and are environmentally suitable.

Corps staff are also reaching out to agency and community partners to assist them in identifying suitable options. If you are, or know of anyone, interested in working with the Corps to sell or otherwise make land available for placement purposes, which is close to the Mississippi River between St. Paul, Minnesota, and Guttenberg, Iowa, please contact Paul Machajewski, dredged material manager, at your convenience. He can be reached at 651-290-5866 or by email at paul.r.machajewski@usace.army.mil.

The nearly 600 U.S. Army Corps of Engineers, St. Paul District, employees working at more than 40 sites in five upper-Midwest states serve the American public in the areas of environmental enhancement, navigation, flood damage reduction, water and wetlands regulation, recreation sites and disaster response. Through the St. Paul District Fiscal Year 2016 \$78 million budget, nearly 1,250 non-Corps jobs were added to the regional economy as well as \$120 million to the national economy. For more information, see www.mvp.usace.army.mil.

-30-

Legal Disclaimer: This news release should not be construed as a notice of intent to acquire real property under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of

1970, as amended (42 U.S.C. 4601 et seq.) (“Uniform Act”). The Corps will need to conduct an environmental review of potential dredged material placement sites before use may be allowed. In addition, the Corps will need to comply with the requirements of the Uniform Act and other laws and regulations, as applicable, which may include developing an appraisal before an offer to purchase real property can be made.

Contact

Public Affairs

Release no. 18-058

Dredged Material Management Plans



DEPARTMENT OF THE ARMY

ST. PAUL DISTRICT, CORPS OF ENGINEERS
180 FIFTH STREET EAST, SUITE 700
ST. PAUL, MN 55101-1638

REPLY TO
ATTENTION OF:

January 10, 2019

Landowner address

Dear Mr. Landowner

The U.S. Army Corps of Engineers, St. Paul District (Corps) is actively seeking land acquisition opportunities in support of the Corps' long-term dredged material management program on the Mississippi River. Specifically, the current area of interest includes properties located near Wabasha and/or Kellogg, MN. This letter is being sent because Wabasha County records indicate that you may currently own parcel R10.00007.00 of land that lie within the area of interest; and, may be suitable for material placement needs. By way of this letter, the Corps is reaching out to you to see if you are interested in more fully discussing the federal land acquisition process.

Dating back to the 1930s, the Corps has been responsible for maintaining the Mississippi River's 9-foot Navigation Channel. A significant component of the Corps' channel maintenance activities includes the identification and acquisition of upland placement sites. Ideally, placement sites are strategically located in areas where dredging operations are most prevalent and will not cause harm to the surrounding environment. As such, the Corps is working with the City of Wabasha to develop a long-term dredged material management plan for Pool 4 of the Mississippi River. However, there remains a strong need to identify suitable placement opportunities to help minimize the impacts on the larger community and surrounding areas.

As a landowner, if you are interested in gaining additional information regarding our dredged material placement program and may be considering a possible sale, please contact me at (651) 290-5253 or via email at kevin.j.sommerland@usace.army.mil. Please note that all federal land acquisitions must comply with the requirements set forth in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. With this letter, I have enclosed a brochure that more fully explains the acquisition process.

Thank you for your time and attention to this matter.

Sincerely,

Kevin Sommerland
Chief, Real Estate Division
USACE, St. Paul District

March 7th, 2019

Dan Kelner
Fisheries Biologist/Malacologist
U.S. Army Corps of Engineers, St. Paul District
180 5th St. East, Ste. 700
St. Paul, MN 55101

Re: Rolling Prairie parcels

Dear Dan,

The purpose of the Farmland Protection Policy Act (FPPA) as you are aware is to minimize the extent that federal programs contribute to the unnecessary and irreversible conversion of prime and important farmland to non-agricultural uses. The FPPA requires federal agencies involved in projects that may convert farmland to determine whether the proposed conversion is consistent with the FPPA. The FPPA is only a part of the EIS and NEPA process and compliance with the FPPA process does not guarantee compliance with other laws.

Upon reviewing the area of this project, I found that there is Prime Farmland in the proposed project area. However, during our conversation we talked about the planned restoration after the dredge material is placed on the site. Considering the possible implications of this determination, I contacted the national leader of technical soil services for guidance. From the conversation we decided that if restoration occurs there will be no permanent conversion. As there is no "irreversible conversion of important farmland to nonagricultural uses." an AD-1006 is not necessary as no conversion is taking place. If you have a copy of the restoration plan, can you send it to me for the file and future reference?

If you have any questions, please contact me via e-mail or at the above number.

Dan Nath, CPSS
Resource Soil Scientist USDA/NRCS
Rochester, MN

From: Kelner, Daniel E CIV USARMY CEMVP (US)
To: ["Nath, Daniel - NRCS, Rochester, MN"](#)
Subject: Rolling Prairie restoration and seed mix
Date: Friday, March 22, 2019 3:43:00 PM
Attachments: [Rolling Prairie seed mixture 2019.pdf](#)

Dan, Attached is the seed mixture that will be used for prairie restoration following dredged material placement at the Rolling Prairie placement site. The seed mixture is the standard recommended Dry Prairie Southeast seed mixture by the MN/DOT and BWSR. A temporary cover crop will also be used and is included as well. Any questions, please feel to contact me.

Thanks.

Dan Kelner
Fisheries Biologist/Malacologist
U.S. Army Corps of Engineers, St. Paul District
180 5th Street East, Suite 700
St. Paul, MN 55101
TELE (651) 290-5277
MOBILE (651) 724 -2244
FAX (651) 290-5805
651-724-2244

STATE SEED MIXES

Standard seed mixtures used by Mn/DOT, BWSR, and some divisions of the DNR have been revised and consolidated into one list of State Seed Mixes. Standards for the mixes have also been combined, with both BWSR and Mn/DOT requiring that mixes be sold as pure live seed (PLS), Source Identified (Yellow Tag) when available, and specific labeling requirements.

Standards for local origin seed will vary depending on program requirements. Native Vegetation Establishment and Enhancement guidelines have been developed for BWSR funded programs and can be found at: http://www.bwsr.state.mn.us/native_vegetation/index.html

Note: Cover crops are included as a component of State Seed Mixes with the exception of some wetland mixes where cover species are not necessary. For State Seed Mixes, oats and winter wheat should be selected based on the time of year that the mix is being used. Oats should be included in mixes if a mix is used between October 15 th and August 1st. Winter wheat should be used for seeding between August 1st and October 15 th. The seeding rate is the same for oats and winter wheat.

List of State Seed Mixes

21-111 Oats Cover Crop

Common Name	Scientific Name	Rate (kg/ha)	Rate (lb/ac)	% of Mix (% by wt)	Seeds/ sq ft
Oats	<i>Avena sativa</i>	112.08	100.00	100.00%	44.54
	Totals:	112.08	100.00	100.00%	44.54
Purpose:	Temporary cover crop for spring and summer plantings				
Planting Area:	Statewide				

21-112 Winter Wheat Cover Crop

Common Name	Scientific Name	Rate (kg/ha)	Rate (lb/ac)	% of Mix (% by wt)	Seeds/ sq ft
Winter Wheat	<i>Triticum aestivum</i>	112.09	100.00	100.00%	26.08
	Totals:	112.09	100.00	100.00%	26.08
Purpose:	Temporary cover crop for fall plantings				
Planting Area:	Statewide				

21-113 Soil Building Cover Crop

Common Name	Scientific Name	Rate (kg/ha)	Rate (lb/ac)	% of Mix (% by wt)	Seeds/ sq ft
Field Pea	<i>Pisum sativum</i>	56.04	50.00	45.46%	3.44
	Total Forbs	56.04	50.00	45.46%	3.44
Oats	<i>Avena sativa</i>	67.25	60.00	54.54%	26.72
	Total Cover Crop	67.25	60.00	54.54%	26.72
	Totals:	123.29	110.00	100.00%	30.16
Purpose:	Temporary cover crop with soil building function.				
Planting Area:	Statewide				

35-621

Dry Prairie Southeast

Common Name	Scientific Name	Rate (kg/ha)	Rate (lb/ac)	% of Mix (% by wt)	Seeds/sq ft
side-oats grama	<i>Bouteloua curtipendula</i>	1.27	1.13	10.23%	2.48
blue grama	<i>Bouteloua gracilis</i>	0.76	0.68	6.19%	10.00
kalm's brome	<i>Bromus kalmii</i>	0.35	0.31	2.78%	0.90
nodding wild rye	<i>Elymus canadensis</i>	1.68	1.50	13.61%	2.86
slender wheatgrass	<i>Elymus trachycaulus</i>	1.32	1.18	10.76%	3.00
junegrass	<i>Koeleria macrantha</i>	0.46	0.41	3.71%	30.00
little bluestem	<i>Schizachyrium scoparium</i>	1.69	1.51	13.70%	8.30
sand dropseed	<i>Sporobolus cryptandrus</i>	0.25	0.22	1.98%	16.00
prairie dropseed	<i>Sporobolus heterolepis</i>	0.29	0.26	2.32%	1.50
	Total Grasses	8.07	7.20	65.28%	75.04
butterfly milkweed	<i>Asclepias tuberosa</i>	0.07	0.06	0.52%	0.09
whorled milkweed	<i>Asclepias verticillata</i>	0.01	0.01	0.11%	0.05
bird's foot coreopsis	<i>Coreopsis palmata</i>	0.06	0.05	0.50%	0.20
white prairie clover	<i>Dalea candida</i>	0.10	0.09	0.78%	0.60
purple prairie clover	<i>Dalea purpurea</i>	0.17	0.15	1.32%	0.80
ox-eye	<i>Heliopsis helianthoides</i>	0.07	0.06	0.51%	0.13
round-headed bush clover	<i>Lespedeza capitata</i>	0.03	0.03	0.31%	0.10
rough blazing star	<i>Liatris aspera</i>	0.02	0.02	0.17%	0.11
dotted blazing star	<i>Liatris punctata</i>	0.02	0.02	0.23%	0.06
wild bergamot	<i>Monarda fistulosa</i>	0.03	0.03	0.30%	0.85
horsemint	<i>Monarda punctata</i>	0.02	0.02	0.22%	0.80
stiff goldenrod	<i>Oligoneuron rigidum</i>	0.07	0.06	0.59%	0.98
large-flowered beard tongue	<i>Penstemon grandiflorus</i>	0.04	0.04	0.35%	0.20
black-eyed susan	<i>Rudbeckia hirta</i>	0.10	0.09	0.86%	3.20
gray goldenrod	<i>Solidago nemoralis</i>	0.01	0.01	0.14%	1.65
skyblue aster	<i>Symphyotrichum oolentangiense</i>	0.01	0.01	0.06%	0.20
silky aster	<i>Symphyotrichum sericeum</i>	0.02	0.02	0.19%	0.20
bracted spiderwort	<i>Tradescantia bracteata</i>	0.01	0.01	0.12%	0.05
heart-leaved alexanders	<i>Zizia aptera</i>	0.02	0.02	0.21%	0.10
	Total Forbs	0.90	0.80	7.49%	10.37
Oats or winter wheat (see note at beginning of list for recommended dates)		3.36	3.00	27.23%	1.33
	Total Cover Crop	3.36	3.00	27.23%	1.33
	Totals:	12.33	11.00	100.00%	86.75
Purpose:	Regional dry prairie reconstruction for wetland mitigation, ecological restoration, or conservation program plantings.				
Planting Area:	Eastern Broadleaf Forest Province excluding Hardwood Hills subsection. Mn/DOT Districts Metro & 6.				

From: [Kelner, Daniel E CIV USARMY CEMVP \(US\)](#)
To: ["Dieterman, Daniel M \(DNR\)"; Kurt Rasmussen \(Kurt.Rasmussen@Wisconsin.gov\); Peter Fasbender@fws.gov; "kevin.stauffer@dnr.state.mn.us"; "Nath, Daniel - NRCS, Rochester, MN"](#)
Subject: UMR Pool 5 Dredge Material Management Plan coordination
Date: Thursday, May 16, 2019 2:53:00 PM

The St. Paul District Corps of Engineers is currently preparing an Upper Mississippi River Pool 5 Dredged Material Management Plan (DMMP). The purpose of this DMMP is to prepare a coordinated, long-term plan for managing material dredged in Pool 5 of the Upper Mississippi River (UMR) for the purposes of continued operation and maintenance of the 9-foot Navigation Channel Project. This plan was initiated due to a change in the availability of dredged material placement sites in Pool 5.

The Corps is currently pursuing long term permanent and beneficial use dredge material placement sites in Wabasha and Winona Counties, MN and Buffalo County, WI to be used for placement of material over the next 40 years. Primarily, upland agricultural row crop lands currently active or previously used as such are being identified for use. The Corps has assessed current local land uses and contacted land owners to develop a list of sites potentially suitable for permanent placement of dredged material. Once identified, sites were evaluated based on aspects of environmental acceptability, operational feasibility and estimated costs.

I'm contacting you to notify you of the plan and that a draft DMMP with integrated Environmental Assessment will be provided to you for review shortly. In the meantime if you want further information of the project or have concerns please feel free to contact me.

Thanks

Dan Kelner
Fisheries Biologist/Malacologist
U.S. Army Corps of Engineers, St. Paul District
180 5th Street East, Suite 700
St. Paul, MN 55101
TELE (651) 290-5277
MOBILE (651) 724 -2244
FAX (651) 290-5805
651-724-2244



NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

For Immediate Release:

Patrick Moes: 651-290-5202, 651-366-7539, patrick.n.moes@usace.army.mil

Sept. 16, 2019

Shannon Bauer: 651-290-5108, 612-840-9453, shannon.l.bauer@usace.army.mil

News Release No. MVP-PA-2019-079

Corps of Engineers release draft dredged material placement plan, schedule public meeting

ST. PAUL, Minn. – The U.S. Army Corps of Engineers, St. Paul District, released a draft Environmental Assessment for its proposed dredged material management plan in Pool 5, near Kellogg, Minnesota, today, Sept. 16.

The draft plan outlines the transportation methods and necessary land requirements to permanently place dredged material removed from the Mississippi River in Pool 5 for the next 40 years. All of the land would be acquired through willing sellers. This plan would ensure the 9-foot navigation channel remains open and able to transport the region's grains to global markets. Pool 5 is an 15-mile long stretch of the river from Lock and Dam 4, in Alma, Wisconsin, to Lock and Dam 5 in Minnesota City, Minnesota.

Corps of Engineers officials will host a public meeting to discuss the draft plan and receive public comments. The meeting will be at the St. Agnes Church, 125 W Belvidere Ave., in Kellogg from 6 - 8 p.m., Sept. 26. The meeting will include a formal presentation highlighting the Corps' navigation mission and the proposed dredged material management plan. A question and answer session will follow the presentation.

A draft EA describing the plan and the environmental impacts is available to the public and can be viewed at the public libraries in Alma, Wisconsin, or Wabasha, Minnesota, or it can viewed and downloaded from the St. Paul District website at: www.mvp.usace.army.mil/Home/PublicNotices.aspx.

Questions on the plan or comments on the EA can be directed to Bob Edstrom, project manager, at 651-290-5026 or Robert.K.Edstrom@usace.army.mil. Please address all formal written correspondence on this project to the St. Paul District, U.S. Army Corps of Engineers, ATTN: Regional Planning and Environment Division North, 180 5th St. E., Suite 700, St. Paul, MN 55101.

Comments in the proposed plan will be accepted through October 18.

– 30 –

ABOUT US: The nearly 700 U.S. Army Corps of Engineers, St. Paul District, employees working at more than 40 sites in five upper-Midwest states serve the American public in the areas of environmental enhancement, navigation, flood damage reduction, water and wetlands regulation, recreation sites and disaster response. Through the St. Paul District Fiscal Year 2018 \$106 million budget, nearly 1,700 non-Corps jobs were added to the regional economy as well as \$163 million to the national economy. Learn more at www.mvp.usace.army.mil or visit our social media sites at:



U.S. ARMY CORPS OF ENGINEERS – ST. PAUL DISTRICT
180 5th St. E, St. Paul, MN 55101



**US Army Corps
of Engineers®**
St. Paul District

Public Notice

Project: Mississippi River Pool 5 Dredged Material Management Plan - Wabasha and Winona Counties, Minnesota; Buffalo County, Wisconsin.

Date: September 13, 2019

In Reply Refer to:

Expires: October 18, 2019 Regional Planning and Environment
Division North

1. Project Proponent. St. Paul District, Corps of Engineers, 180 Fifth Street East, Suite 700, St. Paul, Minnesota 55101-1678.

2. Project Authority. The U.S. Army Corps of Engineers is authorized to maintain a navigable channel on the Mississippi River. Authority for continued operation and maintenance of the Mississippi River 9-Foot Channel project is provided in the Rivers and Harbors Acts of 1930 and 1932. Original authority for the Corps of Engineers to work on the Mississippi River was provided in the Rivers and Harbors Act of 1878. In addition, pursuant to Section 1103(i) of the Water Resources Development Act of 1986 (33 U.S.C. § 652(i)), Congress authorized the Corps to manage dredged material from the system pursuant to the recommendations of the Great River Environmental Action Team (GREAT) I study, which were implemented, in part, in the St. Paul District 1996 Channel Maintenance Management Plan (CMMP). The proposed project is authorized by the referenced legislation and its purpose is compatible with the annual operations and maintenance appropriation.

3. Project Location. The plan addresses dredged material management for the navigation channel on the Mississippi River between Lock and Dam (L/D) 4 and L/D 5 between river miles (RM) 752.8 and 738.1. This project addresses dredge cuts in Pool 5 that currently includes: Upper Zumbro, Mule Bend, West Newton Chute, Below West Newton, Above Fisher Island, Lower Zumbro, Minneiska, Above Mt. Vernon Light, and Below Mt. Vernon Light. Communities located in the project area include Buffalo City, Cochrane, and Alma in Wisconsin, and Kellogg, Minneiska, and Weaver in Minnesota.

4. Summary of the Proposed Project. The purpose of this Dredged Material Management Plan (DMMP) is to prepare a coordinated, long-term plan for managing material dredged in Pool 5 of the Upper Mississippi River (UMR) for the purposes of continued operation and maintenance of the 9-Foot Navigation Channel Project. This plan was initiated due to a change in the availability of dredged material placement sites in Pool 5. There are nine active dredge cuts in Pool 5 where maintenance dredging has occurred since 1970, with around 4.7 million cubic yards (CY) of material dredged between 1981 and 2018.

The proposed plan includes periodically placing dredged material temporarily at the three designated island placement sites (commonly referred to as Above West Newton, Above Fisher Island, and Lost Island). Once the islands are designated as “full”, they would be offloaded at the West Newton Chute transfer site where the material would then be trucked to a newly acquired Rolling Prairie permanent placement site near Kellogg, MN.

5. Schedule. The plan allows for the management of at least 4.7 CY of dredged material over the next 40 years.

6. Permits/Coordination.

a. General. The proposed action has been coordinated with the U.S. Fish and Wildlife Service (USFWS), the U.S. Department of Agriculture Natural Resources Conservation Service (USDA/NRCS), the Minnesota Department of Natural Resources (MNDNR), the Minnesota Pollution Control Agency (MPCA), and the Wisconsin Department of Natural Resources.

b. State. The proposed action will not result in the placement of fill material, the discharge of carriage water, or other work in State of Minnesota waters that would require a permit. No Public Waters Work permit or 401 Water Quality Certification will be required from the State of Minnesota. However, the Rolling Prairie site would be added to the MPCA Solid Waste Disposal Site (SDS) programmatic permit for Corps dredged material placement sites prior to dredged material placement activities.

c. Federal. A Draft Environmental Assessment (EA) and Finding of No Significant Impact was prepared and are being coordinated in accordance with the National Environmental Policy Act. This EA is an integrated component of the DMMP.

Coordination with the USFWS occurred during the planning process and a USFWS Refuge Special Use Permit will not be required by the St. Paul District.

Coordination with the USDA/NRCS occurred regarding irreversible conversion of prime and important farmland to non-agricultural uses. Although Prime Farmland occurs on the Rolling Prairie site, the USDA/NRCS determined that there will be no irreversible conversion of important farmland to nonagricultural uses if the placement site is converted to prairie as planned.

Impacts to wetlands will be avoided during dredged material placement at the Rolling Prairie site to the extent practicable for the duration of the plan. However, if avoiding wetlands later becomes impracticable due to capacity needs, the District will conduct an evaluation in accordance with Section 404(b)(1) of the Clean Water Act, prior to placing any fill in wetlands.

7. Summary of Environmental Impacts. The proposed action includes the continued use of three temporary island placement sites (Above West Newton, Above Fisher Island, and Lost Island); an existing and active placement site (West Newton Chute) and the use of a newly acquired placement site (Rolling Prairie), of which the majority is upland and in active agricultural production. The majority of the Rolling Prairie site would be restored to native prairie after dredged material is placed providing minor beneficial effects to natural resources in the area. A small portion of the Rolling Prairie site would be managed as a dredged material beneficial use site. The proposed action would have no significant cumulative adverse or beneficial effects.

The proposed action would have minor long term beneficial effects on commercial navigation and to terrestrial habitat and biological productivity after the site has been restored to native

prairie. The proposed action may result in adverse impacts on current land use and farmland food supply. There would also be minor adverse effects on noise levels, aesthetic values, transportation, tax revenue, and air quality; and to terrestrial habitat and biological productivity in the short term while the site is actively being used for dredged material placement.

8. Report. A Draft Integrated Feasibility Report and Environmental Assessment that describes the project and the environmental impacts in detail is available to the public and can be viewed at <http://www.mvp.usace.army.mil/Home/PublicNotices.aspx> . Copies of the report can also be obtained at the Wabasha Public Library, 168 Allegheny Ave., Wabasha, MN 55981 and the Alma Public Library, 312 N. Main St., Alma, WI 54610. The report includes project drawings, a Draft Finding of No Significant Impact, and letters of coordination from regulatory agencies.

9. Review and Comment. If you have any comments on the environmental assessment they should be provided before the expiration date of this notice. Persons submitting comments are advised that all comments received will be available for public review, to include the possibility of posting on a public website. Questions on the project or comments on the Environmental Assessment should be directed to Mr. Bob Edstrom, Project Manager at (651) 290-5026 or at Robert.k.Edstrom@usace.army.mil. Please address all correspondence on this project to District Engineer, St. Paul District, Corps of Engineers, ATTN: Regional Planning and Environment Division North; 180 Fifth Street East; Suite 700; St. Paul, Minnesota 55101-1638.

A handwritten signature in black ink, appearing to read 'Edstrom', is positioned above the typed name. The signature is fluid and cursive.

Acting Deputy Chief, Regional Planning and
Environment Division North

Appendix B

Sediment Contaminant Datasheet

Pool 5 Dredged Material Management Plan

Upper Mississippi River

Wabasha and Winona Counties, Minnesota

Buffalo County, Wisconsin



**US Army Corps
of Engineers**

St. Paul District

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		MPCA SQT I	MPCA SQT II	MPCA Res/Rec Soil Reference Value (SRV) Aug 2016	MPCA Comm/Ind Soil Reference Value (SRV) Aug 2016	Below Mt Vernon	Below Mt Vernon	Above Mt. Vernon Light	Above Mt. Vernon Light	Minneiska	Minneiska	Lower Zumbro	Lower Zumbro	Below West Newton	Below West Newton	Fisher Island	Fisher Island	West Newton	West Newton	Mule Bend	Mule Bend	Upper Zumbro	Upper Zumbro		
River Mile						740.23	740.25	741.4	741.6	742.1	742.5	744	744.5	746.2	746.6	746.5	746.6	747.7	748.1	748.5	748.8	749.6	749.5		
Pool						5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Northing UTM 15N						4892784	4892787	4893789.3	4893986.7	4894329	4894756	4896762	4897536	4900143	4900590	4900498.2	4900603.1	4902240	4902742	4903373	4903728	4904158.6	4904071.7		
Easting UTM 15N						592878	592841	591279.4	591054.6	590361	589927	589177	588788	588814	588757	588817.2	588811.4	588027	588071	587744	587488	586313.7	586507.7		
Lab						ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	ADRL, INC	
database ID						P5-09-2016	P5-08-2016	P5-06-2013	P5-05-2013	P5-07-2016	P5-12-2016	P5-11-2016	P5-10-2016	P5-18-2016	P5-17-2016	P5-04-2013	P5-03-2013	P5-16-2016	P5-15-2016	P5-14-2016	P5-13-2016	P5-01-2013	P5-02-2013		
Lab ID						008251-19	008251-18	8966-04	8966-03	008251-17	008251-16	008251-15	008251-14	008250-19	008250-18	8966-06	8966-05	008250-17	008250-16	008250-15	008250-14	8966-08	8966-07		
Corps ID						POOL 5-12	POOL 5-11	2B	2A	POOL 5-10	POOL 5-9	POOL 5-8	POOL 5-7	POOL 5-6	POOL 5-5	3B	3A	POOL 5-4	POOL 5-3	POOL 5-2	POOL 5-1	4B	4A		
Date Collected						9/28/2016	9/28/2016	9/9/2013	9/9/2013	9/28/2016	9/28/2016	9/28/2016	9/28/2016	9/28/2016	9/28/2016	9/9/2013	9/9/2013	9/28/2016	9/28/2016	9/28/2016	9/28/2016	9/9/2013	9/9/2013		
Organics	ug/kg	Acenaphthylene	5.9	130		<0.84	<0.85	ND	ND	<0.86	<0.85	<0.86	<0.85	<0.8	<0.8	ND	ND	<0.8	<0.81	<0.8	<0.81	ND	ND		
	ug/kg	Acenaphthene	6.7	89	1300000	19000000	<0.84	<0.85	ND	ND	<0.86	<0.85	<0.86	<0.85	<0.8	<0.8	ND	ND	<0.8	<0.81	<0.8	<0.81	ND	ND	
	ug/kg	Anthracene	57	850	6500000	97000000	<0.84	<0.85	ND	ND	<0.86	<0.85	<0.86	<0.85	<0.8	<0.8	ND	ND	<0.8	<0.81	<0.8	<0.81	ND	ND	
	ug/kg	Fluoranthene	420	2200	510000	6700000	<0.84	<0.85	ND	ND	<0.86	.95 J	<0.86	<0.85	<0.8	<0.8	ND	ND	<0.8	<0.81	<0.8	<0.81	ND	1.22 J	
	ug/kg	Pyrene	200	1500	44000	44000	<0.84	<0.85	ND	ND	<0.86	.85 J	<0.86	<0.85	<0.8	<0.8	ND	ND	<0.8	<0.81	<0.8	<0.81	ND	ND	
	ug/kg	Benzo(a)anthracene	110	1100			<0.84	<0.85	ND	ND	<0.86	<0.85	<0.86	<0.85	<0.8	<0.8	ND	ND	<0.8	<0.81	<0.8	<0.81	ND	ND	
	ug/kg	Benzo(b)fluoranthene					<0.84	<0.85	ND	ND	<0.86	<0.85	<0.86	<0.85	<0.8	<0.8	ND	ND	<0.8	<0.81	<0.8	<0.81	ND	ND	
	ug/kg	Benzo(k)fluoranthene					<0.84	<0.85	ND	ND	<0.86	<0.85	<0.86	<0.85	<0.8	<0.8	ND	ND	<0.8	<0.81	<0.8	<0.81	ND	ND	
	ug/kg	Benzo(a)pyrene	150	1500	1000 ***	14000***	<0.84	<0.85	ND	ND	<0.86	<0.85	<0.86	<0.85	<0.8	<0.8	ND	ND	<0.8	<0.81	<0.8	<0.81	ND	ND	
	ug/kg	Benzo(g,h,i)perylene					<0.84	<0.85	ND	ND	<0.86	<0.85	<0.86	<0.85	<0.8	<0.8	ND	ND	<0.8	<0.81	<0.8	<0.81	ND	ND	
	ug/kg	Hexachlorobenzene					<4.2	<4.3	ND	ND	<4.2	<4.2	<4.3	<4.2	<4	<4	ND	ND	<4	<4	<4	<4	<4	ND	ND
	ug/kg	Chlordane trans isomer					<4.2	<4.3	ND	ND	<4.2	<4.2	<4.3	<4.2	<4	<4	ND	ND	<4	<4	<4	<4	<4	ND	ND
	ug/kg	Chlordane cis isomer	3.2*	18*	9500*	11000*	<4.2	<4.3	ND	ND	<4.2	<4.2	<4.3	<4.2	<4	<4	ND	ND	<4	<4	<4	<4	<4	ND	ND
	ug/kg	P, P' -DDE	3.2	31	22000	28000	<4.2	<4.3	ND	ND	<4.2	<4.2	<4.3	<4.2	<4	<4	ND	ND	<4	<4	<4	<4	<4	ND	ND
	ug/kg	O, P' -DDD					<4.2	<4.3	ND	ND	<4.2	<4.2	<4.3	<4.2	<4	<4	ND	ND	<4	<4	<4	<4	<4	ND	ND
	ug/kg	Dieldrin	1.9	62			<4.2	<4.3	ND	ND	<4.2	<4.2	<4.3	<4.2	<4	<4	ND	ND	<4	<4	<4	<4	<4	ND	ND
	ug/kg	O, P' -DDE			110	1500	<4.2	<4.3	ND	ND	<4.2	<4.2	<4.3	<4.2	<4	<4	ND	ND	<4	<4	<4	<4	<4	ND	ND
	ug/kg	O, P' -DDT					<4.2	<4.3	ND	ND	<4.2	<4.2	<4.3	<4.2	<4	<4	ND	ND	<4	<4	<4	<4	<4	ND	ND
	ug/kg	P, P' -DDD	4.9	28	19000	100000	<4.2	<4.3	ND	ND	<4.2	<4.2	<4.3	<4.2	<4	<4	ND	ND	<4	<4	<4	<4	<4	ND	ND
	ug/kg	P, P' -DDT	4.2	63	7300	86000	<4.2	<4.3	ND	ND	<4.2	<4.2	<4.3	<4.2	<4	<4	ND	ND	<4	<4	<4	<4	<4	ND	ND
ug/kg	PCB 1016					<6.2	<6.4	ND	ND	<6.4	<6.3	<6.4	<6.4	<6	<6	ND	ND	<6	<6	<6	<6	<6	ND	ND	
ug/kg	PCB 1248					<12.5	<12.8	ND	ND	<12.7	<12.6	<12.8	<12.8	<12	<11.9	ND	ND	<12	<11.9	<12	<12	<12	ND	ND	
ug/kg	PCB 1254					<12.5	<12.8	ND	ND	<12.7	<12.6	<12.8	<12.8	<12	<11.9	ND	ND	<12	<11.9	<12	<12	<12	ND	ND	
ug/kg	PCB 1260					<6.2	<6.4	ND	ND	<6.4	<6.3	<6.4	<6.4	<6	<6	ND	ND	<6	<6	<6	<6	<6	ND	ND	
ug/kg	Total PCBs	60	680	810	10000	<62.4	<64.1	ND	ND	<63.5	<63	<63.9	<63.9	<59.8	<59.7	ND	ND	<60.2	<59.6	<59.8	<59.9	ND	ND		
Metals	mg/kg	Arsenic	9.8	33	9	9	0.44	0.45	0.94	1.6	0.46	2.4	0.50	0.70	0.61	0.50	1.3	1.1	0.78	0.94	1.4	0.74	1.6	1.2	
	mg/kg	Cadmium	0.99	5	1.6	23	<0.24	<0.24	0.18	0.25	<0.25	0.25	<0.23	<0.23	<0.24	0.09	0.2	<0.24	0.23	<0.24	<0.23	0.27	0.24	0.24	
	mg/kg	Chromium	43	110	23000	100000	5.7	4.7	5.5	7.3	4.0	4.6	3.7	3.6	3.9	3.1	5.5	6.1	4.5	7.5	4.6	4.7	8.3	7.3	
	mg/kg	Copper	32	150	2200	33000	2.4	2.5	2.5	4.2	2.4	3.7	3.0	1.4	2.1	1.8	3.1	3.3	1.8	3.7	2.4	2.4	5.5	4.3	
	mg/kg	Lead	36	130	300	700	1.0	1.1	1.2	2	1.1	1.1	0.88	1.0	0.71	0.83	1.3	1.3	0.94	1.0	0.90	0.97	1.4	1.6	
	mg/kg	Manganese			2100	21000	192	155	201	308	140	280	246	132	153	121	202	226	185	291	278	229	353	276	
	mg/kg	Mercury	0.18	1.1	3.1 **	3.1	<0.098	<0.099	ND	ND	<0.097	<0.1	<0.095	<0.1	<0.092	<0.089	ND	ND	<0.09	<0.092	<0.09	<0.094	ND	ND	
	mg/kg	Nickel	23	49	170	2600	5.2	8.2	4.4	7.9	3.1	7.2	4.7	3.5	4.2	2.7	5.1	4.9	3.5	6.7	3.9	4.6	8.4	5.5	
	mg/kg	Zinc	120	460	4600	70000	17.1 B	16.6 B	12.7	24.7	15.9 B	23.9 B	17 B	18.1 B	23.8 B	22.1 B	11.6	12.5	24.1 B	28.6 B	27.1 B	27.8	22.6	16.2	
	mg/kg	Ammonia Nitrogen					4.6	6.3	4.1	4.2	<3.6	<3.7	4.1	3.9	4.1	4.6	3.8	ND	4.6	5.7	5.5	3.3	ND	13.4	
	mg/kg	Chromium (VI)			11	57	<1.3	<1.3	ND	ND	<1.3	<1.3	<1.3	<1.3	<1.2	<1.1	ND	ND	<1.2	<1.2	<1.2	<1.2	ND	ND	
	mg/kg	Cyanide, Total			13	190	<0.24	<0.25	ND	ND	<0.25	<0.25	<0.25	<0.25	<0.23	<0.23	ND	ND	<0.24	<0.23	<0.22	<0.22	ND	ND	
Inorganics	%	Moisture				19.9	22.3	15.2	12.4	22.6	21.2	22.0	21.7	16.7	17.6	12	14.5	17.7	17.8	16.7	17.4	15.5	14.2		
	mg/kg	Phenol			3500	24000	<1.2	<1.2	ND	ND	<1.3	<1.2	<1.2	<1.3	<1.2	ND	0.77	<1.3	<1.2	<1.3	<1.2	ND	ND		
	mg/kg	Phosphorus					156	166	104	282	141	140	123	99.4	101	128	158	193	153	154	167	289	326	133	
	%	Solids, Percent					80.1	77.7	84.8	87.6	77.4	78.8	78.0	78.3	83.3	82.4	88	85.5	82.3	82.2	83.3	82.6	84.5	85.8	
	%	Solids, Total Volatile					0.51	0.40	ND	ND	0.37	0.36	0.23	0.26	0.19	0.21	ND	ND	0.19	0.21	0.19	0.18	ND	ND	
	mg/kg	Total Kjeldahl Nitrogen					36.7	30.2	47.3	91.5	58.1	47.8	36.9	40.2	27.8	28.7	38.4	42.9	38.0	36.4	29.9	<24.2	ND	294	
	mg/kg	Total Organic Carbon																							

Appendix C

Finding of No Significant Impact

Pool 5 Dredged Material Management Plan

Upper Mississippi River

Wabasha and Winona Counties, Minnesota

Buffalo County, Wisconsin



**US Army Corps
of Engineers**

St. Paul District

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DRAFT FINDING OF NO SIGNIFICANT IMPACT

MISSISSIPPI RIVER POOL 5 DREDGED MATERIAL MANAGEMENT PLAN FEASIBILITY REPORT AND INTEGRATED ENVIRONMENTAL ASSESSMENT WABASHA AND WINONA COUNTIES, MINNESOTA; BUFFALO COUNTY, WISCONSIN

The U.S. Army Corps of Engineers, St. Paul District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The final Integrated Feasibility Report and Environmental Assessment (IFR/EA) dated 10 February 2020, for the Mississippi River Pool 5 Dredged Material Management Plan Feasibility Study addresses the long-term plan for managing material dredged in Pool 5 of the Upper Mississippi River (UMR) for the purposes of continued operation and maintenance of the 9-foot Navigation Channel sites in Pool 5.

The Final IFR/EA, incorporated herein by reference, evaluated various alternatives that would be used to manage an estimated 4,700,000 cubic yards of material over a 40 year period. The recommended plan consists of:

- Periodically placing dredged material temporarily at the three designated island placement sites (Above West Newton, Above Fisher Island, and Lost Island). Once the islands are designated as “full”, they will be offloaded at the West Newton Chute transfer site where the material will then be trucked to the Rolling Prairie permanent placement site.

In addition to a “no action” plan, several alternatives were evaluated which are detailed in Chapter 5 Formulation of Alternatives and Plan Selection. In summary, the St. Paul District evaluated the management of material dredged from the nine dredge cuts at a number of existing (historic) and potential dredged material placement sites in the vicinity of Pool 5 on the UMR. Placement sites were evaluated using factors such as cost effectiveness, environmental acceptability, and operational feasibility. Current local land uses were assessed and land owners were contacted to develop a list of sites potentially suitable for permanent placement of dredged material. Once identified, sites were evaluated based on aspects of environmental acceptability, operational feasibility and estimated costs. Finally, alternative plans were developed that would meet the study objectives. Historically, a limited amount of beneficial use of dredged material in Pool 5 has been part of management plans. The study team decided to formulate alternatives that incorporated permanent upland placement as the long-term goal for most of the material, but to include sites that could provide for some beneficial use.

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan.

	Insignificant effects	Insignificant effects as a result of mitigation	Resource unaffected by action
Aesthetics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquatic resources/wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Invasive species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Fish and wildlife habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threatened/Endangered species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Historic properties	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other cultural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Floodplains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hazardous, toxic & radioactive waste	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hydrology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Land use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Navigation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise levels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public infrastructure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Socio-economics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tribal trust resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Climate change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs), such as those related to erosion control at the placement site, will be implemented, if appropriate, to minimize impacts.

No compensatory mitigation is required as part of the recommended plan.

Public review of the draft IFR/EA was completed on 18 October 2019. All comments submitted during the public comment period were responded to in the Final IFR/EA. A 30-day state and agency review of the Final IFR/EA was also completed on 18 October 2019.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan will have no effect on federally listed species or their designated critical habitat.

Pursuant with Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. § 306108, et seq.) and its implementing regulations 36 CFR Part 800 – Protection of Historic Properties, a programmatic agreement has been executed pursuant to 36 CFR § 800.14(b)(1)(ii) and compliance with Section 106 has been satisfied.

Pursuant to the Clean Water Act of 1972, as amended, the discharge of dredged or fill material associated with the recommended plan must be compliant with section 404(b)(1) Guidelines (40 CFR 230). The recommended plan is not anticipated to result in any fill activity in a Water of the U.S., including wetlands. As a result, a 404(b)(1) and 401 water quality certification is not required. Impacts to waters or wetlands will be avoided during dredged material placement at the Rolling Prairie site to the extent practicable for the duration of the plan. If avoiding wetland fill later becomes impracticable due to capacity needs, the District will first conduct an evaluation in accordance with Section 404(b)(1) of the Clean Water Act, and compensate for wetland losses as appropriate at that time. When hydraulic dredging methods are used to place material at the Homer site or Winona Harbor Site, excess carriage water would be returned to the river. This discharge is addressed in Nationwide Permit 16, which also includes Section 401 Water Quality Certification from the MPCA.

Pursuant with the Farmland Protection Policy Act of 1981, the recommended plan will not require irreversible conversion of important farmland to nonagricultural uses when the land is converted to the Rolling Prairie site.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

Technical, environmental, and economic criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

10 FEB 2020

Date



KARL D. JANSEN
Colonel, Corps of Engineers
District Commander



**US Army Corps
of Engineers®**
St. Paul District

Appendix D

Qualitative Assessment of Climate Change Impacts

Pool 5 Dredged Material Management Plan

Upper Mississippi River

Wabasha and Winona Counties, Minnesota

Buffalo County, Wisconsin

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Contents

1	Purpose	1
2	Project Background Information.....	1
3	Literature Review	4
3.1	Precipitation.....	4
3.1.1	Observed Precipitation Trends	4
3.1.2	Projected Precipitation Trends	6
3.2	Air Temperature.....	7
3.2.1	Observed Air Temperature Trends	7
3.2.2	Projected Air Temperature Trends	8
3.3	Hydrology.....	8
3.3.1	Observed Hydrologic Trends.....	8
3.3.2	Projected Hydrologic Trends.....	9
3.4	Sedimentation.....	10
3.5	Summary	12
4	Trends in Observed Records	13
4.1	Gage Data.....	14
4.2	Peak Streamflow	16
4.3	Annual Average Discharge	20
5	Projected Trends and Watershed Vulnerability.....	25
5.1	USACE Climate Hydrology Assessment	25
5.2	USACE Watershed Climate Vulnerability Assessment	27
6	Risk Assessment.....	30
7	Conclusion.....	31
8	Works Cited.....	32

Table of Figures

Figure 1 Pool 5 and Contributing Watershed Map with HUC4 Watersheds.	3
Figure 2 Third National Climate Assessment regional boundaries in CONUS (Melillo et al., 2014)	5
Figure 3 Regional heavy rainfall increases.	6
Figure 4 Five year running mean of streamflow statistics averaged for major rivers in Minnesota (Novotny and Stefan, 2007)	9
Figure 5 Sediment accumulation rates versus sediment age for 10 detailed cores (Engstrom et al. 2009)	11
Figure 6 Summary matrix of observed and projected climate trends and literary consensus (USACE, 2015)	13
Figure 7 Streamflow gage used for analysis (Department of the Interior 2019b).....	15
Figure 8 Nonstationarity detection results for Mississippi River at Winona, MN USGS gage (ID 05378500)	17
Figure 9 Annual peak flow monotonic trend analysis for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500), 1928-2018	18
Figure 10 Annual peak flow monotonic trend analysis for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500), 1928-2018	19
Figure 11 Annual peak flow monotonic trend analysis for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500), 1938-2018 (post change point).....	19
Figure 12 Annual peak flow monotonic trend analysis for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500), 1938-2018 (post change point).....	20
Figure 13 Annual average discharge for the Mississippi River near Winona, MN USGS Gage (Gage ID 05378500), 1928-2018.....	21
Figure 14 Annual average discharge for the Mississippi River near Winona, MN USGS Gage (Gage ID 05378500), 1941-2018.....	22
Figure 15 Annual average discharge for the Trempealeau River near Dodge, WI USGS Gage (Gage ID 05379500), 1934-2018.....	23
Figure 16: Annual average discharge for the Chippewa River near Durand, WI USGS Gage (Gage ID 05369500), 1930-2018.....	25
Figure 17 Reference map of HUC2 and HUC4 watersheds.....	26
Figure 18 Range of projected maximum monthly streamflow for years 1980-2099 within HUC4 0704 ...	27
Figure 19 Projected vulnerability for the HUC4 0704, Upper Mississippi-Black-Root watershed.....	29

Table of Tables

Table 1: Annual average discharge for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500) 24

Table 2 Projected vulnerability with respect to navigation for HUC4 0704 29

Table 3 Comparison of indicators for navigation for HUC4 0704, 2050 epoch 29

Table 4 Climate risk identifiers for Pool 5 DMMP 30

Pool 5 Qualitative Climate Assessment

1 Purpose

United States Army Corps of Engineers (USACE) projects, programs, missions, and operations have generally proven to be robust enough to accommodate the range of natural climate variability over their operating life spans. Recent scientific evidence shows that in some places, and for some impacts relevant to USACE operations, climate change has shifted the climatological baseline about which natural climate variability occurs, and may be changing the range of that variability as well. This is relevant to the USACE because the assumptions of stationary climatic baselines and a fixed range of natural variability, as captured in the historic hydrologic record, may no longer be appropriate for long-term projections of risk to the USACE Navigation.

Long-term, natural fluctuations in climate or anthropogenic driven climate change have the ability to alter regional precipitation, temperature, hydrology patterns, and ecosystem functions. This study seeks to provide qualitative information which can be used to determine how hydrologic variables have responded to climate change in the past and may respond to climate change in the future. The purpose of this analysis is to provide a qualitative assessment to determine if climate change is relevant to navigation projects in the Upper Mississippi River Watershed and make recommendations about how to incorporate the findings of this assessment. The results of this qualitative assessment can be used to increase the resilience of existing and proposed water resources projects in the watershed.

2 Project Background Information

The purpose of this Dredged Material Management Plan (DMMP) is to prepare a coordinated, long-term plan for managing dredged material in Lower Pool 5 of the Upper Mississippi River for the purposes of continued operation and maintenance of the 9-Foot Navigation Channel Project. This plan was initiated because permanent dredged material placement sites previously used in Lower Pool 5 have reached capacity. Dredged material placed at island transfer sites will need to be offloaded to permanent sites. Therefore, additional permanent sites are needed to accommodate the Corps' dredging needs in Lower Pool 5 over the next 40 years. Costs associated with managing the dredged material have increased significantly over the past 20 years, so the DMMP also looked for ways to reduce cost. Lower Pool 5 has six active dredge cuts where maintenance dredging has occurred. These dredge cuts are expected to generate 4.7 million cubic yards (CYs) of dredged material over the next 40 years, or about 117,000 CYs annually.

The Tentatively Selected Plan (TSP) for the Lower Pool 5 DMMP has been identified as the "Federal Standard". The Federal Standard is defined as "the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process..." (33 C.F.R. § 335.7). The DMMP study includes the use of the existing West Newton Chute site as a transfer site prior to hauling the material to the selected Rolling Prairie Site. The combined sites are capable of accepting material placed hydraulically and mechanically from Pool 5 for more than 40 years.

Use of land-based transfer sites reduces the need to periodically offload material from island transfer sites. Additionally, several other property locations have been identified for future dredged material placement opportunities within Pool 5.

Three island sites used in the past for temporary placement are retained in the Recommended Plan. Above West Newton, Fisher Island, and Lost Island would remain available in the future if the permanent placement sites are at capacity, become unavailable for some unforeseen reason, or if it's operationally more feasible to use the island sites. Finally, no dredge material will be used to make islands, beaches, or added back into the Mississippi River.

Climate change impacts on the hydrology of the Upper Mississippi River Basin were considered in accordance with the USACE Engineering Construction Bulletin (ECB) 2018-14, *Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs and Projects* (USACE, 2018a), as well as USACE Engineering Technical Letter (ETL) 1100-2-3 *Guidance for Detection of Nonstationarities in Annual Maximum Discharges* (Friedman et al., 2016).

The goal of a qualitative analysis of potential climate threats and impacts to USACE hydrology-related projects and operations is to describe the observed present and possible future climate threats, vulnerabilities, and impacts of climate change specific to the study goals or engineering designs, in this case, the TSP for dredge material from Pool 5. This includes consideration of both past (observed) changes as well as potential future (projected) changes to relevant climatic and hydrologic variables. This analysis uses a weight of evidence based approach to make a qualitative assessment of climate change impacts to dredging in the Upper Mississippi-Black-Root River Basin (Hydrologic Unit Code 'HUC' 0704) which contains the project area at Mississippi River Pool 5.

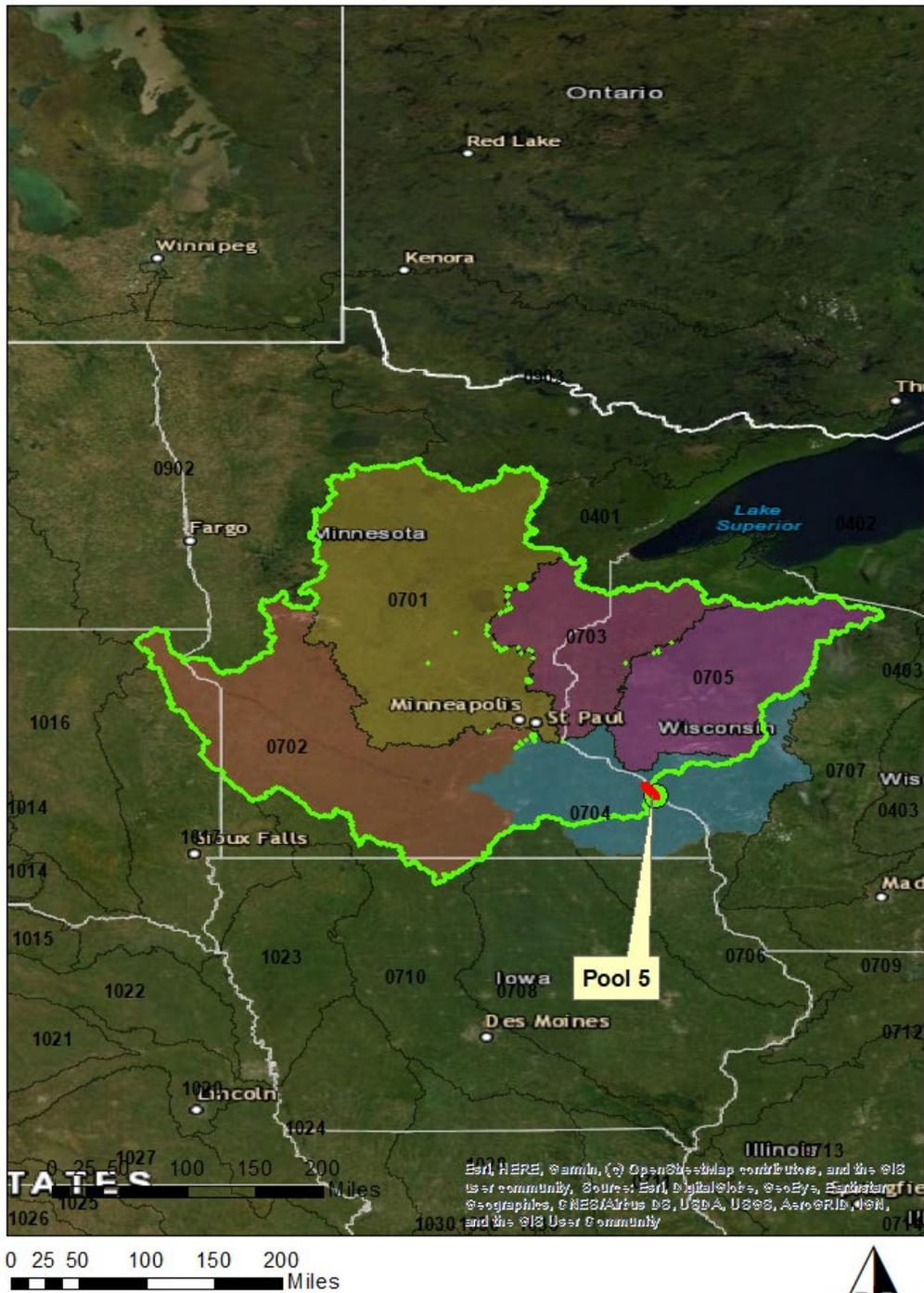


Figure 1 Pool 5 and Contributing Watershed Map with HUC4 Watersheds.

3 Literature Review

Both historical, observed hydro-meteorological datasets, as well as projected, climate-changed hydro-meteorological data was reviewed to support qualitative statements about how to incorporate resilience from impacts of climate change over the minimum 20-year DMMP. Important, driving hydro-meteorological variables include streamflow, precipitation, and temperature. The magnitude, seasonal and inter-annual variation, duration, and rate of change of these variables can affect the volume and frequency of dredging sediment material.

The Upper Mississippi River Region is also referred to as Water Resources Region 07 (2-digit hydrologic unit code, or HUC, 07). The Upper Mississippi-Black-Root River watershed (encompassing the project area) falls within the 2-digit HUC07 region. A synthesis of peer reviewed climate literature is available from the Corps of Engineers for the Upper Mississippi River Region and is referenced as the primary source of information in this literature review (USACE, 2015). The report concludes that increased average annual precipitation in the region may lead to increases in streamflow. A change in flow regime could affect dredging in the area. Increased annual precipitation can also lead to an increase in erosion and promote additional sediment transport (Melillo et al., 2014). Increased sedimentation would impact the demand for dredging and affect future planning for dredged material placement. These conclusions were based on a large body of research cited which is summarized in the sections below.

3.1 Precipitation

3.1.1 Observed Precipitation Trends

The fourth National Climate Assessment (NCA) considers the science and impacts of climate change within the Continental United States (CONUS) and at a regional scale (Melillo et al., 2014). A map of regions defined in the third (and subsequently the fourth) NCA is shown in Figure 2 below. On a national scale, average precipitation in the United States increased by approximately 4% since 1900 (USGCRP, 2017). Precipitation in the Midwest region (encompassing the study area) increased by 9% since 1991 (Pryor et al., 2014).

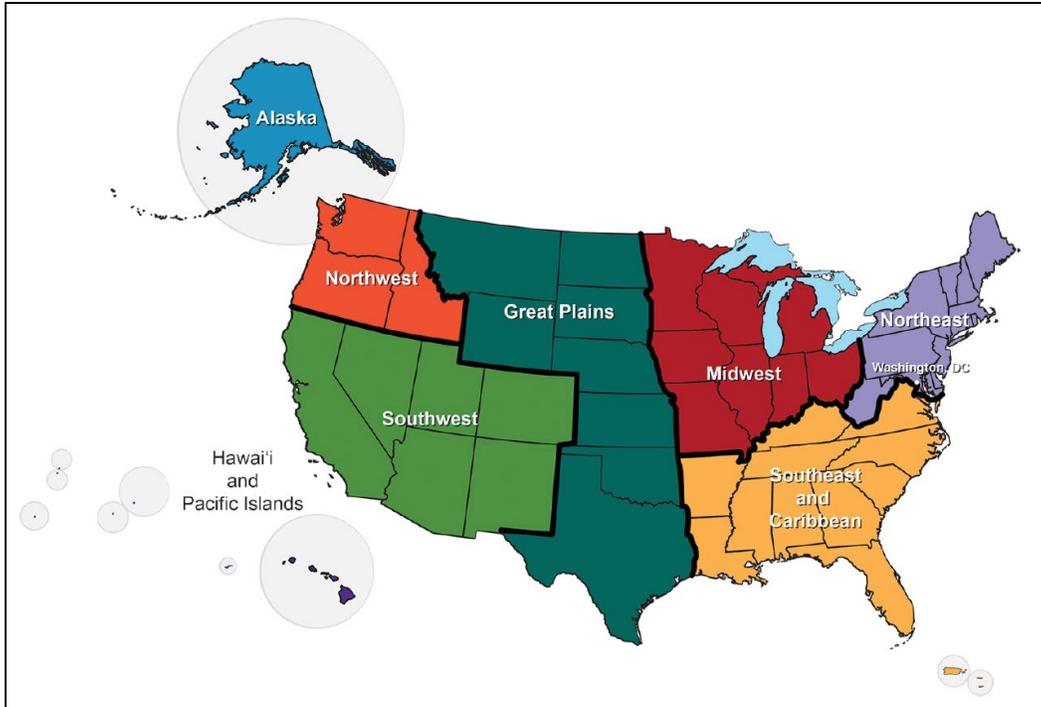
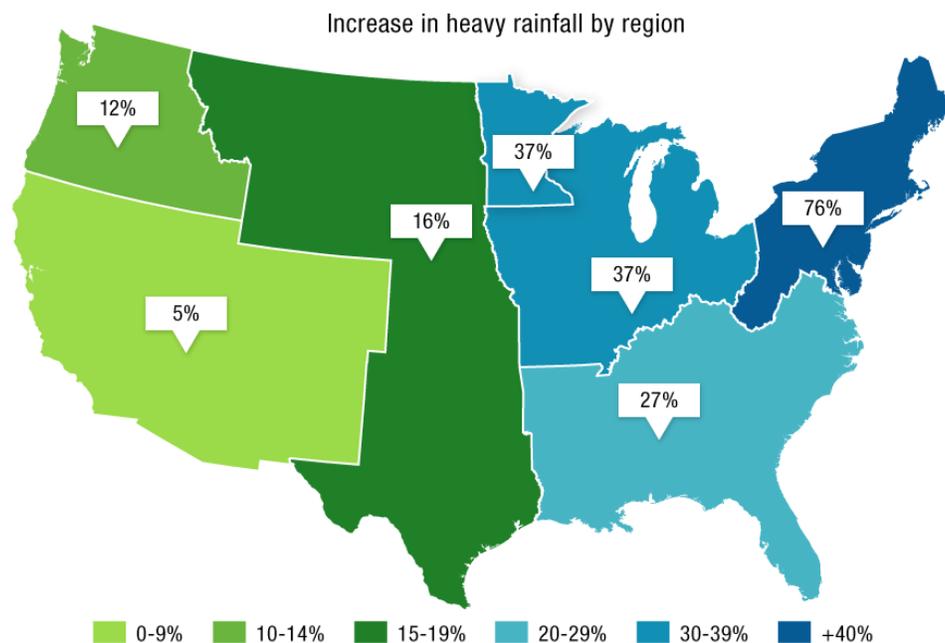


Figure 2 Third National Climate Assessment regional boundaries in CONUS (Melillo et al., 2014)

Increases in the amount of precipitation are primarily driven by intensification of the heaviest rainfall events (Melillo et al., 2014). Heavy, extreme rainfall events are more frequent now than in the past, particularly in the Midwest and Northeast United States during summer and fall months (Melillo et al., 2014). The amount of rain falling in heavy precipitation events in the Midwest is 30% greater than it was relative to a 1901-1960 average. Frequency of heavy precipitation events in the Midwest have increased nearly 37% from 1958-2012 (Pryor et al., 2014). A corresponding increase in frequency of flood events has also been noted in the Midwest United States, where the frequency of heavy rainfall events is greatest (Melillo et al., 2014).



Source: National Climate Assessment, National Climatic Data Center

Figure 3 Regional heavy rainfall increases.

Using historical records, multiple authors have identified significant increasing trends in total precipitation for the Upper Mississippi River Basin, which contains the project area. Palecki et al. (2005) quantified statistically significant increases in winter storm precipitation totals for the 1972 to 2002 time period in the Upper Mississippi River Region. Grundstein (2009) identified significant positive linear trends (period 1895-2006) in both annual precipitation and the soil moisture index for multiple sites within the Upper Mississippi River Region. Wang et al. (2009) identified an increasing precipitation trend from 1950-2000 for late summer and fall in central regions of the United States. A study by McRoberts and Nielsen-Gammon (2011) found that the positive trend in annual precipitation indicates an increase on the order of 5%-20% per century (1895-2009 period of record) for the Upper Mississippi River Region.

3.1.2 Projected Precipitation Trends

According to the third NCA, at a global scale, climate models show consistent projections of future increases in precipitation for northern climates under a range of greenhouse gas (GHG) emissions scenarios (Melillo et al., 2014). In addition to increases in annual precipitation, the frequency of heavy storm events is expected to increase relative to current conditions (Melillo et al., 2014). Under a high greenhouse gas emissions scenario (A2 scenario), GCMs project average winter and spring precipitation in 2071-2099 to increase between 10% and 20% for the Midwest United States relative to a 1971-2000 baseline condition (Pryor et al., 2014). Increases in summer and fall precipitation are not expected to be greater than the natural observed variation. Regional climate models (RCMs) for the Midwest using the same emissions scenarios as the previously mentioned study are projected to increase spring

precipitation by 9% for the 2041-2062 timeframe relative to the 1979-2000 time period (Pryor et al., 2014). Projected changes in the Northern United States are a consequence of a warmer atmosphere (temperatures, see Section 3.2), which can hold more moisture, and changes in large scale weather patterns. Climate model projections for the Midwest region of the United States indicate a significant increase in annual precipitation (2.4-4.0 inches) by the middle of the 21st century (Melillo et al., 2014). The fourth NCA findings were consistent with findings from the third NCA, with more detail cited in the third edition.

At a regional scale, projections generally showed an increase in average annual precipitation. Projections based on global circulation models (GCMs) assessed by Johnson et al. (2012) for the Upper Mississippi River Basin showed average annual precipitation changes for the 2055 planning horizon compared to a historic baseline. The projections showed an increase in average annual precipitation of 5%-15%. A study by Liu et al. (2013) investigated maximum air temperatures in the Upper Mississippi River Region using a single GCM, which assumes an A2 (high) greenhouse gas emissions scenario. The study forecasted droughts in the region will be more severe in the future, because the effects of projected temperature (see Section 3.2.2) and evapotranspiration increases are expected to outweigh increases in precipitation. Drought severity in the Upper Mississippi River Basin is also anticipated to increase in the future as a result of projected temperature (see Section 3.2.2) and evapotranspiration increases (USACE, 2015).

3.2 Air Temperature

3.2.1 Observed Air Temperature Trends

According to the fourth NCA, observed temperature in the United States increased 1.2-1.8 degrees Fahrenheit since 1895, and the largest proportion of this increase occurred since 1970 (USGCRP, 2017). Much of the warming occurred in recent decades, with the most recent decade at time of the publication being the nation's hottest on record. Since 1991, temperatures rose 1.0-1.5 degrees Fahrenheit over most of the United States relative to a 1901-1960 time period.

Recent work by Pryor et al. (2014) for the Upper Mississippi River Region estimates that from 1895-2012, temperatures in the region increased by an average of 1.5 degrees Fahrenheit. The largest increases by season occurred during the winter and spring months (USGCRP, 2017). Wang et al. (2009) also found a statistically significant trend of increasing air temperature for the winter, spring, and summer months for the 1950-2000 time period across Minnesota; however, a slight decreasing trend was observed in the fall. Johnson and Stefan (2006) identified numerous trends in 20th century hydro-climate data for sites across Minnesota suggestive of a warming climate. These include earlier ice-out dates and later ice-in dates for lakes and earlier spring runoff.

The length of the frost-free season has gradually increased since the 1980s. The last occurrence of freezing temperatures presently occurs earlier in the spring and later in the fall, which suggests a change in the frost-free season length and a potential shift in the timing of seasons (USGCRP, 2017). Nationally, the average frost-free season from 1991-2011 is ten days longer relative to an earlier 1901-1960 timeframe. When compared to the typical season length, the frost-free season length increased by 9

days in the Midwestern United States (USGCRP, 2017). An increase in frost-free season would impact the duration and demand for dredging, as dredging season generally occurs ice-out to ice-in.

3.2.2 Projected Air Temperature Trends

Future temperature projections are estimated using GCMs and various greenhouse gas emissions scenarios. According to the fourth NCA, warming is projected for all parts of the United States during the next century (USGCRP, 2017). Estimates indicate the magnitude of warming will be 2-4 degrees Fahrenheit over the coming decades (Melillo et al., 2014). Even under a lower greenhouse gas emissions scenario, which incorporates assumed reductions in greenhouse gas emissions, by the end of the century it is estimated that temperatures will be roughly 3-5 degrees Fahrenheit greater than present day temperatures. For higher greenhouse gas emission scenarios, warming is anticipated to increase by 5-10 degrees Fahrenheit by the end of the 21st century. The largest temperature increases are expected in the upper Midwestern United States and Alaska (USGCRP, 2017).

In the Midwestern region of the United States, an increase in both annual average temperature and the number of extreme heat days is expected over the next century (Pryor et al., 2014). Increases in extreme heat days has the potential to increase the frequency and duration of droughts in the Midwest (Pryor et al., 2014). By applying a worst case greenhouse gas emissions scenario, Liu et al. (2013) projected an average temperature increase of 2.7-8.1 degrees Fahrenheit in the Upper Mississippi River Region by 2055 compared to a historic study baseline from 1971-2000. It is important to note there is a high degree of uncertainty associated with temperature estimates due to the use of GCMs, the natural variability of temperature, and assumed greenhouse gas emissions scenarios. However, in general, consensus among peer-reviewed studies indicates projected temperatures in Minnesota will rise over the next century, and drought conditions are likely to become more prevalent (USACE, 2015).

3.3 Hydrology

3.3.1 Observed Hydrologic Trends

The fourth NCA (NCA) indicates the magnitude of floods has changed in many parts of the United States (USGCRP, 2017). Due to variations in climate across the country, there is no national trend in flood magnitude; however, flood magnitudes at the regional level have increased in the Midwestern United States (USGCRP, 2017). The regional trends in observed flows are consistent with regional observed climate trends. As precipitation and the frequency of extreme precipitation has increased in the Midwest, so have the number of flood events. Extreme precipitation events now occur more frequently during the summer and fall months. Although the frequency of summer and fall floods has increased, these events are less likely to produce floods as large as spring snowmelt driven floods, in part because the water storage capacity of the soil is typically greater during the summer and fall months (USGCRP, 2017). Spring snowmelt floods can also be exacerbated by the combination of snowmelt and rainfall to produce large scale flooding.

Xu et al. (2013) studied trends in streamflow for multiple gages in the Upper Mississippi River Region using Model Parameter Estimation Experiment (MOPEX) data for 1950-2000. The study found that of 302 watershed gages across the United States, 20%-30% of sites used in the study showed significant increases in streamflow and baseflow and 65% of sites showed non-significant trends. Most of the sites

which showed significant increases in streamflow and baseflow are concentrated in the Midwestern United States (Xu et al., 2013). This finding is consistent with what is presented in the fourth NCA: northern climates tend to show increases in streamflow.

At the regional level, Novotny and Stefan (2007) studied 20th century streamflow data from 36 gages in the state of Minnesota. A total of 11 gages were observed in the Upper Mississippi River Basin, including gages near the Pool 5 project site. Trend analysis of flow metrics including mean flow, 7-day low flow, and peak flows were used in the study. The majority of Minnesota stream gages exhibited a statistically significant trend of increasing flows for the period of 1913-2002 (Novotny and Stefan, 2007). Figure 4 below shows a summary of trends in streamflow for several large river basins in Minnesota (Novotny and Stefan, 2007). A strong consensus was found showing an upward trend in mean annual flow, low flows (example: 7-day low flow), and peak streamflow. There is a reasonable consensus among multiple studies that trends show an increase in flow in the Midwest and the Upper Mississippi River Basin (USACE, 2015). Increases in flow may lead to more low-magnitude but high-frequency flood events. These high frequency events are within a sediment transport prompting flow regime, which would affect sedimentation in the project area.

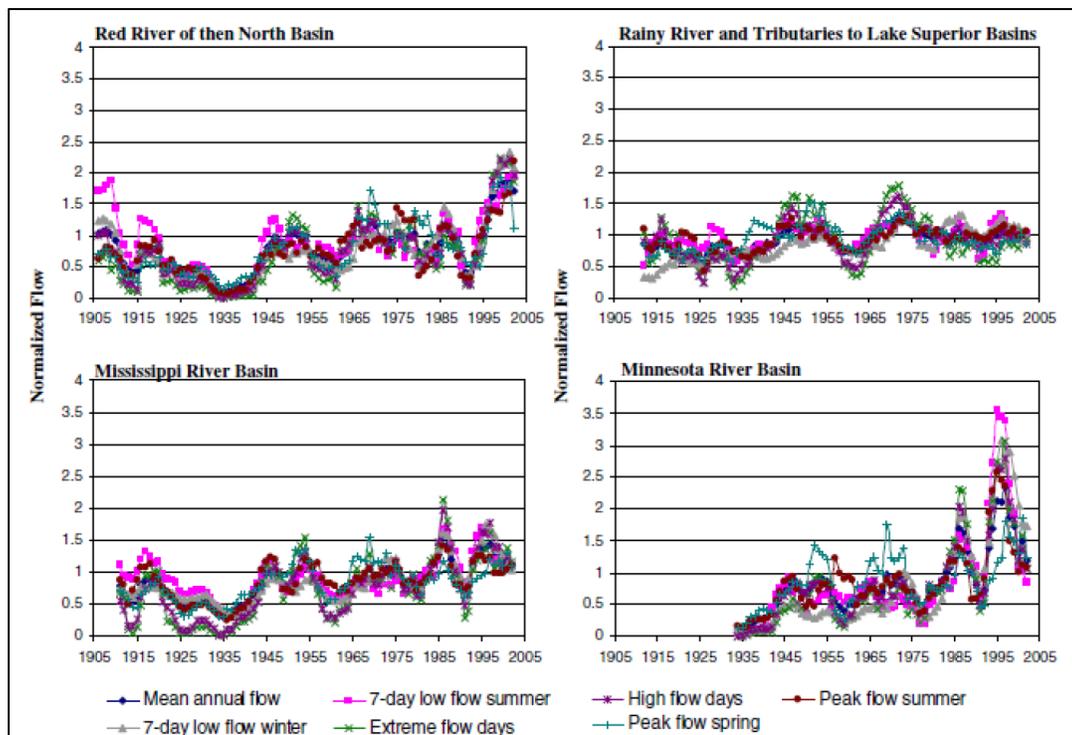


Figure 4 Five year running mean of streamflow statistics averaged for major rivers in Minnesota (Novotny and Stefan, 2007)

3.3.2 Projected Hydrologic Trends

The fourth NCA (NCA) states extreme rainfall events and flooding have increased during the last century (see Sections 3.1.1 and 3.3.1) and these trends are expected to continue in the future (USGCRP, 2017). Large scale flooding in the Midwest Region is typically caused by spring snowmelt and the associated

runoff, which can be exacerbated by rainfall. The NCA notes that high magnitude snowfall years are less frequent than in the past, but large-scale flooding is expected from increases in extreme precipitation.

Jha et al. (2006) used Soil and Water Assessment Tool (SWAT) models to assess the effects of potential future climate change on the hydrology of the Upper Mississippi River Basin. The study assessed the effects of nine 30-year (1968-1997) sensitivity runs and six climate change scenarios relative to a baseline scenario. The study noted that precipitation trends in the United States over the past century indicate that average precipitation nationwide has increased by 5%-10% and that the average increase in the Upper Mississippi River Basin is greater than this. The model results indicated a substantial amount of uncertainty in the current GCM projections for the region and, consequently, Jha et al. (2006) did not make definitive conclusions about how changes in climatic variables impact streamflow. Jha et al. (2006) did note it is likely that snowmelt and rainfall have the potential to increase in January, which would result in both an earlier melt and increases in spring streamflow, signaling a potential shift in seasonality.

Notaro et al. (2011) applied 15 different GCMs using three different greenhouse gas emissions scenarios of varying severity (B1, A1B, and A2) to assess the impact of climate change on snow pack in Wisconsin. The results indicated that warmer and wetter winters are anticipated in the future. Snow pack is anticipated to be reduced and earlier snowmelt is expected, resulting in a shortened snow season. As noted above, the frequency of high magnitude snowfall in the Midwest is decreasing, and the frequency of summer and fall floods is increasing. Collectively, these effects could result in a change in seasonality of maximum annual flood peaks from being primarily snowmelt driven in the spring to being primarily rainfall driven in the summer and fall.

The complex interaction between precipitation, temperature, and hydrology make it difficult to state with certainty how climate change will affect future hydrology and streamflow. Increases in precipitation have the potential to increase streamflow; however, corresponding increases in temperature and evapotranspiration could outweigh effects of increased precipitation. As the studies above indicate, no definitive statement can be made to describe how climate change will impact hydrology and streamflow in the region; however, it can be stated with relative certainty that climate change has the ability to alter basin hydrology.

3.4 Sedimentation

High rates of sedimentation increase the need for navigation channel dredging, an important factor in the Pool 5 DMMP project. Studies have been conducted to observe sediment transport in the Upper Mississippi River Basin and the lower Minnesota River Basin, a primary source of sediment to the Mississippi River. Engstrom (2009) collected 25 sediment core samples across the flow axis of Lake Pepin. Lake Pepin is located in Pool 4 of the Mississippi River. The study found that sediment accumulation rates have increased by over a magnitude from the beginning of European settlement in 1830 to the 1990s. This increase in sediment accumulation is detailed by a doubled increase at the time of European settlement, followed by a gradual increase at the beginning of the twentieth century and then a sharp rise from 1940 to 1960 (Figure 5). Sediment accumulation rates then plateaued during the 1970s, but were observed to have peak values from the preceding two decades, when the study was completed.

Changes in land use should be taken into account when observing the data. Settlement in Minnesota significantly impacted the landscape as agriculture increased, which is separate from climate change.

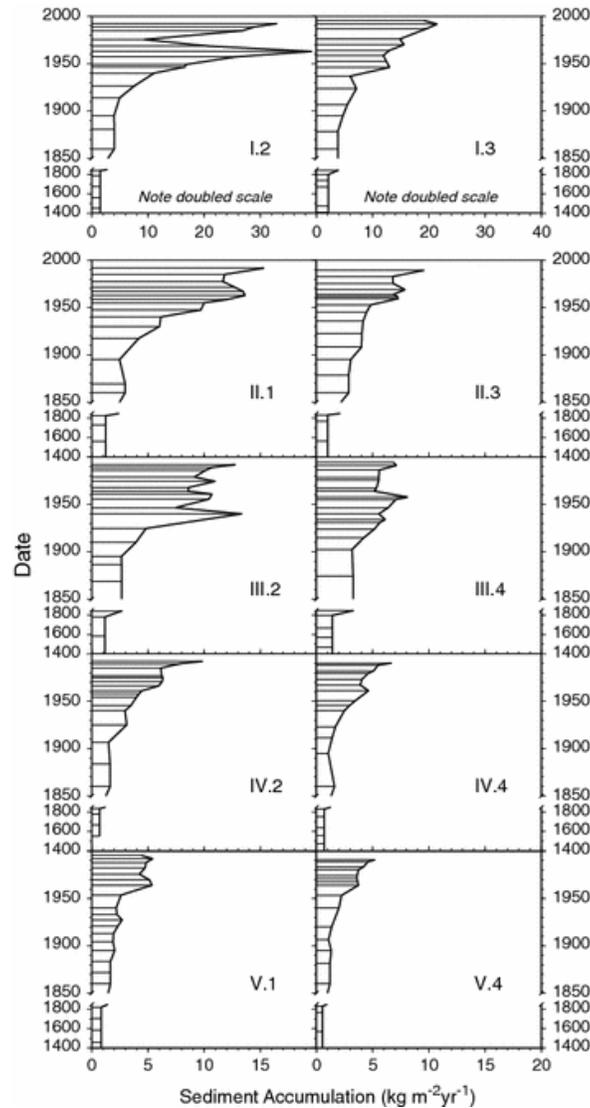


Figure 5 Sediment accumulation rates versus sediment age for 10 detailed cores (Engstrom et al. 2009)

Johnson et al. (2015) studied 20 large watersheds in the United States (including the Minnesota River Basin) and assessed the response of watershed runoff and water quality to several projected climate change scenarios. The study used six climate change scenarios adopted from the North American Regional Climate Change Assessment Program (NARCCAP) and dynamically downscaled for climate model output. Two time periods were simulated in the SWAT model, 1971-2000 and 2041-2070 for past and potential conditions. Variance between the simulated changes in total suspended solids, total phosphorus load, and total nitrogen load among the studied watersheds were related to different sediment and nutrient sources, soil erosion, and biogeochemical cycling. Based on the six NARCCAP scenarios, the mean increase in simulated annual total suspended solids load for the Minnesota River basin was approximately 50% by 2070. The mean increase in simulated annual total phosphorus load

was approximately 25%. The mean increase in simulated annual total nitrogen load was approximately 45% (Johnson et al., 2015). According to the study, 78% of land surrounding the Minnesota River is used for agriculture. This could account for the projected increases in sediment and nutrient loads. Due to the influence of the Minnesota River on sedimentation in the Mississippi River, total suspended solids could be expected to increase in the Mississippi River and consequently study area under the assumed conditions of the modeled scenarios.

The link between climate change and sedimentation is not well studied, and it is difficult to draw conclusions regarding how climate change will impact sediment load to a watershed (Johnson et al., 2015). The magnitude of precipitation and frequency of storm events has increased over the observed period of record and is expected to increase in the future (Walsh et al., 2014). Increases in precipitation intensity may increase erosion and promote additional sediment transport (Melillo et al., 2014). The study conducted by Novotny and Stefan found increases in mean annual flow for the Upper Mississippi River. Mean annual flow and low flow relates to flow regimes that can advance sedimentation in the project area.

3.5 Summary

A summary of the findings from the *Recent US Climate Change and Hydrology Literature Applicable to U.S. Army Corps of Engineers Missions – Water Resources Region 07, Upper Mississippi* is included in Figure 6 below. In general, temperature, precipitation, and streamflow have increased over the observed period of record for the region. Projected increases in temperature and precipitation are anticipated in the future. Projections of future hydrology are uncertain due to the complex interaction between temperature, evapotranspiration, and soil moisture deficits. Projected increases in precipitation could increase streamflow; however, increases in temperature and evapotranspiration could outweigh additional runoff from precipitation causing streamflow to decrease. An increase in streamflow would promote sedimentation and sediment transport from project area tributaries, as low and normal flow conditions are projected to increase. It should be noted that changing land use since settlement in the 1830s has also impacted observed increases in erosion and streamflow, a separate mechanism from climate change. All of these projected variables would have an impact to the study area and dredging activity for the future.

PRIMARY VARIABLE	OBSERVED		PROJECTED	
	Trend	Literature Consensus (n)	Trend	Literature Consensus (n)
 Temperature	↑	 (7)	↑↑	 (14)
 Temperature MINIMUMS	↑	 (3)	↑↑	 (4)
 Temperature MAXIMUMS	↓	 (3)	↑↑	 (6)
 Precipitation	↑↑	 (12)	↑	 (15)
 Precipitation EXTREMES	↑	 (2)	↑	 (10)
 Hydrology/ Streamflow	↑	 (10)	↕	 (15)

TREND SCALE

 = Large Increase
 = Small Increase
 = No Change
 = Variable
 = Large Decrease
 = Small Decrease
 = No Literature

LITERATURE CONSENSUS SCALE

 = All literature report similar trend
 = Low consensus
 = Majority report similar trends
 = No peer-reviewed literature available for review
(n) = number of relevant literature studies reviewed

Figure 6 Summary matrix of observed and projected climate trends and literary consensus (USACE, 2015)

4 Trends in Observed Records

The important hydrologic variables affecting the project include water surface elevation (stage) and river discharge (water surface elevation is directly proportional to river discharge). Discharge can give indication to behaviors of potential sediment transport, as it is the main driver of how sediment travels through a system. There is limited data available on sediment transport, particularly in the study area so conclusions are best drawn from discharge trends. The concept of sediment transport is important in dredging because it reflects the amount of material in the river channel.

Besides fluctuations in climate, stage can be influenced by long-term geomorphic change, changes to Lock and Dam operating plans, and gage relocation. Discharge can be influenced by changes in upstream water storage due to dam construction, changes in land-use, and measurement techniques. These factors make it difficult to determine the role of climate change in affecting the hydrologic signal at the project scale. The relevant question to answer at the project scale is whether there has been, or will be, a hydrologic change that will affect dredging frequency for the future. Discharge was selected as the primary hydrologic variable to analyze for this project.

4.1 Gage Data

The Mississippi River at Winona, MN USGS gage (ID 05378500) is the best representation of streamflow for the project area (Pool 5) and is used for the climate assessment. The continuous period of record for daily discharge and annual instantaneous peak flow at this site is 1928-2018, in full water years. The gage recorded sediment data from 1975-1987. This short period of record was difficult to draw conclusions for trends in sediment transport so it was not included in the assessment.

The USGS gage at Winona, MN is approximately 12.0 miles downstream of Lock and Dam 5 and Pool 5. The USGS gage at Prescott, WI was considered; however, the gage at Winona was selected due to the relatively similar watershed size and inclusion of the Zumbro and Chippewa River (Wisconsin) as significant tributaries. The records at the Winona gage are considered good, according to the USGS website. Nonetheless, flow is influenced by power operations at the Prairie Island Power Plant, located upstream in Pool 3 of the Mississippi River. Additionally, there are various power and flood control projects located along the Chippewa and Flambeau Rivers that are tributaries just upstream from Pool 4. The drainage area for Pool 5 is estimated to be approximately 59,277 mi² and the drainage area above the Winona gage is approximately 59,620 mi².

None of the Locks and Dams upstream or along the Mississippi River itself are thought to adversely impact the annual peak discharges seen at Pool 5. Since the hydraulic structures in the area do not store water, they are not anticipated to have an impact on the annual average discharge for the Mississippi River at Winona, MN USGS gage. In fact, when flows are high enough, the gates of the Locks and Dam affected by high flows are lifted out of the water column after which the flow has a free run of the river.

The Chippewa River at Durand, WI USGS gage (ID 05369500) is a tributary of the Mississippi River into Pool 4. The gage has a period of record from 1930-2019. The stream has considerable influences from regulation and reservoir operations, so cannot be used for comparison of peak flow data and non-stationary. However, annual volumetric flow, which is not affected by flood control or power regulation, can be examined for patterns of change over the period of record and will be presented in sections following with the Winona analysis.

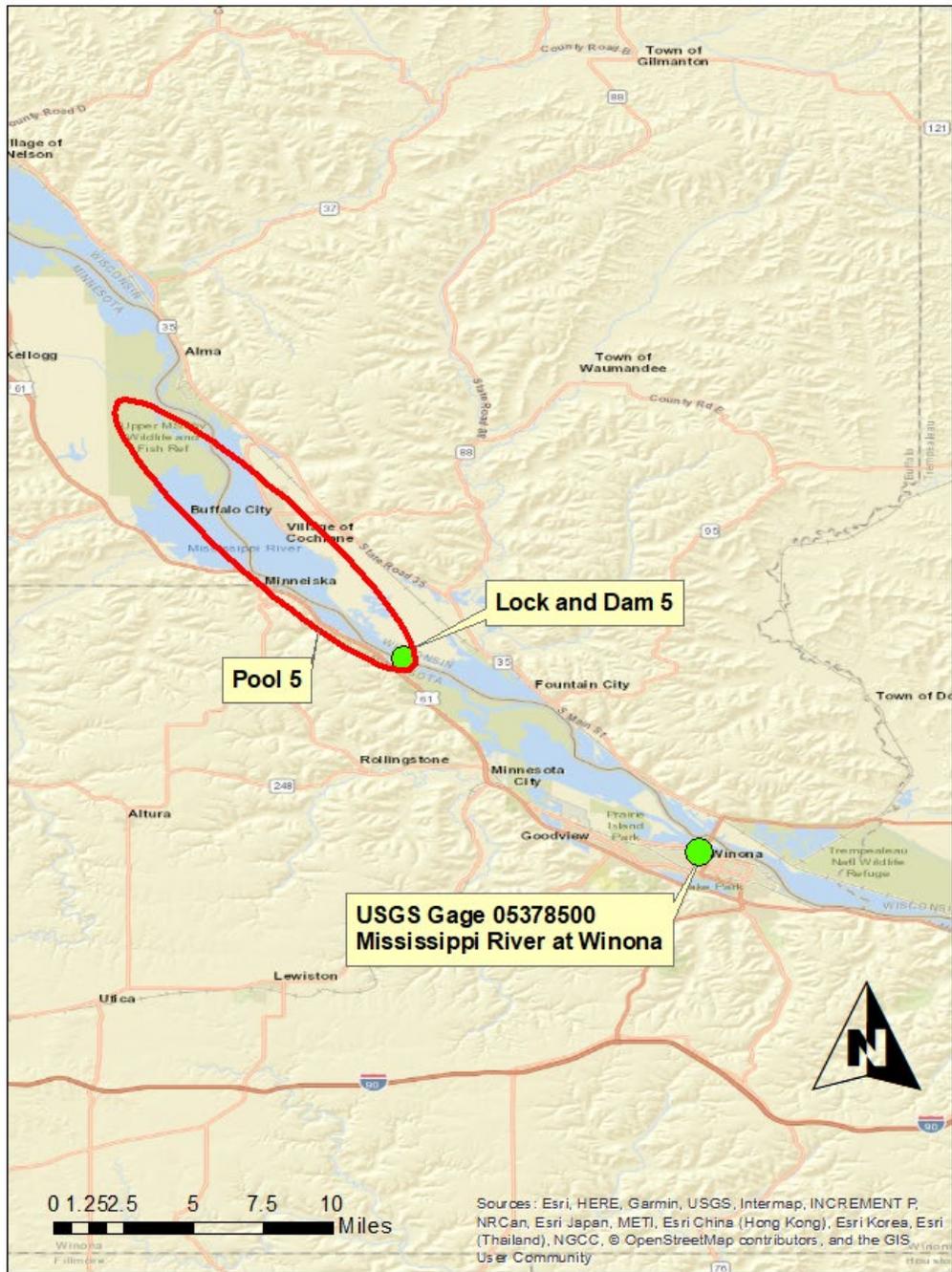


Figure 7 Streamflow gage used for analysis (Department of the Interior 2019b)

4.2 Peak Streamflow

Annual peak flow data was analyzed to determine if there are any patterns in observed discharge that might provide insight into future hydrologic conditions in the project area. Peak streamflow is relevant to navigation projects because it could indicate changing high flow regimes in the area. As noted in the USGS information on the Winona gage, peak streamflow is a good representation for natural flow conditions in the area, i.e. unregulated. The stationarity of the flow record at the Mississippi River at Winona, MN USGS gage (ID 05378500) is assessed by applying a series of twelve statistical test to the observed peak flow record using the USACE Nonstationarity Detection (NSD) tool with default settings in the Timeseries Toolbox (USACE, 2019a). These settings apply statistical tests to detect the presence of nonstationarities in data. The statistical tests can be grouped into mean-based, variance-based, and distribution-based. The results can be seen in Figure 8 below. Trend lines are fit to the data using regression techniques. The relative strength of a detected nonstationarity is evaluated using criteria of consensus, robustness, and magnitude.

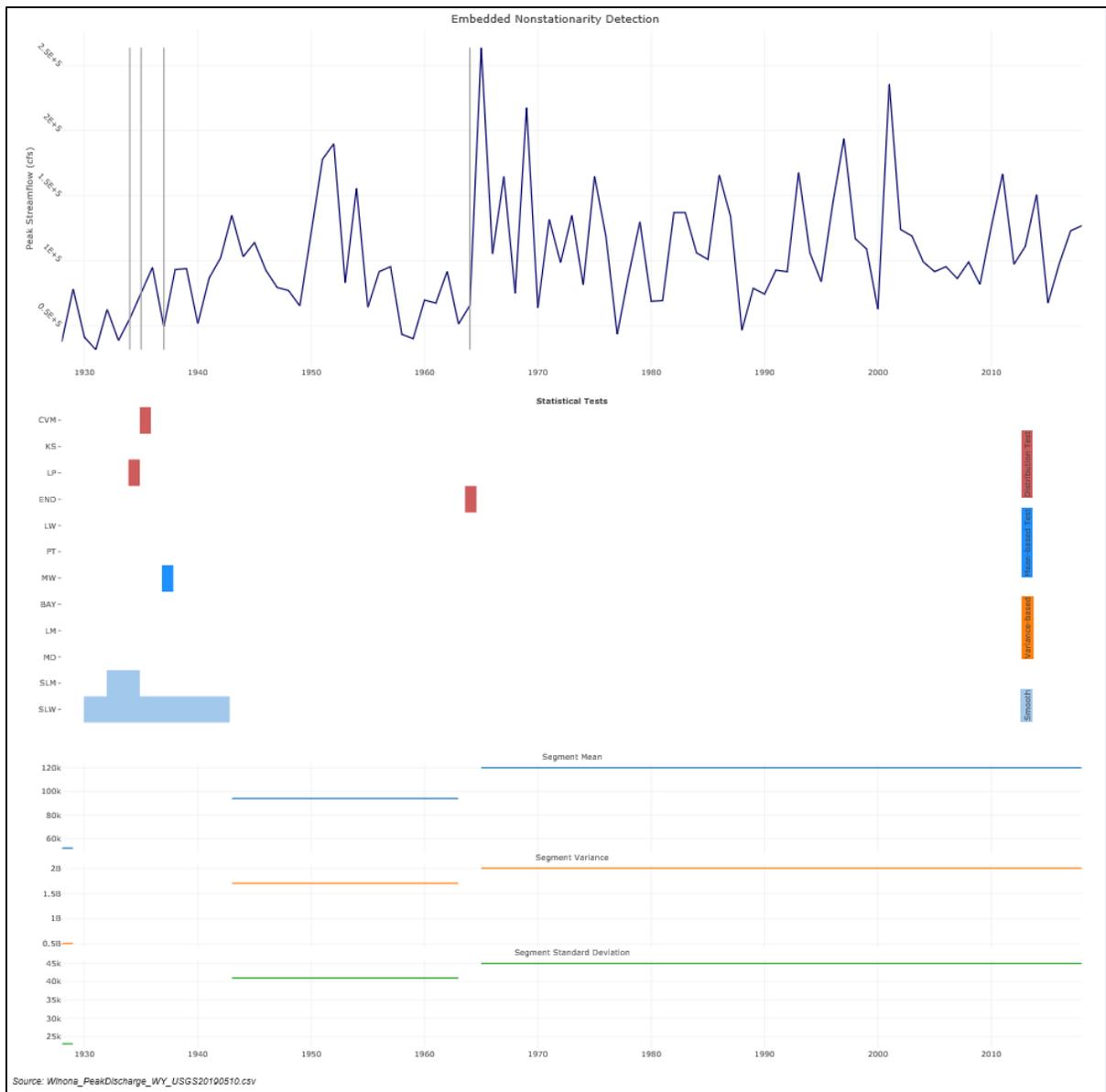


Figure 8 Nonstationarity detection results for Mississippi River at Winona, MN USGS gage (ID 05378500)

Nonstationarities were detected in 1934, 1935, 1937, and 1964. The relative strength of each nonstationarity is determined by considering the level of consensus between different statistical tests targeted at detecting the same type of nonstationarity (e.g. a change in the variance/standard deviation, mean, or distribution) in the flow data series. If consensus is not found for a given year or a short period of time, it is reasonable to discount the nonstationarity (Friedman et al., 2016). In accordance with the guidance, the 1934, 1935, and 1937 change points are under the same consideration to meet the criteria for consensus, because they are within five years of each other. Consensus between two different statistical tests showed changes in distribution for the two change points.

A second criterion for adopting nonstationarities as significant indicators of change is robustness. Robustness is achieved when tests targeting changes in two or more different statistical properties

(mean, variance/standard deviation, and overall distribution) indicate a statistically significant nonstationarity. For example, robustness would be achieved if at least one test indicated a change in the mean and another test indicated a change in standard deviation in the same year. Again, 1934, 1935, and 1937 meet the criteria of robustness because significant changes in the mean and distribution of the annual peak flows were detected.

A third criterion for detection of significant nonstationarities is a change in magnitude of the annual peak flows. Changes in magnitude are noted in the segment mean, variance, and standard deviation for 1965. Since the 1965 change point did not meet the consensus and robustness criteria, it is not considered a strong change point. The 1934, 1935, and 1937 change points could not be determined for magnitude changes because the segmented statistical properties were not plotted. This could be due to the Smooth Lombard Wilcoxon being applied at the start of the period of record to 1943, where the first segment mean, variance, and standard deviation begins.

Using the strong nonstationarity indicators detected in 1934, 1935, and 1937, a monotonic trend analysis was performed for annual peak streamflow recorded at the Mississippi River at Winona, MN USGS gage (ID 05378500) for two periods: 1928-2018 (systematic record) and 1938-2018 (post latter change point). A p-value less than 0.05 is generally accepted as statistically significant, and this threshold is adopted for this assessment. For the 1928-2018 time period (the entire period of record), both the Mann-Kendall Test and Spearman Rank Order Test determined a statistically significant positive trend, with p-values of 0.00037 and 0.00023, respectively. See Figure 9 and Figure 10 for the annual peak flow monotonic trend analysis results for the Mississippi River at Winona, MN gage from 1928-2018.

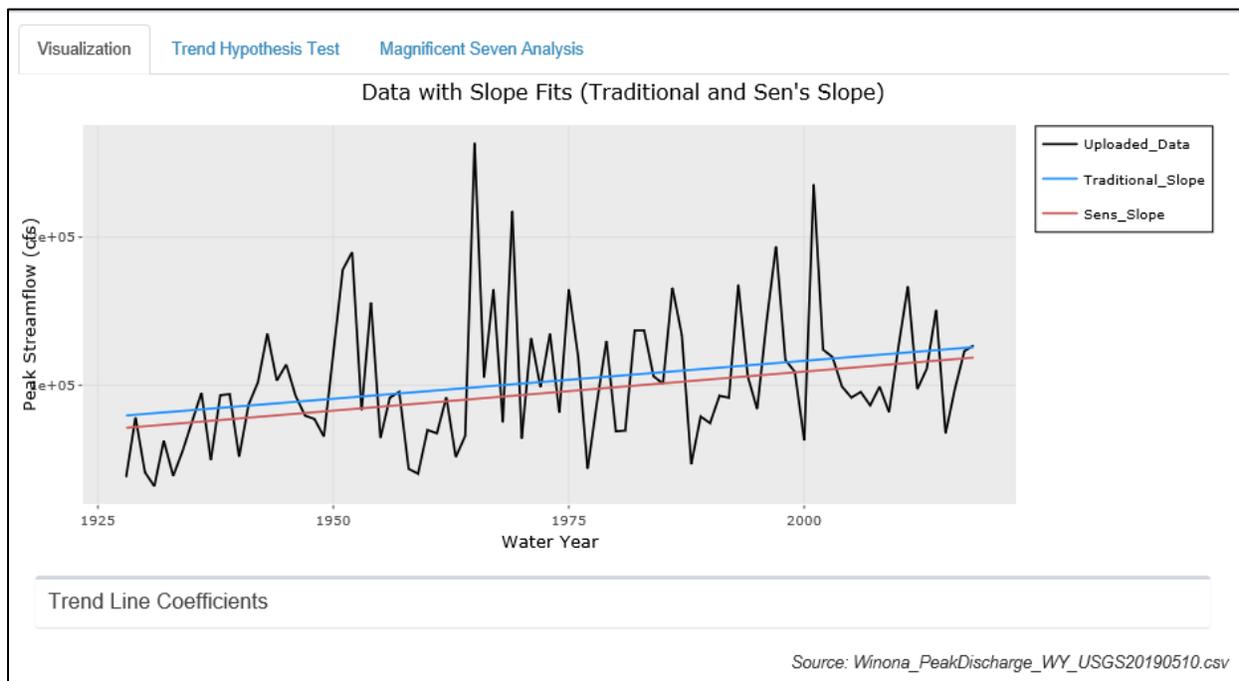


Figure 9 Annual peak flow monotonic trend analysis for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500), 1928-2018

Test	P.Value
t-Test	0.0035601
Mann-Kendall	0.00036788
Spearman Rank-Order	0.00023036

• A statistically significant trend (at the alpha = .05 level) was detected by the Mann-Kendall Test.
 • A statistically significant trend (at the alpha = .05 level) was detected by the Spearman Rank-Order Test.

Source: Winona_PeakDischarge_WY_USGS20190510.csv

Figure 10 Annual peak flow monotonic trend analysis for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500), 1928-2018

Figure 11 and Figure 12 shows the annual peak flow monotonic trend analysis results for the Mississippi River at Winona, MN gage from 1938-2018. For this timeframe, both the Mann-Kendall Test and Spearman Rank Order Test did not detect a significant trend with p-values of 0.1045 and 0.0864, respectively. Looking at the post change point monotonic trend analysis provides evidence that a significant trend is not observed amongst annual peak flows for the Mississippi River at Winona, MN USGS gage (ID 05378500).

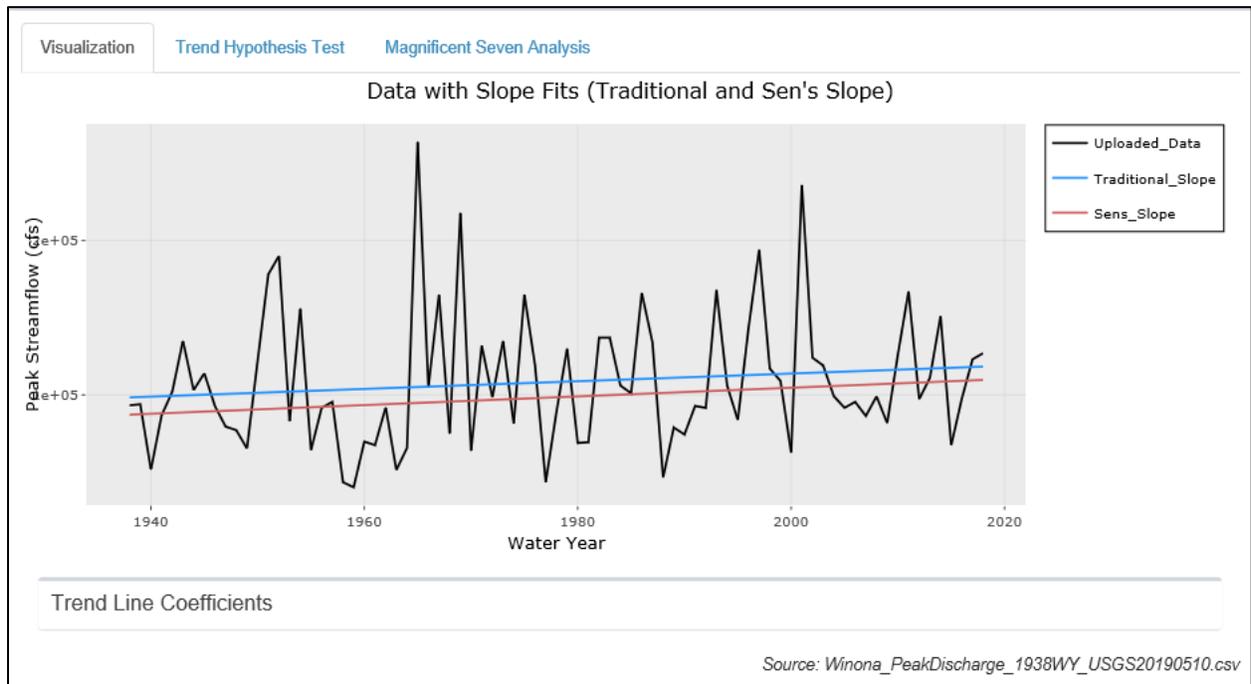


Figure 11 Annual peak flow monotonic trend analysis for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500), 1938-2018 (post change point)

Test	P.Value
t-Test	0.23294
Mann-Kendall	0.10453
Spearman Rank-Order	0.086419

- A statistically significant trend (at the alpha = .05 level) was NOT detected by the Mann-Kendall Test.
- A statistically significant trend (at the alpha = .05 level) was NOT detected by the Spearman Rank-Order Test.

Source: Winona_PeakDischarge_1938WY_USGS20190510.csv

Figure 12 Annual peak flow monotonic trend analysis for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500), 1938-2018 (post change point)

4.3 Annual Average Discharge

Observed annual average discharge for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500) was analyzed for trends in streamflow (Department of the Interior, 2019a). The USGS indicates that low and medium flow regimes at the gage are influenced by upstream regulation. Regulation is from the Prairie Island power plant (they use water for cooling) and impoundments on tributaries. The Prairie Island power plant is not used to store water and therefore is unlikely to have any impact on the natural flow regime of the river. The drainage area of tributary streams which are affected by regulation is considerably smaller than the drainage area at the Mississippi River at Winona, MN USGS gage and have a negligible impact on the annual average discharge volume. Regulation began in Pool 5 with the construction of the locks and dams in 1936, so the majority of the period of record should reflect consistent operation. In other words, trends in flow could still indicate changing flow regimes outside of regulation, like climate change.

Microsoft Excel 2013 was used to calculate average annual discharge using the water year and apply a test for statistical significance. Over the entire period of record (1928-2018), a statistically significant positive trend was identified, as shown in Figure 13. The p-value of 4.45×10^{-8} was significantly lower than the generally accepted threshold for significance of less than 0.05, which indicated a strong trend when the entire period of record is used. It should also be noted that regulation and operation of reservoirs often lower flow, so an increasing trend could indicate other affecters in higher flows, like changes in land use or climate.

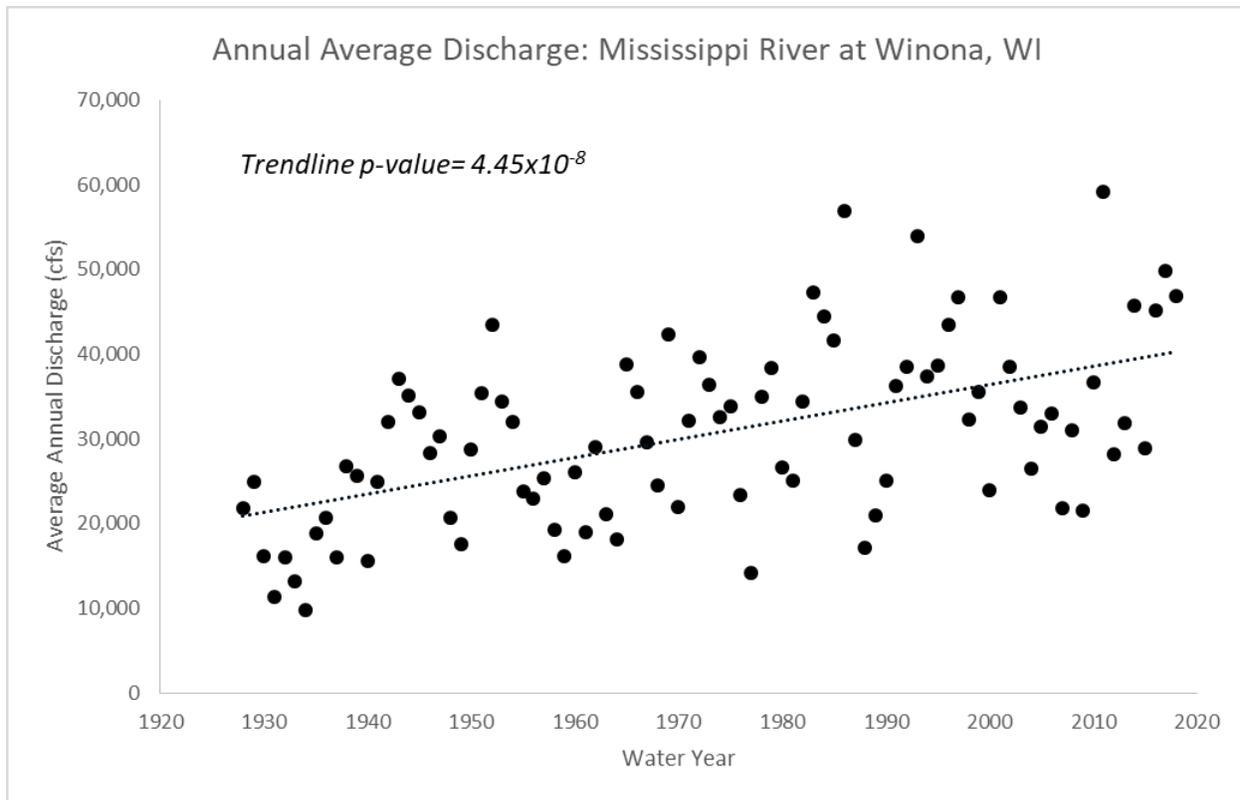


Figure 13 Annual average discharge for the Mississippi River near Winona, MN USGS Gage (Gage ID 05378500), 1928-2018

A separate qualitative assessment of climate change was prepared for the Pool 3 North and Sturgeon Lakes in 2016 (USACE, 2016a). According to the *Qualitative Assessment of Climate Change for Mississippi River North and Sturgeon Lakes*, the 1930s and early 1940s were a periods of extremely low flows (drought) on the Mississippi River, corresponding with dry climatic conditions across the Upper Midwest and Great Plains region (USACE 2016a). Engstrom et al. (2009) indicated that discharges in the Mississippi River were persistently low in the 1920s and 1930s and substantially higher beginning in the early 1940s, especially during the 1980 to present time period (Engstrom et al., 2009). The plot in Figure 13 Annual average discharge for the Mississippi River near Winona, MN USGS Gage (Gage ID 05378500), 1928-2018

13 shows that flows were generally greater after the early 1940s. The NSD tool uses linear regression modeling to determine if there are breakpoints to segment the data for separate analysis. A breakpoint was detected in 1940, which supports the notion that the dust bowl era flows are not part of the stationary period of record.

Due to the effects of the dry conditions in the 1930s and early 1940s, a separate trend analysis of average annual flows is performed for the period of record from 1940-2018 and is shown in Figure 14. The low p-value in Figure 13 may be potentially influenced from the large number of low flow years in the early period of record (1928-1940). When the 1941-2018 period of record is considered (excluding the dry years), the positive trend produces a p-value of 0.0013 which is still less than the accepted significant threshold of 0.05. The 1941-2018 period of record also includes years after construction of

the locks and dams. This exclusion of dry years and consistent period of locks and dams operation validates the statistical significance of the average annual flow for the entire period of record.

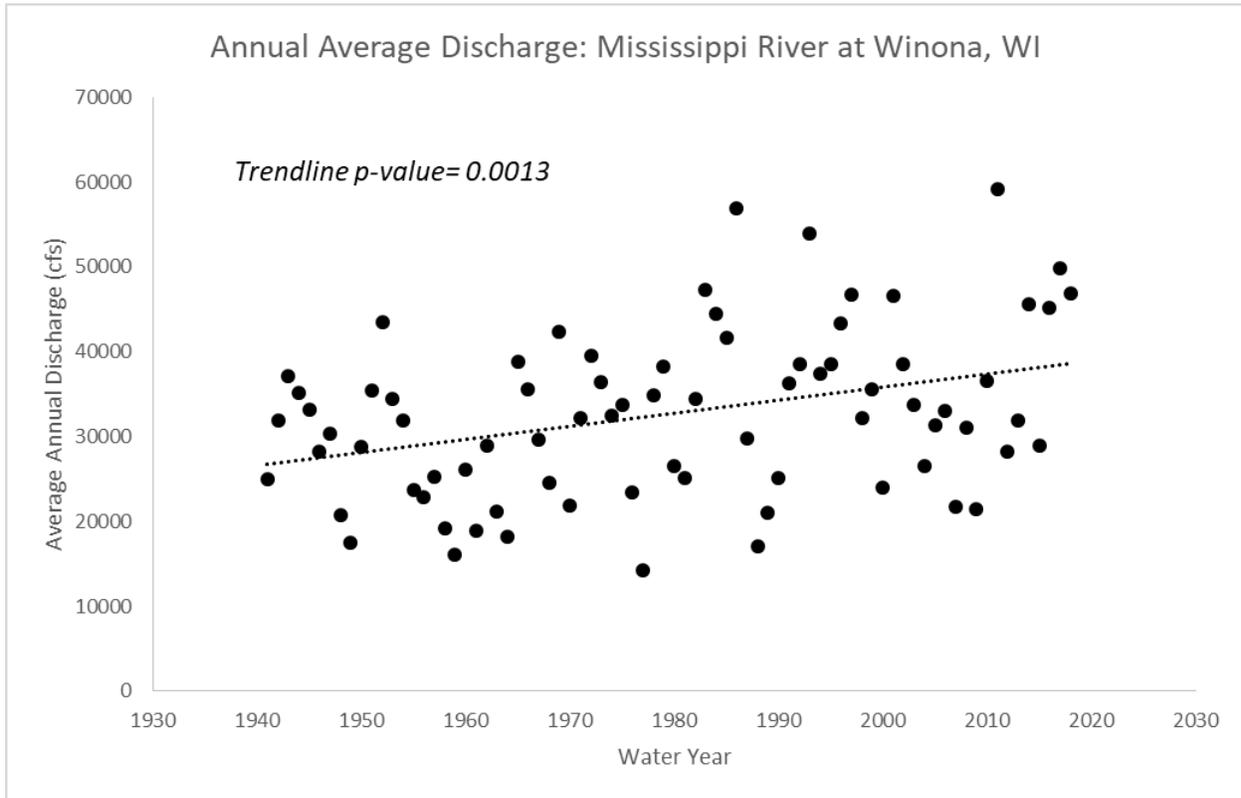


Figure 14 Annual average discharge for the Mississippi River near Winona, MN USGS Gage (Gage ID 05378500), 1941-2018

Additionally, an analysis was done on the annual average discharge for the Trempealeau River at Dodge, WI, one of the tributaries that flows into Pool 6, but is downstream of the Winona gage. The entire period of record for the gage is 1914-2018, however, there is a gap of no recorded data from 1920-1933 so the period from 1934-2018 was analyzed. There is a positive trend in the observed annual average streamflow for the tributary with an accepted statistical significance ($p=2.38 \times 10^{-7}$). With no locks and dams operation affecting the data from the Trempealeau River at Dodge, WI gage, this increase in natural streamflow supports the concept of an increase in flow which is driven by climate and land use rather than hydraulic structures.

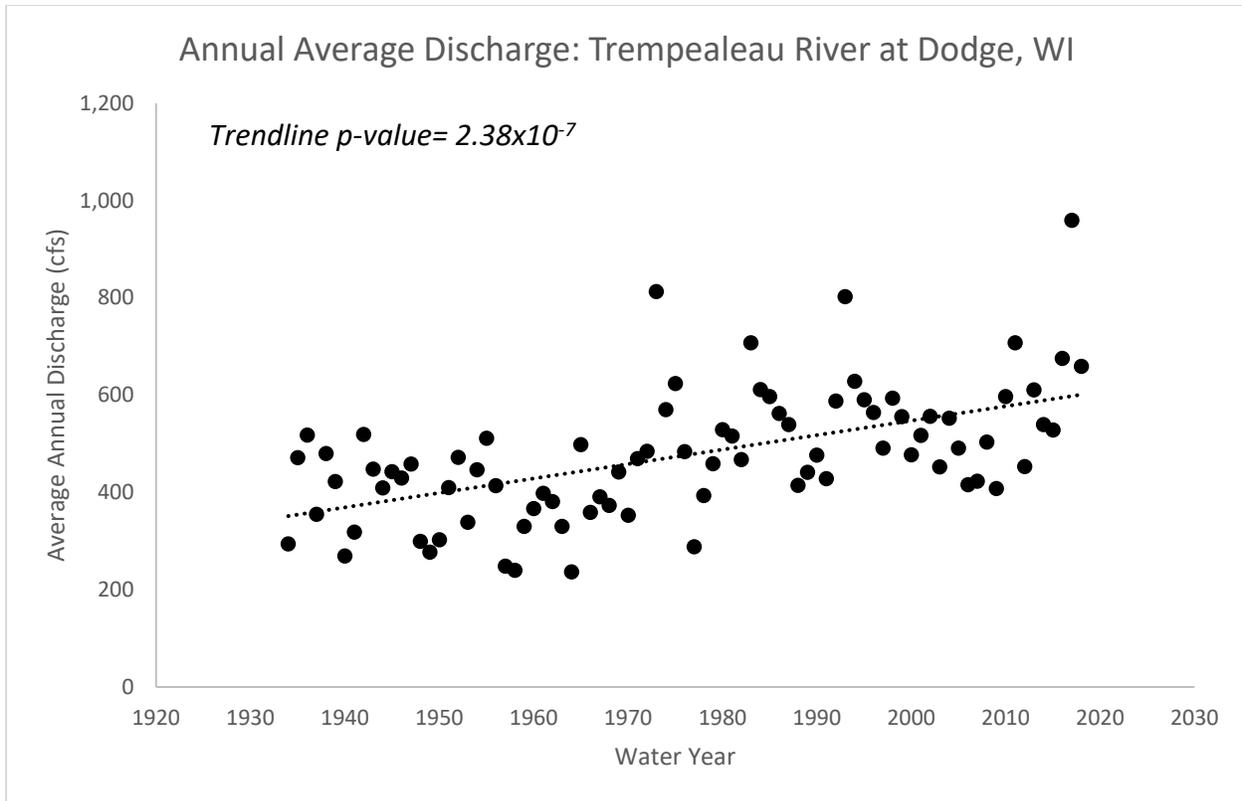


Figure 15 Annual average discharge for the Trempealeau River near Dodge, WI USGS Gage (Gage ID 05379500), 1934-2018

In the Upper Mississippi River Region, the general consensus is that recorded flows during the latter part of the 20th century were higher than flows during the first part of the 20th century (see Section 3.3.1). In prior work, the USACE and Engstrom et al. (2009) identified the year 1980 as a useful break point when comparing the early and late portions of observed flow records (USACE, 2014). The average annual discharge for the Mississippi River at Winona, MN (Gage ID 05378500) was compared between the time periods: 1928-1980, 1981-2018, 1941-1980, 1928-2018, and 1941-2018 to observe any changes in the project area. Summary statistics for these periods are shown in Table 1: Annual average discharge for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500)

Time Period	Mean	Standard Deviation	P-Value	Trend Significance
1928-1980	26,312	8,477	0.0012	Yes
1981-2018	36,462	10,423	0.7004	No
1941-1980	28,950	7,585	0.8371	No
1928-2018	30,550	10,502	4.45E-08	Yes
1941-2018	32,610	9,779	0.0013	Yes

below.

There was a 28% increase in the average annual flow for the 1981-2018 time period compared to the 1928-1980 time period. A significant positive trend was identified for the period 1928-1980, 1928-2018, and 1941-2018. No significant trend was identified for 1981-2018 or 1941-1980. The inter-annual

variability in annual average discharge increased for 1981-2018 relative to 1928-1980 (1981-2018 standard deviation: 10,423 cfs, 1928-1980 standard deviation: 8,477 cfs). The inter-annual variability in annual average discharge increased for 1981-2018 relative to 1941-1980 (1981-2018 standard deviation: 10,423 cfs, 1941-1980 standard deviation: 7,585 cfs). The mean discharge increased for the 1941-2018 time period relative to the 1928-2018 time period but the variability decreases. The identified drought years early in the period of record would account for the decreased inter-annual variability.

Shorter duration records often have more variability, but it could also indicate a change in average discharge over time. It can be observed from Table 1 that time periods that end later in the period of record show increased average annual discharges and variability. The study by Engstrom observed an increase in flow starting in the 1940s, with the trend becoming more apparent from the 1980s to the present day. The article noted that changes in land use after the European settlement in the 1830s and climate change could be factors in the increase of discharge over time. Increases in discharge variability poses issues in dredged material planning and navigation. This increase in discharge could impact the frequency of dredging due to sedimentation, depending on the flow regime.

Table 1: Annual average discharge for the Mississippi River at Winona, MN USGS gage (Gage ID 05378500)

Time Period	Mean	Standard Deviation	P-Value	Trend Significance
1928-1980	26,312	8,477	0.0012	Yes
1981-2018	36,462	10,423	0.7004	No
1941-1980	28,950	7,585	0.8371	No
1928-2018	30,550	10,502	4.45E-08	Yes
1941-2018	32,610	9,779	0.0013	Yes

Finally, annual discharge volume was examined at the Chippewa River at Durand gage, which is approximately 17 miles upstream from the confluence with the Mississippi River where it empties into Pool 4. Figure 16 shows the upward trend observed in the gage record at Durand. The p-value significance is 0.015, which indicates a significant trend toward greater discharge volumes at the gage. The observations at the Durand gage are in agreement with the other gage analyses in the area that show higher discharge volumes over time. Higher discharge volumes are linked to greater potential for sediment transport and potentially greater sediment loading to Pool 4, directly upstream of Pool 5.

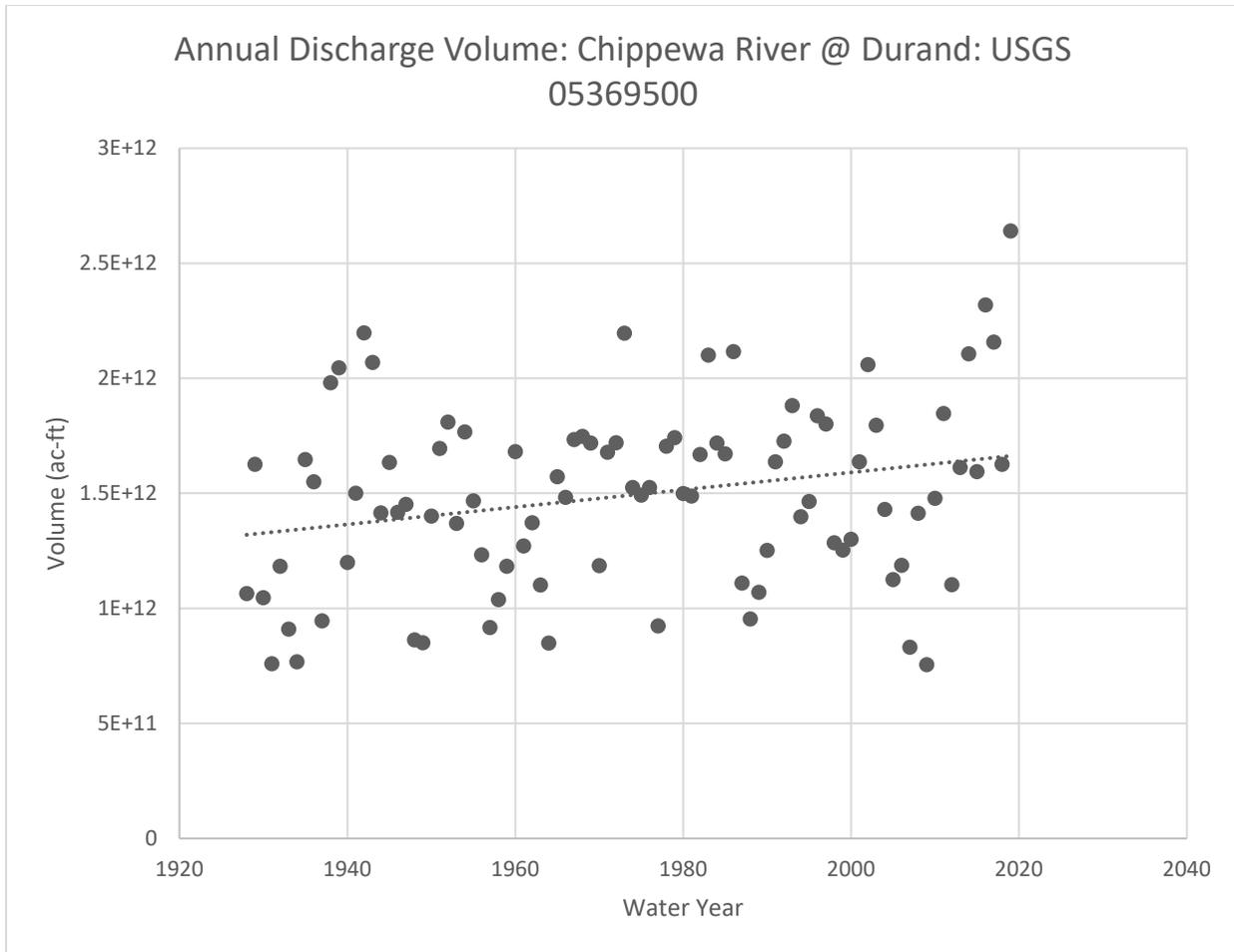


Figure 16: Annual average discharge for the Chippewa River near Durand, WI USGS Gage (Gage ID 05369500), 1930-2018

5 Projected Trends and Watershed Vulnerability

5.1 USACE Climate Hydrology Assessment

The USACE has developed tools to project future streamflow and assess vulnerability to climate change at a regional scale. These tools were used to project changes to basin hydrology in response to climate change that are relevant to navigation projects. HUC4 0704, the Upper Mississippi-Black-Root watershed shown in Figure 16, encompasses the project area and was used for this analysis.

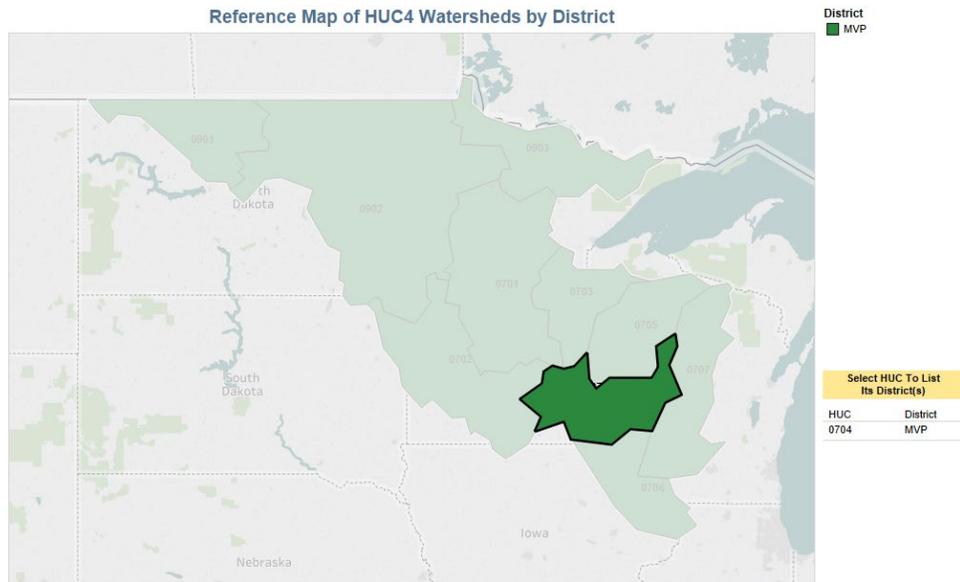


Figure 17 Reference map of HUC2 and HUC4 watersheds

The USACE Climate Hydrology Assessment Tool (CHAT) was used to investigate potential future trends in streamflow for the HUC4 0704 watershed. Hydrologic model output is generated using meteorological inputs derived based on 93 different combinations of representative concentration pathways (RCPs) of greenhouse gas emission scenarios and Global Circulation Models (GCMs). Couplings of RCPs and GCMs are used to project precipitation and temperature data into the future. These meteorological outputs are spatially downscaled using the bias corrected spatially downscaled (BCSD) statistical method and then inputted into the Variable Infiltration Capacity (VIC) precipitation-runoff model, developed at the University of Washington (Liang, et al., 1994). The VIC model (and thus the climate assessment tool and vulnerability assessment tool) simulates unregulated basin conditions.

Figure 17 displays the range of projected annual maximum monthly streamflows computed from 93 different climate-changed hydrologic model runs for the period 1980-2099. There was considerable but consistent spread in the projected annual maximum monthly flows. This spread is indicative of the high degree of uncertainty associated with projected, climate-changed hydrology.

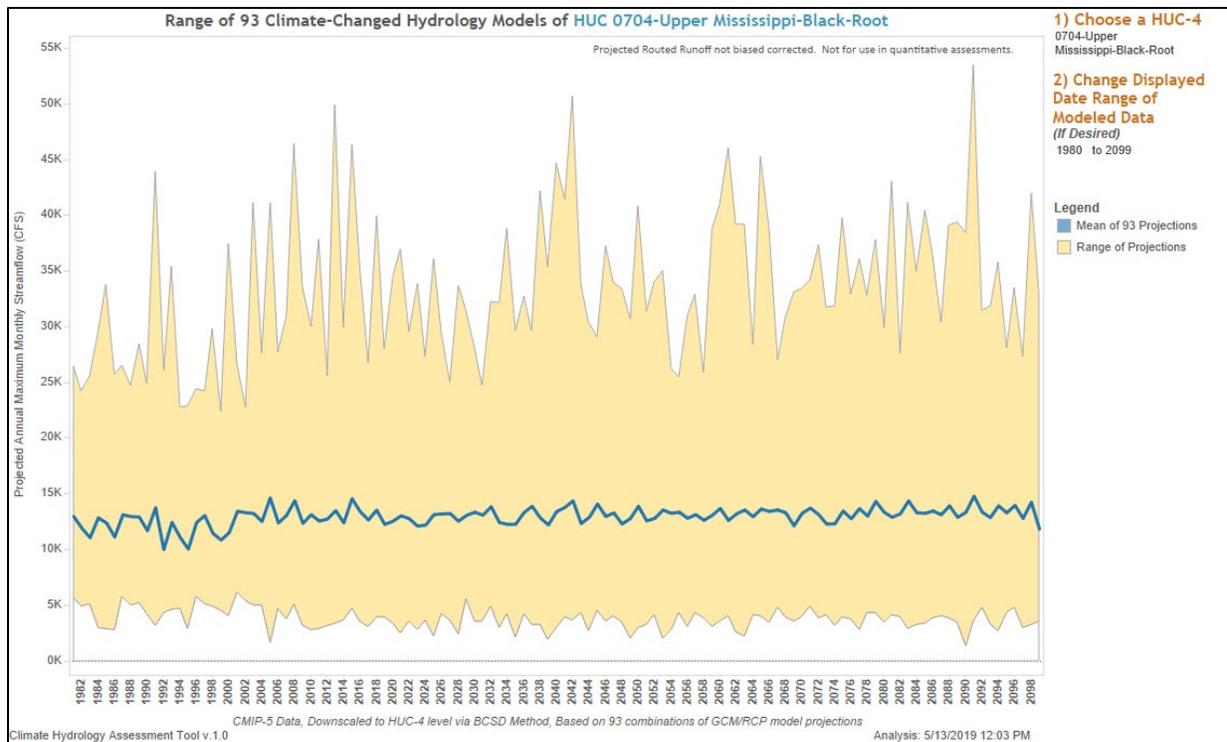


Figure 18 Range of projected maximum monthly streamflow for years 1980-2099 within HUC4 0704

The overall trend in the mean projected annual maximum monthly streamflow (the blue line) is shown above in Figure 17. The trend was statistically significant with a p-value of less than 0.0001 (much less than the generally accepted significance threshold of 0.05). A positive trend suggests there is potential for annual maximum monthly streamflow to increase in the study area over the next century, relative to current conditions. However, even though flows are projected to increase, this trend may not be operationally significant. The CHAT tool uses the best available climate information to make an assessment of whether or not flows will increase in the future. However, due to the nature of the climate models and the high degree of uncertainty associated with the models, a quantitative increase cannot be determined. Based on the information presented, it is likely that flows average annual maximum monthly streamflow will increase in the region. This could promote erosion and sediment transport through the project area. The increase in maximum streamflow and promotion of sediment transport would impact dredging activity in Pool 5. Sedimentation to the area would increase the need for dredging in the area and require more planning for material placement.

5.2 USACE Watershed Climate Vulnerability Assessment

The USACE Watershed Climate Vulnerability Assessment (VA) Tool was used to compare the relative vulnerability to climate change of the HUC4 0704 watershed to the 130 navigable HUC4 watersheds across the continental United States (CONUS) with respect to Navigation. The tool facilitates a screening level, comparative assessment of how vulnerable a given HUC4 watershed is to the impacts of climate change. The tool can be used to assess the vulnerability of a specific USACE business line, such as Navigation, to projected climate change impacts. Assessments such as these help to identify and characterize specific climate threats, at least in a relative sense, across regions and business lines.

The VA tool uses the Weighted Order Weighted Average (WOWA) method to represent a composite index of how vulnerable a given HUC4 watershed is to climate change specific to a given business line. This WOWA index is also known as the Vulnerability Score. The HUC4 watersheds with the top 20% of WOWA scores are flagged as being vulnerable. Indicators considered within the WOWA score for Navigation include: change in sediment load, two indicators on low flow runoff exceeded 90% of the time, drought severity index, flood magnification (indicator of how much high flows are projected to change over time), mean monthly runoff, low flow reduction, area of floodplain in 0.2% Annual Exceedance Probability (AEP), and percentage of urban/suburban land cover.

When assessing future risk projected by climate change, the USACE Climate Vulnerability Assessment Tool makes an assessment for two 30-year epochs centered at 2050 and 2085. These two periods were selected to be consistent with many of the other national and international analyses. The tool assesses how vulnerable a given HUC4 watershed is to the impacts of climate for a given USACE business line using climate hydrology based on a combination of projected climate outputs from the global circulation models (GCMs) and representative concentration pathway (RCP), resulting in 100 traces per watershed per time period. The top 50% of the traces are called “wet,” and the bottom 50% of traces are called “dry.” Meteorological data projected by the GCMs is translated into runoff using the Variable Infiltration Capacity (VIC) macroscale hydrologic model. For this assessment, the default National Standards Settings (NSS) were used to carry out the vulnerability assessment.

Figure 18 shows the results of the USACE Watershed Climate Vulnerability Assessment Tool. Based on these results, the Upper Mississippi-Black-Root (HUC4 0704) watershed is not vulnerable to the impacts of climate change on navigation projects relative to the other 129 HUC4 watersheds in the continental United States. For the Upper Mississippi-Black-Root watershed, the major drivers of the computed vulnerability score are Flood Magnification, the Runoff/Precipitation Ratio, Monthly Low Flow 90% Exceedance, and Low Flow Reduction. Table 2 shows the vulnerability scores for the two 30-year epochs. The scores are relatively constant between both epochs as well as between their wet and dry scenarios. This consistency in scores between both scenarios and epochs could be an indicator for a projected wetter climate susceptibility for the Upper-Mississippi-Black-Root watershed. Table 3 lists the vulnerability score contribution from each indicator for the 2050 epoch. The dominating indicators for the wet and dry scenarios were flood magnification and low flow reduction, respectively. The flood magnification indicator score for the wet scenario indicates an increase in flood flow occurrences. The dry scenario score on the low flow reduction indicates an increased value for low flow conditions. While the HUC4 0704 watershed is not vulnerable in a relative sense, it may still be vulnerable in an absolute sense.

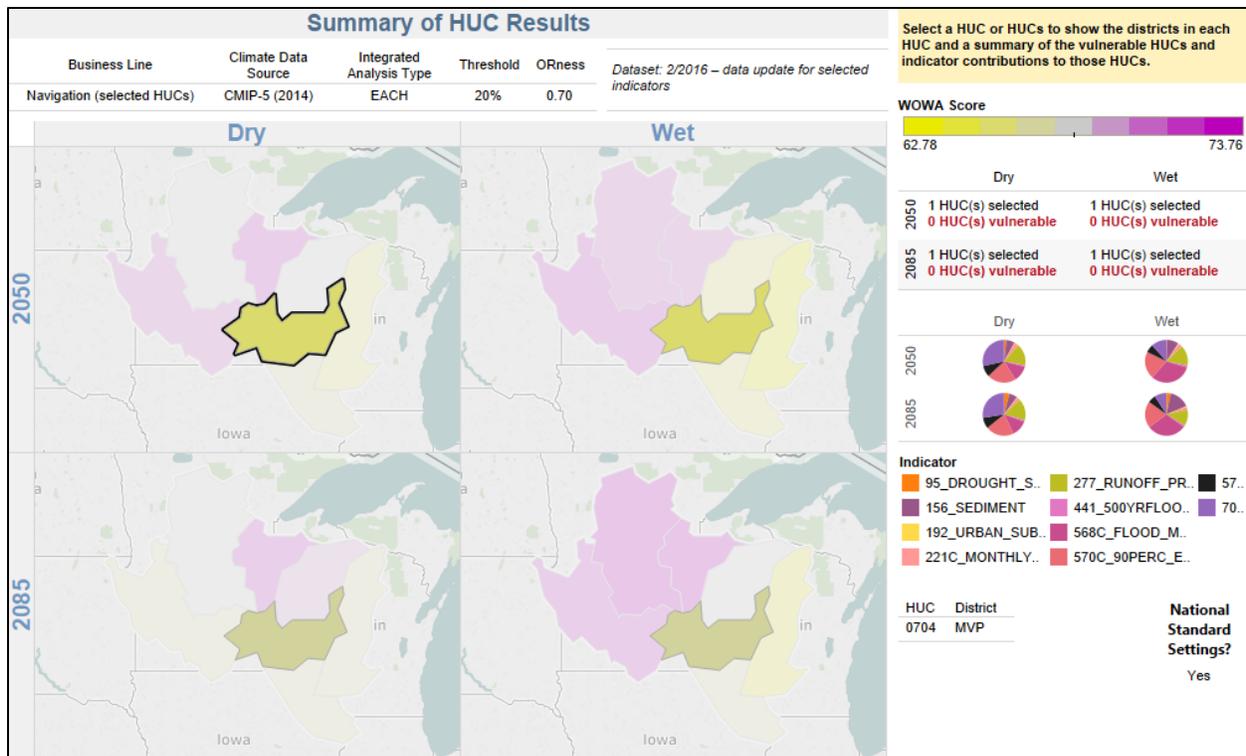


Figure 19 Projected vulnerability for the HUC4 0704, Upper Mississippi-Black-Root watershed

Table 2 Projected vulnerability with respect to navigation for HUC4 0704

HUC4 Watershed	Navigation Vulnerability (WOWA) Score			
	2050 Dry	2050 Wet	2085 Dry	2085 Wet
Upper Mississippi Black Root	66.3	65.88	66.748	66.96

Table 3 Comparison of indicators for navigation for HUC4 0704, 2050 epoch

Indicator	Contribution to WOWA Score	
	Wet	Dry
Flood Magnification- Cumulative	20.898	7.893
Drought Severity Index	0.207	1.237
Cumulative Monthly Low Flow 90% Exceedance	13.61	14.46
Sediment	5.908	4.173
Low Flow Reduction- Cumulative	7.68	18.94
Runoff/ Precipitation Ratio	10.126	10.843
Local Monthly Low Flow 90% Exceedance	4.055	5.586
Mean Monthly Runoff- Cumulative	1.9646	2.009
Area in 0.2% AEP Floodplain	1.115	0.905
Land Cover Urban/Suburban	0.3104	0.2521

There is a moderate degree of uncertainty with the climate-changed hydrology projected by the vulnerability assessment tool, as each of the tool’s inputs has uncertainty. The uncertainty associated with projected hydrologic data includes errors in temporal downscaling, errors in spatial downscaling, errors in hydrologic modeling, errors associated with emissions scenarios, and errors associated with GCMs. Some of the uncertainty associated with the tool can be visualized, because the tool separates results for each of the scenarios (wet versus dry) and epoch (2050 versus 2085) combinations rather than presenting a single, aggregate result (USACE, 2016b). Beyond the uncertainties associated with inputs to the vulnerability assessment tool, the analysis also contains substantial uncertainty inherent in the exact level of risk aversion selected (ORness factor) and the importance weights applied. Some users may elect to use a higher level of risk aversion while others may not. The importance weights of the indicator variables used to compute the WOWA (vulnerability) scores are subjective, and there is no way to quantify which indicator variables are more important than others when making projections about vulnerability. The user should note that the uncertainty with climate-changed hydrology projects is high and is currently not readily quantifiable; however, the VA tool can help to indicate which watersheds may be more vulnerable than others to impacts from climate change.

6 Risk Assessment

Identified risks to the project can be observed in Table 4. With the project being a DMMP, the main measures assessed for risk are dredging and dredged material placement. Future DMMPs for Pool 5 should consider the potential increases in dredged material and assess material placement location capabilities.

Table 4 Climate risk identifiers for Pool 5 DMMP

Feature or Measure	Trigger	Hazard	Harm	Qualitative Likelihood
Channel Dredging	Increased precipitation	Increases in low and normal flow regimes.	Changes in flow regimes could have an effect on channel accessibility for dredging.	Likely
Dredged Material Placement	Increased precipitation	Increases in low and normal flow regimes.	Increased sediment transport and sedimentation in the channel could occur with increases in flow regimes, potentially increasing the demand for dredged material placement.	Likely

7 Conclusion

USACE Watershed Climate Vulnerability Tool indicates that the Upper Mississippi-Black-Root watershed is not highly vulnerable to the impacts of climate change on navigation projects relative to other HUC4 watersheds in CONUS. However, it is still vulnerable in an absolute sense. The climate change literature review concluded that an increased average annual precipitation in the region may lead to variation in the flow regime, which could affect dredging in the area. An increase in precipitation and annual discharge volumes would promote erosion and increased sediment transport, also affecting dredging activity and future planning for dredged material placement. Available literature suggests a warmer and wetter climate in the future. Observed increases in air temperature could impact durations of future frost-free seasons. Observed trends in average annual discharge of the Mississippi River at Winona, MN were analyzed for statistical significance and concurred with findings in the literature review. Over the period of record (1928-2018), a statistically significant positive trend was identified in average annual discharge. Analysis was also done for the years 1941-2018 to account for dry years in the 1930s and 1940s, as well as regulation for the basin. A statistically significant positive trend line was observed for the discharge for this time period as well. This positive trend line was also observed on the Chippewa River at the Durand gage, as well as on the Trempealeau River gage. Changing flow conditions will likely have effects on future dredging efforts in Pool 5, although the extent of those effects cannot be known with great accuracy. Based on this assessment, the recommendation is to treat the potential effects of climate change and long-term natural variability in climate as occurring within the uncertainty range calculated for the current hydrologic analysis.

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Appendix E

Wetland Assessment 2018

Pool 5 Dredged Material Management Plan

Upper Mississippi River

Wabasha and Winona Counties, Minnesota

Buffalo County, Wisconsin



**US Army Corps
of Engineers**

St. Paul District

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Steps taken to estimate potential wetlands: Sheehan Property [Wabasha County, MN]

1. Offsite assessment of historical imagery using Corps and State procedures for assessing wetland hydrology on agricultural land
2. National Wetland Inventory, LIDAR elevations, and soil maps reviewed
3. Inquiry made about FEMA/DNR 100 year floodplain elevation (DNR-determined elevation is 669.12)
4. Preliminary wetland polygons were drawn
5. Site visit made May 24th, 2018 focusing on areas 4 and 5 [Refer to Right of Entry Map]; this visit was made during normal precipitation conditions
6. Field verification suggested that preliminary wetland polygons are reasonable
7. Information about the mitigation site south of area 4 was reviewed
8. Field visit October 30 revisited areas of May 24th plus all remaining areas with potential wetland signatures; this visit was made during wet precipitation conditions
9. Taken together, these data and techniques produced a reasonable estimate of potential wetlands

Observations: Refer to Table 1: Summary of Wetland Potential, Right of Entry Map and Sheehan Collection Fall 2018

- a. Strong correlation exists between recurring photo tone and wet signatures.
- b. Field observations and soil borings aided a refined boundary of wetland polygons and established that wetland signatures on upper end of drainage swales, non-concave or linear (back slope) landscape positions are a “false-positive wetland signature” and represent soil with higher organic matter content (showing as darker signatures). Darker-colored soils contrast with lighter colored loamy-textured surface soil on upland, non-wetland areas. Confirmation was provided that potential wetlands strongly correlate with concave and flat landscape positions and elevations 670 and lower.¹
- c. Field observations also indicate that wet signatures extend beyond what can reasonably be considered wetland. Wet (“dark”) signatures creep-up the back slope into areas of non-hydric soil. **Wet signatures – alone over-estimate actual wetland extent.**²
- d. The landscape and soils in the mitigation area, south part of area 4, extends to the north.
- e. Area 16 has been drained. A pump station is evident. Corn was harvested, without rutting.
- f. The potential for wetland impacts are much greater below elevation 670 and the 100 year floodplain.

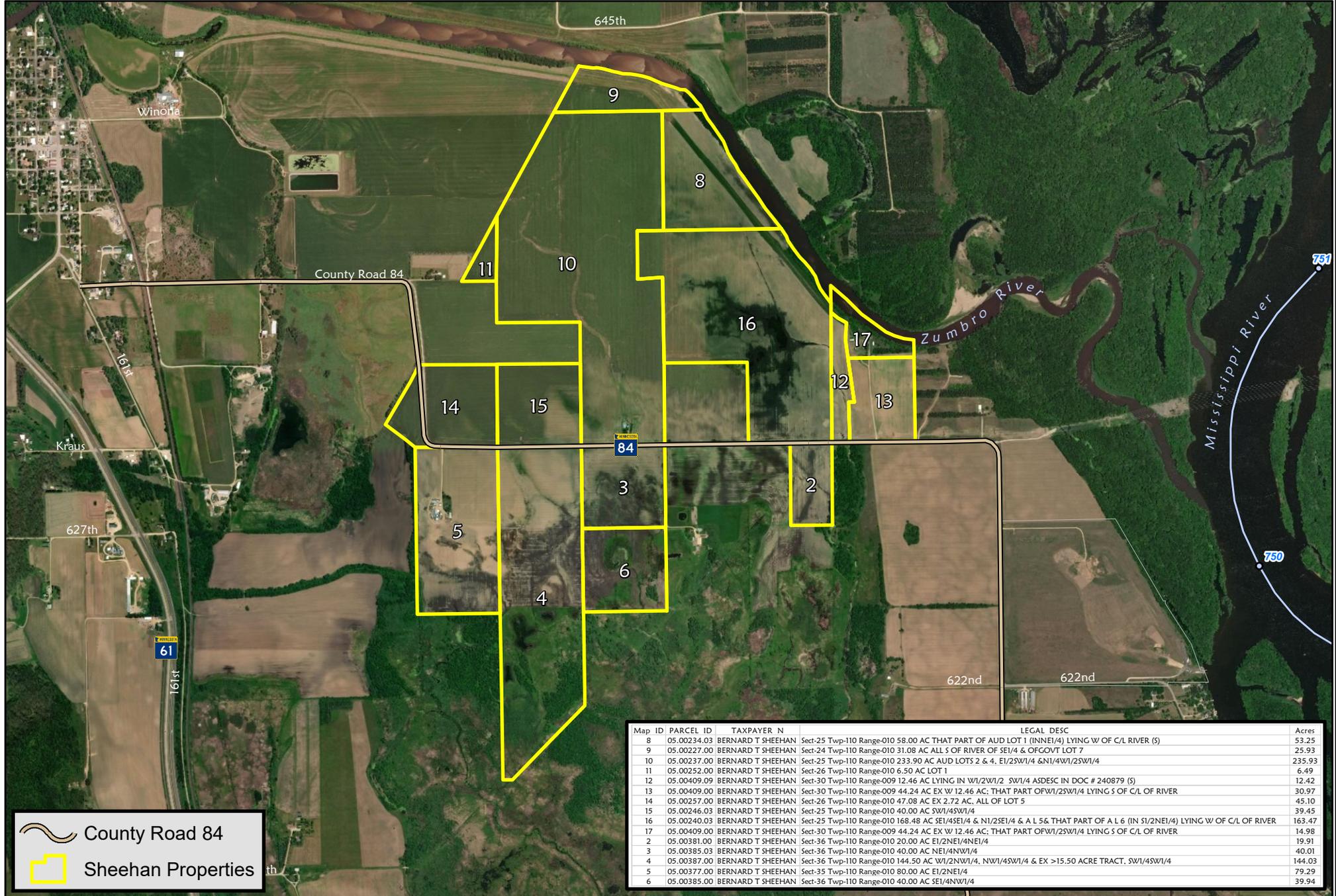
Recommendations:

1. Although useful for project planning and preparing for a wetland delineation, a wetland assessment such as this one does not necessarily negate the need for a wetland delineation. If needed, a wetland delineation identifies the boundary of a specific wetland.
2. Determinations about whether a wetland delineation is needed, and regulatory permits, are best made when a project and its location are identified.
3. Areas south of the 100 year floodplain identified as potential wetlands could likely be restored in a manner similar to the mitigation site located on the south part of area 4.

¹ Sample point 3, Sheehan Collection, was a non-hydric soil on a back slope, yet the signature was “dark”.

² See footnote 1

Right of Entry for Survey and Exploration - Bernard Sheehan Property



Map ID	PARCEL ID	TAXPAYER N	LEGAL DESC	Acres
8	05.00234.03	BERNARD T SHEEHAN	Sect-25 Twp-110 Range-010 58.00 AC THAT PART OF AUD LOT 1 (INNE1/4) LYING W OF C/L RIVER (S)	53.25
9	05.00227.00	BERNARD T SHEEHAN	Sect-24 Twp-110 Range-010 31.08 AC ALL S OF RIVER OF SE1/4 & OFGOVT LOT 7	25.93
10	05.00237.00	BERNARD T SHEEHAN	Sect-25 Twp-110 Range-010 233.90 AC AUD LOTS 2 & 4, E1/2SW1/4 & N1/4W1/2SW1/4	235.93
11	05.00252.00	BERNARD T SHEEHAN	Sect-26 Twp-110 Range-010 6.50 AC LOT 1	6.49
12	05.00409.09	BERNARD T SHEEHAN	Sect-30 Twp-110 Range-009 12.46 AC LYING IN W1/2W1/2 SW1/4 ASDESC IN DOC # 240879 (S)	12.42
13	05.00409.00	BERNARD T SHEEHAN	Sect-30 Twp-110 Range-009 44.24 AC EX W 12.46 AC, THAT PART OF W1/2SW1/4 LYING S OF C/L OF RIVER	30.97
14	05.00257.00	BERNARD T SHEEHAN	Sect-26 Twp-110 Range-010 47.08 AC EX 2.72 AC, ALL OF LOT 5	45.10
15	05.00246.03	BERNARD T SHEEHAN	Sect-25 Twp-110 Range-010 40.00 AC SW1/4SW1/4	39.45
16	05.00240.03	BERNARD T SHEEHAN	Sect-25 Twp-110 Range-010 168.48 AC SE1/4SE1/4 & N1/2SE1/4 & A L 5& THAT PART OF A L 6 (IN S1/2NE1/4) LYING W OF C/L OF RIVER	163.47
17	05.00409.00	BERNARD T SHEEHAN	Sect-30 Twp-110 Range-009 44.24 AC EX W 12.46 AC, THAT PART OF W1/2SW1/4 LYING S OF C/L OF RIVER	14.98
2	05.00381.00	BERNARD T SHEEHAN	Sect-36 Twp-110 Range-010 20.00 AC E1/2NE1/4NE1/4	19.91
3	05.00385.03	BERNARD T SHEEHAN	Sect-36 Twp-110 Range-010 40.00 AC NE1/4NW1/4	40.01
4	05.00387.00	BERNARD T SHEEHAN	Sect-36 Twp-110 Range-010 144.50 AC W1/2NW1/4, NW1/4SW1/4 & EX >15.50 ACRE TRACT, SW1/4SW1/4	144.03
5	05.00377.00	BERNARD T SHEEHAN	Sect-35 Twp-110 Range-010 80.00 AC E1/2NE1/4	79.29
6	05.00385.00	BERNARD T SHEEHAN	Sect-36 Twp-110 Range-010 40.00 AC SE1/4NW1/4	39.94

 County Road 84
 Sheehan Properties



Sheehan Collection Fall 2018

Legend

Point_Collections

TYPE, PHOTO

✗ Sample Point, Yes

contour_2f_3m

Elevation

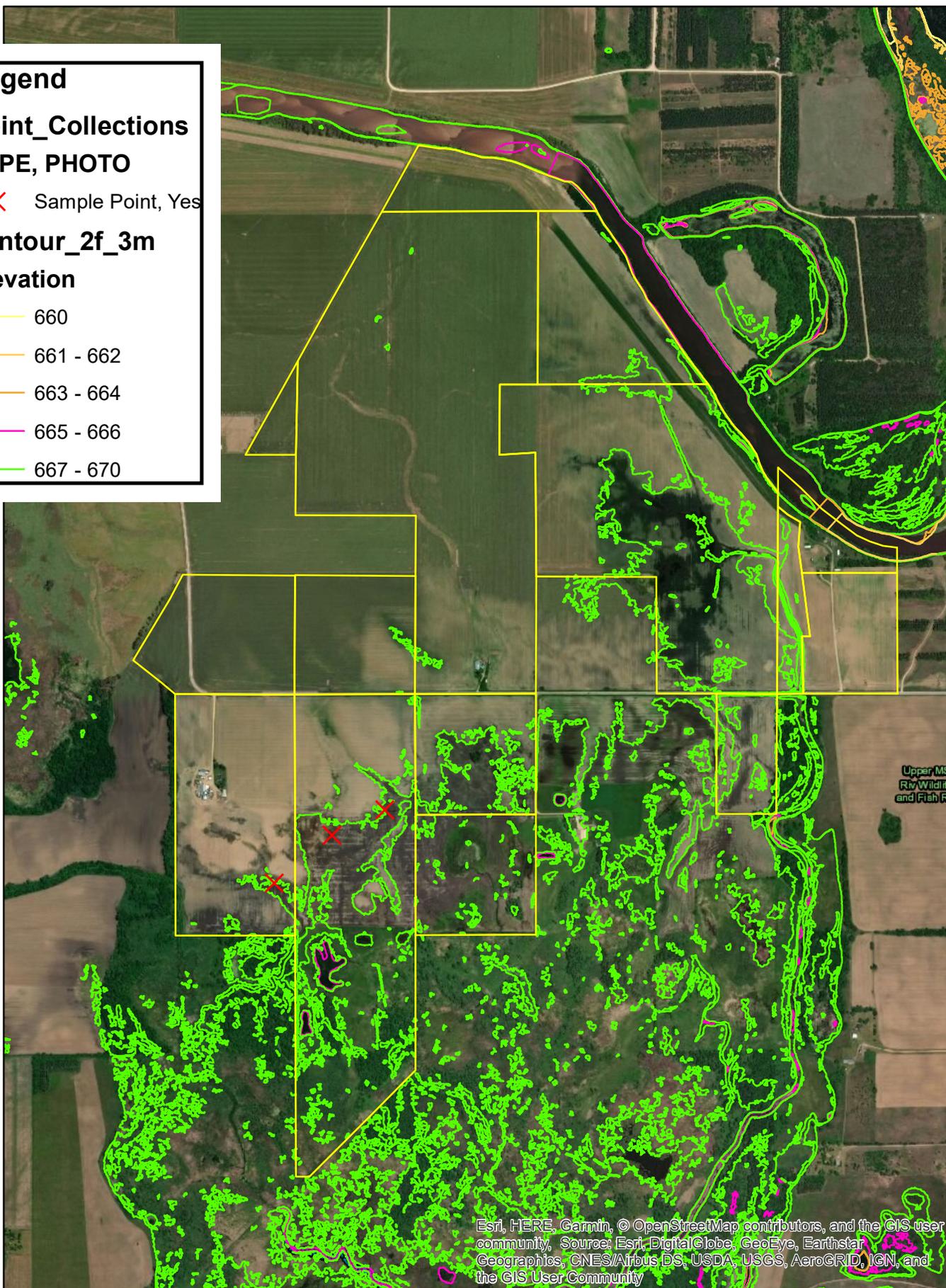
660

661 - 662

663 - 664

665 - 666

667 - 670



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Sheehan Collection Fall 2018

Legend

Point_Collections

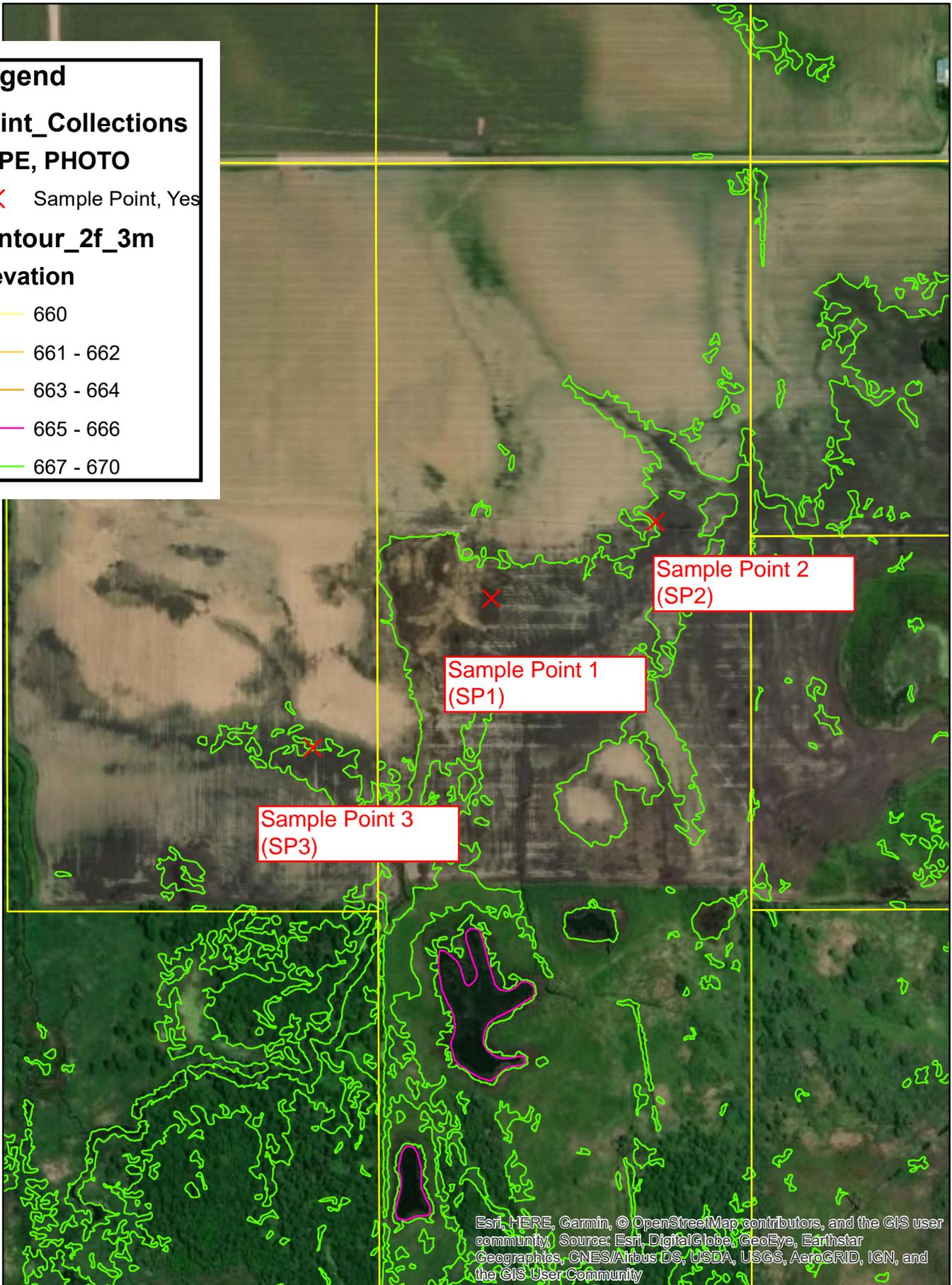
TYPE, PHOTO

✗ Sample Point, Yes

contour_2f_3m

Elevation

- 660
- 661 - 662
- 663 - 664
- 665 - 666
- 667 - 670



Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 0.04 0.08 0.16 0.24 0.32 Miles



SP1 (1 of 2)
10/30/18
Sheehan,
Wabasha Co. MN



SP1 (2 of 2)
10/30/18
Sheehan,
Wabasha Co. MN



SP2 (1 of 2)
10/30/18
Sheehan,
Wabasha Co. MN



SP 2 (2 of 2)
10/30/18
Sheehan,
Wabasha Co. MN



SP3 (1 of 1)
10/30/18
Sheehan,
Wabasha Co. MN



TABLE 1: SUMMARY OF WETLAND POTENTIAL: SHEEHAN PROPERTY

Parcel	Imagery Evidence: Wetland Hydrology ¹	Elevation of wet signature ²	Percent of Parcel with Potential Wetlands	General Location of Potential Wetlands (“Signatures” are visible on imagery)
2	Yes	~668	33	Swales: Trending N/S and NW/SE
3	Yes	~670	50	Below 100 year flood elevation ³
4	Yes	~670	75	Below 100 year flood elevation and swale trending NW/SE above 100 year flood plain
5	Yes	~670	25	Below 100 year flood elevation
6	Yes	~670	>90	Entire parcel except for isolated small knolls
8	No		None	N/A
9	No		None	N/A
10	Yes	~670	<10	South part, north of Hwy 84; west of buildings
11	No		None	N/A
12	No		None	N/A
13	No		None	N/A
14	No		None	N/A
15	Yes	~670	<10	East central and SE swales
16	Yes (historically)	~670	40 (prior to drainage) None, now ⁴	Central and south central—formerly
17	No		None	N/A

--Refer to the map “Right of Entry for Survey and Exploration” and Sheehan Collection Fall 2018--

GL/EW 122118

¹ Wet-appearing signatures from historic imagery were assessed with the “Offsite Hydrology and Wetland Determination Procedure (CORPS and BWSR, 2016)”. These findings were further refined with field observations and elevations from LIDAR (Light Detection and Ranging), MN TOPO desktop application.

² Elevations from LIDAR (MN TOPO desktop application, point elevation tool) were found to be within one foot +/- of surveyed elevations.

³ The DNR-established 100 year flood elevation is 669.12

⁴ As observed during an October 30, 2018 visit, the site has been drained with pattern tile, including a pumping station. This infrastructure was apparently installed 2016 and 2017. Although wet antecedent precipitation conditions preceded October 30, 2018, corn had been harvested prior to the site visit, no standing crop remained and no rutting was observed in the field. Wetland hydrology has been likely removed.

Appendix F

Programmatic Agreement

Pool 5 Dredged Material Management Plan

Upper Mississippi River

Wabasha and Winona Counties, Minnesota

Buffalo County, Wisconsin



**US Army Corps
of Engineers**

St. Paul District

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**PROGRAMMATIC AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT
AND
THE MINNESOTA STATE HISTORIC PRESERVATION OFFICE
REGARDING
THE PURCHASE OF LANDS FOR
THE MISSISSIPPI RIVER NAVIGATION POOL 5
DREDGED MATERIAL MANAGEMENT PLAN,
WABASHA COUNTY, MINNESOTA**

WHEREAS, the U.S. Army Corps of Engineers, St. Paul District (Corps) is proposing to purchase 909 acres of land in Wabasha County, Minnesota intended for the placement of dredged material (Project) in order to facilitate continued operation and maintenance of the Upper Mississippi River (UMR) 9-Foot Navigation Channel Project pursuant to the River and Harbor Act of 1930 and the Mississippi River Navigation Pool 5 Dredged Material Management Plan; and

WHEREAS, the Corps has determined that the proposed Project constitutes an undertaking subject to the requirements of 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (54 USC § 306108); and

WHEREAS, the Corps has determined that the proposed Project is the type of undertaking that has the potential to affect historic properties listed in or eligible for listing in the National Register of Historic Places (NRHP), but that the identification of historic properties and determinations of effect will not be completed prior to the completion of the environmental document needed for compliance with the National Environmental Policy Act (NEPA), making execution of this Programmatic Agreement (PA) for the Project appropriate pursuant to 36 CFR § 800.14(b)(1)(ii); and

WHEREAS, the Corps, in consultation with the Minnesota State Historic Preservation Office (SHPO), has defined the area of potential effects (APE) for the Project to include all areas of potential direct effects, including the approximately 962 acres of land included in the purchase, as well as areas of potential indirect effects, including the areas extending approximately one quarter-mile outward from the boundary of the land purchase (see Attachment A); and

WHEREAS, the APE for the Project may be further refined as a result of additional Project design refinements and consultation with the SHPO and other consulting parties; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), the Corps has notified the Advisory Council on Historic Preservation (Council) of its decision to enter into this PA and has invited the Council to enter into consultation, and the Council has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii); and

WHEREAS, the Corps has invited the Lower Sioux Community, the Upper Sioux Community, the Prairie Island Community, the Shakopee Mdewakanton Sioux, the Sisseton-Wahpeton Oyate, the Ho-Chunk Nation, the Iowa of Kansas and Nebraska, and the Winnebago of Nebraska to participate in consultation and development of this PA and the Upper Sioux Community and

Shakopee Mdewakanton Sioux Community have requested to be Consulting Parties and have been invited to sign this PA as concurring parties; and

WHEREAS, public involvement and an appropriate level of public notification for the undertaking, pursuant to 36 CFR § 800.2(d), will be coordinated with the concurrent scoping, public review and comment, public meetings, and technical reviews as required under NEPA and its implementing regulations; and

NOW, THEREFORE, the Corps and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effects of the undertaking on historic properties.

Stipulations

The Corps shall ensure that the following stipulations are carried out.

I. Phase I and Phase II Historic Property Identification and Evaluation

- A. Following the execution of this PA and prior to the commencement of any construction activities, the Corps shall have its consultants complete and document historic property identification efforts and NRHP eligibility recommendations within the undertaking's APE in accordance with 36 CFR § 800.4. The Corps shall ensure that any archaeologists, historians, or architectural historians who conduct historic property identification and evaluation efforts related to the Project meet the professional qualification standards in the appropriate field as defined in the Secretary of the Interior's (SOI) *Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716-01).
- B. All historic property identification, evaluation, and survey work carried out pursuant to this PA will meet the SOI *Standards for Archaeology and Historic Preservation*, applicable NRHP Bulletins, and applicable State of Minnesota guidelines.
- C. The Corps shall ensure that, at a minimum, its consultants complete a literature search of the APE which includes consulting Minnesota site files, previous survey reports, and other documents at the SHPO and the Office of the State Archaeologist (OSA) for information on previously recorded historic properties, site leads, and previously surveyed areas. The literature search shall be used to direct the scope of the Phase I reconnaissance and Phase II intensive level surveys.
- D. Any archaeological investigations conducted in association with the proposed Project shall follow the guidelines outlined in the *SHPO Manual for Archaeological Projects in Minnesota*.
- E. The Phase I/Phase II architecture/history investigations shall follow the guidelines outlined in the Heritage Preservation Department, *Historic and Architectural Survey Manual* and shall include an adequate level of survey of all properties forty-five (45) years old or older within the APE for direct and indirect effects for the Project.
- F. The Corps' consultants shall provide to the Corps their fully-documented historic property identification efforts, including NRHP-eligibility determinations and recommendations. The Corps shall review the provided documentation and shall

provide its fully-documented eligibility determinations and recommendations to the SHPO and Consulting Parties, who shall have thirty (30) calendar days from receipt of the documentation to provide their comments to the Corps.

- G. After receipt of comments from the SHPO and Consulting Parties, the Corps shall provide all comments to their consultants and the consultants shall incorporate all changes requested in those comments within thirty (30) days of receipt.
- H. If the Corps chooses to not accept a comment by the SHPO or Consulting Parties, the Corps shall provide a written explanation to the SHPO and Consulting Parties and consult, as appropriate, to seek resolution. Should the Corps and the SHPO be unable to reach agreement on NRHP-eligibility determinations under this stipulation, then the Corps shall resolve the disagreement pursuant to Stipulation V *Dispute Resolution*.
- I. Following completion of review and consultation as required under Stipulation I (G-H), the consultants shall submit the final report and any associated historic property inventory forms to the Corps, and the Corps will submit these documents to SHPO for incorporation into the statewide historic property records inventory. Reports shall be considered final upon written notice from the Corps.

II. Assessment of Effect

- A. The Corps will strive to avoid and protect any historic properties identified that may be affected by the Project.
- B. If the Corps finds that either there are no historic properties identified within the APE, or there are historic properties within the APE, but the Project will have no effect upon them, as defined in 36 CFR § 800.16(i), then the Corps may make a No Historic Properties Affected finding and provide this finding, along with supporting documentation, in accordance with 36 CFR § 800.11(d), including, but not limited to, photographs, maps, and drawings/plans, to the SHPO and Consulting Parties who shall have thirty (30) days to review and comment.
 - 1. If the SHPO and Consulting Parties agree with the Corps' No Historic Properties Affected finding, then no further consultation is required. The Corps shall notify the public of this finding in accordance with 36 CFR § 800.4(d)(1).
 - 2. Implementation of the Project in accordance with the Corps' No Historic Properties Affected finding, as documented, fulfills the agency's responsibilities under Section 106. If the Corps does not conduct the Project as proposed at the time of the No Historic Properties Affected finding, then the Corps will need to reopen consultation.
 - 3. If the Corps and the SHPO are unable to reach agreement on the Corps' finding of No Historic Properties Affected, the Corps shall consult with the SHPO to resolve the disagreement in accordance with Stipulation V *Dispute Resolution*.
- C. If the Corps finds that historic properties within the APE may be affected by the Project, then the Corps shall assess adverse effects in accordance with 36 CFR § 800.5.

1. Following the assessment of adverse effect, the Corps may make a finding of No Adverse Effect to historic properties. If so, then the Corps shall provide this finding, along with supporting documentation, in accordance with 36 CFR § 800.11(e), including, but not limited to, photographs, maps, and drawings/plans, to the SHPO and Consulting Parties who shall have thirty (30) days to review and comment.
 - a. If the SHPO and Consulting Parties agree with the Corps' No Adverse Effect finding, then no further consultation is required. The Corps shall maintain a record of this finding and provide information to the public on request.
 - b. Implementation of the Project in accordance with the Corps' No Adverse Effect finding, as documented, fulfills the agency's responsibilities under Section 106. If the Corps does not conduct the Project as proposed at the time of the No Adverse Effect finding, then the Corps will need to reopen consultation.
 - c. If the Corps and the SHPO are unable to reach agreement on the Corps' finding of No Adverse Effect, the Corps shall consult with the SHPO to resolve the disagreement in accordance with Stipulation V *Dispute Resolution*.
2. Following the assessment of adverse effect, the Corps may make a finding of Adverse Effect to historic properties. If an Adverse Effect finding is made, the Corps shall proceed with consultation to resolve the adverse effect by seeking ways to avoid, minimize, or mitigate the adverse effect to historic properties in accordance with Stipulation III *Resolution of Adverse Effects*.
 - a. Following a finding of Adverse Effect, the Corps shall notify and invite the Council to participate in the consultation to resolve the adverse effect in accordance with 36 CFR § 800.6(a)(1).

III. Resolution of Adverse Effects

- A. If the Corps finds, pursuant to review and consultation under Stipulation II of this PA, that the Project will have an adverse effect on historic property(ies), then the Corps shall consult with the SHPO and others, including Consulting Parties, as applicable, to resolve the adverse effect, including consideration of whether or not the adverse effect may be avoided through modification of Project design or other measures.
- B. If the Corps, the SHPO, and Consulting Parties, if applicable, reach agreement in writing on modifications or measures to avoid adverse effects and essentially revise the finding to a No Adverse Effect finding, then the Corps shall document the agreement in the Corps administrative record for the Project and share findings with the SHPO, and Consulting Parties, as applicable. The Project shall then be carried out according to the Corps written agreement to avoid adverse effects.
- C. If the Corps, the SHPO, and Consulting Parties, if applicable, fail to reach agreement on appropriate avoidance measures pursuant to Stipulation III (A) of this PA, then the Corps shall make a determination that the adverse effect cannot be avoided and will continue consultation with the SHPO and Consulting Parties pursuant to Stipulations III (D-E) to identify appropriate minimization and/or mitigation measures to resolve the adverse effect.

- D. The Corps shall consult with the SHPO and Consulting Parties, as applicable, to this PA to determine appropriate minimization and/or mitigation measures to resolve the adverse effect. Once an agreement on resolution of the adverse effect has been reached in writing, the Corps shall develop a Mitigation Plan (Plan) appropriate to the historic property(ies) and the nature and scale of the adverse effect(s). The Plan shall incorporate minimization and mitigation measures agreed upon during consultation under Stipulation III (C) of this PA. The Corps shall provide a final draft of the Plan to the SHPO and Consulting Parties to this PA who will have thirty (30) calendar days from receipt to review and provide comments. The Corps will incorporate the comments, as feasible, into the final Plan and provide explanations to the SHPO and Consulting Parties if comments cannot feasibly be incorporated.
- E. The final Plan shall be agreed to in writing by the Corps and the SHPO and Consulting Parties to this PA and will be carried out according to its terms in order to resolve adverse effects. If the Corps and the SHPO or Consulting Parties cannot reach agreement on the Plan, the Corps will proceed with consultation in accordance with Stipulation V *Dispute Resolution*.
- F. If any agreed-upon mitigation included in the final Plan involves archaeological data recovery or some other historic property documentation, then Project-related ground-disturbing activities may not begin until after the completion of the fieldwork for the data recovery or documentation and the Corps has provided written notification in this regard.

IV. Unanticipated Discoveries

- A. If previously unidentified historic properties, including human remains, are discovered unexpectedly during construction of the Project, or previously known historic properties are affected, or have been affected in an unanticipated adverse manner, all ground-disturbing activities will cease in the area of the historic property, as well as within one hundred (100) feet of it, to avoid and/or minimize harm to the property. The contractor will immediately notify the Corps of the discovery and implement interim measures to protect the discovery from damage, looting, and vandalism, including but not limited to protective fencing and covering of the discovery with appropriate materials. Upon receipt of the notification, the Corps shall notify the SHPO and Native American groups and may inspect the construction site to ensure that construction activities have halted. The SHPO and Native American groups may jointly confer at the site to assess the property and potential impacts, and to determine the most appropriate avoidance measures.
- B. If unmarked human burials or skeletal remains are encountered during construction activities, all ground disturbing activities will cease. The contractor will immediately notify the Corps and local law enforcement and the Corps will bring in a qualified consultant as appropriate who meets the SOI professional qualification standards for his or her respective field. The consultant will comply with federal laws as well as take into account the ACHP's Policy Statement on the Treatment of Burial Sites.
 - 1. If it is immediately obvious that the skeletal remains found are non-human and are in association with cultural material, the procedures described in Stipulation IV (A) and (B) shall be followed.

2. The Corps shall immediately notify the SHPO, and appropriate Native American groups within twenty-four (24) hours via email, fax, or telephone. The Corps will also notify the Office of the State Archaeologist (OSA) and Minnesota Indian Affairs Council (MIAC).
3. If it is not certain whether the remains are human, all work will immediately cease within a 100-foot radius from the point of discovery and the consultant will secure the area. The consultant will place pin flags in a 100-foot radius around the discovery and ensure that appropriate measures are taken to protect the discovery from further disturbance. All human remains, regardless of ancestry, will be treated with dignity and respect.
4. The local law enforcement will investigate the human remains and contact the medical examiner. If the human remains are modern, the local law enforcement and/or medical examiner will assume responsibility. If it is determined that the remains are not modern or do not reflect a crime scene and/or the local law enforcement relinquish their jurisdiction over the remains, the Corps will consult with the SHPO and appropriate tribes regarding additional steps to be followed.
5. If the human remains appear to be precontact or historic Native American, the Corps will meet the requirements of the Native American Graves Protection and Repatriation Act for all Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony on a case-by-case basis, in accordance with 43 CFR Part 10. An action plan will be written for each case by the Corps in consultation with appropriate consulting parties.
6. Measures to protect the human remains and any associated artifact(s) will remain in effect until the remains and associated artifacts have been fully evaluated and appropriate treatment of the discovery (if applicable) has been completed. The contractor will not resume work in the vicinity of the find until the Corps has granted clearance to do so.

V. Dispute Resolution

Should any party to this PA object at any time to any actions proposed or the manner in which the terms of the PA are implemented, the Corps shall consult with such party (or parties) to resolve the objection. The parties shall work cooperatively to achieve a consensus to resolve any disagreement. If the Corps determines the objection(s) cannot be resolved, the Corps shall:

- A. Forward all documentation relevant to the dispute, including the Corps' proposed resolution, to the Council. The Council shall provide the Corps with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the Corps shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the Council, signatories and concurring parties, and provide them with a copy of this written response. The Corps will then proceed according to its final decision.
- B. If the Council does not provide its advice regarding the dispute within the thirty (30) day time period, the Corps may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the Corps shall prepare a written response that takes into account any timely comments regarding the dispute from the Signatory Parties and provide them and the Council with a copy of such written response.

- C. Any comment provided by the Council or Signatory Party in response to a dispute shall be taken into account by the Corps with reference only to the subject of the dispute; the Signatory Parties' responsibility to carry out all other actions subject to the terms of this PA that are not the subject of the dispute remain unchanged.

VI. Duration

This PA will remain in effect for a period of seven (7) years from the date of execution; at such time, if the terms of the PA have not been implemented, this agreement will be null and void. If the Corps anticipates that the terms of this PA will not be completed within this timeframe it will notify the signatories in writing at least thirty (30) calendar days prior to the expiration date. This PA may be extended by the written concurrence of the signatories. If this PA expires and the Corps elects to continue with the undertaking, then the Corps will reinitiate review of the Project in accordance with 36 CFR Part 800.

VII. Amendments

This PA may be amended when such an amendment is agreed to in writing by the signatories. Any signatories to this PA may request that it be amended, whereupon the other signatories will consult in accordance with Stipulation V of this PA. The amendment will be effective on the date that a signed copy of the amendment is filed with the Council.

VIII. Termination

This PA may be terminated by any of the signatories upon thirty (30) days written notice to the other signatories. The signatories will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the Corps will reinitiate review of the undertaking in accordance with 36 CFR Part 800.

IX. Anti-Deficiency Provision

All obligations on the part of the Corps under this PA shall be subject to the appropriation, availability and allocation of sufficient funds to the Corps for such purposes.

X. Implementation of this PA

This PA may be executed in counterparts, with a separate page for each signature. This PA will become effective on the date of the final signature of a signatory or invited signatory. The Corps will ensure each party is provided with a complete copy and that the final PA, updates to appendices, and any amendments are filed with the Council.

Execution of this PA by the Corps and the SHPO and implementation of its terms is evidence that the Corps has taken into account the effects of its undertaking on historic properties and has afforded the Council opportunity to comment pursuant to Section 106 of the NHPA.

**PROGRAMMATIC AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT
AND
THE MINNESOTA STATE HISTORIC PRESERVATION OFFICE
REGARDING
THE PURCHASE OF LANDS FOR
THE MISSISSIPPI RIVER NAVIGATION POOL 5
DREDGED MATERIAL MANAGEMENT PLAN,
WABASHA COUNTY, MINNESOTA**

SIGNATORY

U.S. Army Corps of Engineers, St. Paul District

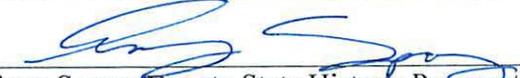
By: *Karl Jansen*
Colonel Karl Jansen, District Engineer

Date: 30 OCT 19

PROGRAMMATIC AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT
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THE MISSISSIPPI RIVER NAVIGATION POOL 5
DREDGED MATERIAL MANAGEMENT PLAN,
WABASHA COUNTY, MINNESOTA

SIGNATORY

Minnesota State Historic Preservation Office

By:  Date: 11/4/19
Amy Spong, Deputy State Historic Preservation Officer

**PROGRAMMATIC AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT
AND
THE MINNESOTA STATE HISTORIC PRESERVATION OFFICE
REGARDING
THE PURCHASE OF LANDS FOR
THE MISSISSIPPI RIVER NAVIGATION POOL 5
DREDGED MATERIAL MANAGEMENT PLAN,
WABASHA COUNTY, MINNESOTA**

**CONCURRING PARTY
Upper Sioux Community**

By: _____
Kevin Jensvold, Chairman

Date: _____

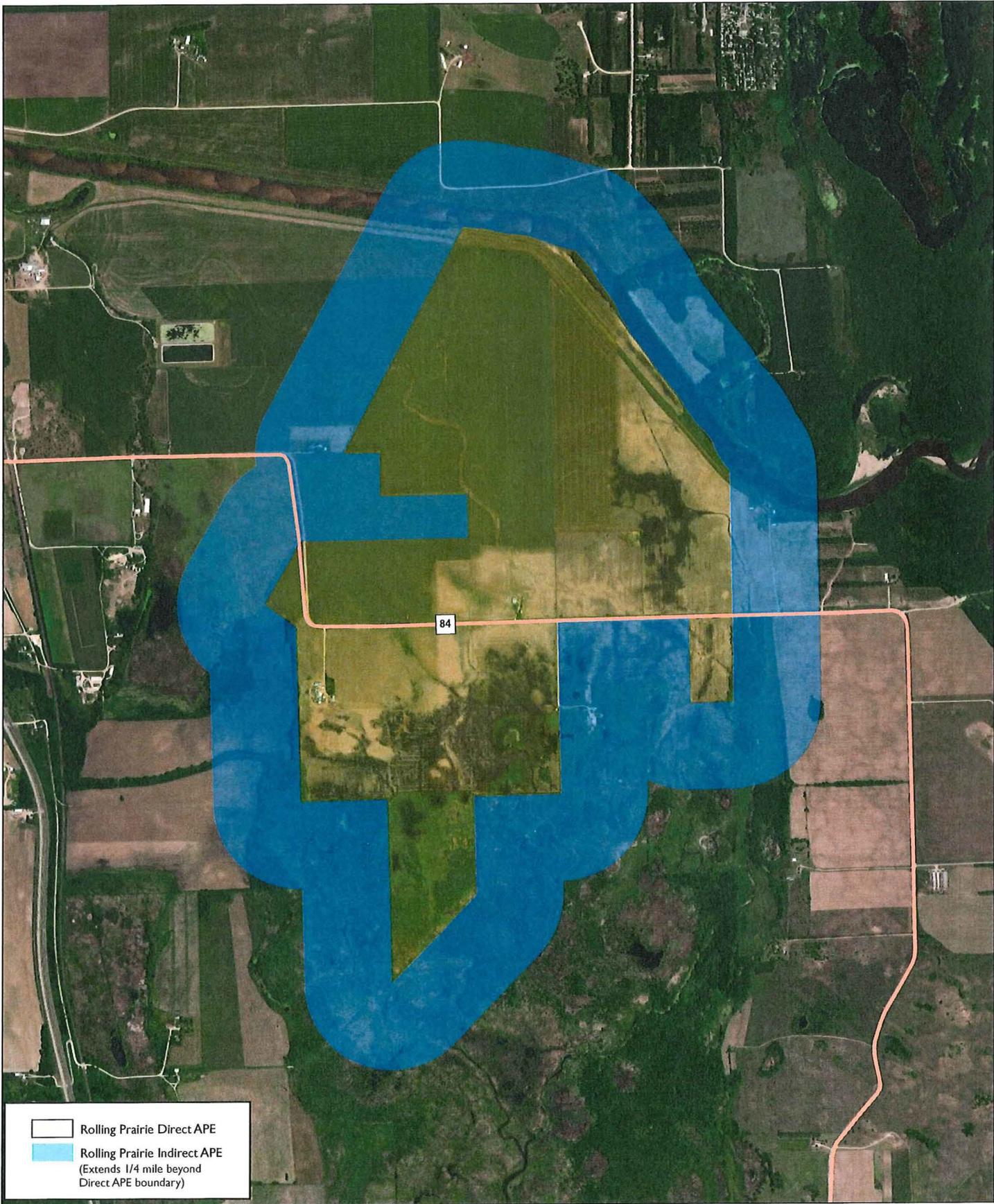
PROGRAMMATIC AGREEMENT

**BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT
AND
THE MINNESOTA STATE HISTORIC PRESERVATION OFFICE
REGARDING
THE PURCHASE OF LANDS FOR
THE MISSISSIPPI RIVER NAVIGATION POOL 5
DREDGED MATERIAL MANAGEMENT PLAN,
WABASHA COUNTY, MINNESOTA**

**CONCURRING PARTY
Shakopee Mdewakanton Community**

By: _____
Charles R. Vig, Chairman

Date: _____



Rolling Prairie Direct APE
Rolling Prairie Indirect APE
(Extends 1/4 mile beyond Direct APE boundary)

 **St. Paul District**
GIS CENTER
US Army Corps
of Engineers®

Rolling Prairie Area of Potential Effect (APE)

Base Image: Esri, DigitalGlobe Imagery
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Feet



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Appendix G

Real Estate Plan

Pool 5 Dredged Material Management Plan

Upper Mississippi River

Wabasha and Winona Counties, Minnesota

Buffalo County, Wisconsin



**US Army Corps
of Engineers**

St. Paul District

POOL 5 DREDGED MATERIAL MANAGEMENT PLAN
MISSISSIPPI RIVER MILES 752.8 - 738.1

1.0 PURPOSE AND GENERAL PROJECT DESCRIPTION

1.1 PURPOSE: The purpose of this Real Estate Plan (REP) is to provide an analysis of the real estate requirements deemed necessary to support the Upper Mississippi River Pool 5 Dredged Material Management Plan (DMMP). In addition to identifying the real estate requirements that support the DMMP, this REP provides an estimate of the real estate costs associated with the Recommended Plan, as recommended by the St. Paul District. The purpose of the DMMP is to prepare a coordinated, long-term plan to manage material dredged in Pool 5 and this REP supports and complements that plan and is intended to be used for long-term planning purposes, and as a Real Estate Decision Document for the purposes of meeting the pre-acquisition criteria set forth in ER 405-1-11, para. 3-14.

1.2 GENERAL PROJECT INFORMATION: The DMMP was initiated because existing permanent dredged material placement sites are nearing capacity coupled with the increased cost associated with managing dredged material over the past 15-20 years. Dredged material placed at temporary island transfer sites eventually needs to be offloaded to permanent sites. Therefore, additional permanent placement sites are needed to accommodate the U.S Army Corps of Engineers (Corps) dredging needs in Pool 5 over the next 40-years. The selected plan must comply with the policy for managing dredged material pursuant to the Federal Standard. The Federal Standard (33 CFR Part 335.7) for dredged material placement sites is defined as: “the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria.”

Pool 5 encompasses the area between Lock and Dam (L/D) 4 at river mile (RM) 752.8 down to L/D 5 at RM 738.1. The cities or communities of Buffalo City and Alma, Wisconsin, and Kellogg, Minneiska and Weaver, Minnesota are located within the Pool 5 study area. Buffalo City is located on the Wisconsin mainland off the main channel at river mile 744, while Alma is located at the upstream end of the study area near river mile 752 at L/D 4. Minneiska is located on the Minnesota mainland at river mile 742 and Kellogg is located approximately 3.5 miles east of river mile 751, south of the Old Zumbro River. There is considerable residential development along the Wisconsin shorelines in Pool 5.

State Hwy 35 parallels the floodplain on the Wisconsin side of the river and U.S. Hwy 61 on the Minnesota side. On the Wisconsin side, the Burlington Northern railroad tracks lie riverward of State Hwy 35 and on the Minnesota side, the Canadian Pacific railroad tracks lie riverward of U.S. Hwy 61. A coal fired electrical power station is located on the river near Alma, Wisconsin in Buffalo County, near RM 751. There are no interstate bridge crossings in Pool 5. The closest upstream crossing is the Wabasha-Nelson Bridge in Pool 4 at approximate RM 760.2 and the

closest crossing downstream of Pool 5 is the Minnesota State Hwy 43 and the Wisconsin State Hwy 54 Bridge at RM 725.9. Alma, Buffalo City and Cochrane, Wisconsin have populations of 781, 1,023, and 450, respectively and Minneiska and Kellogg, Minnesota have populations of approximately 456 and 110, respectively. All population numbers were derived from the 2010 census.

This REP addresses the real estate needs for Pool 5's permanent upland dredged material placement sites. Specifically, it addresses the Pool's dredge cuts that currently include: Upper Zumbro, Mule Bend, West Newton Chute, Below West Newton, Above Fisher Island, Lower Zumbro, Minneiska, Above Mt. Vernon Light, and Below Mt. Vernon Light (Figure 1). The study area includes not only all of Pool 5 but also dredge cuts and placement sites that are outside the geographical boundaries of the Pool. This is intentionally being done to support projected multi-pool dredging activities and placement sites that shall be needed for at least the next 40-years.

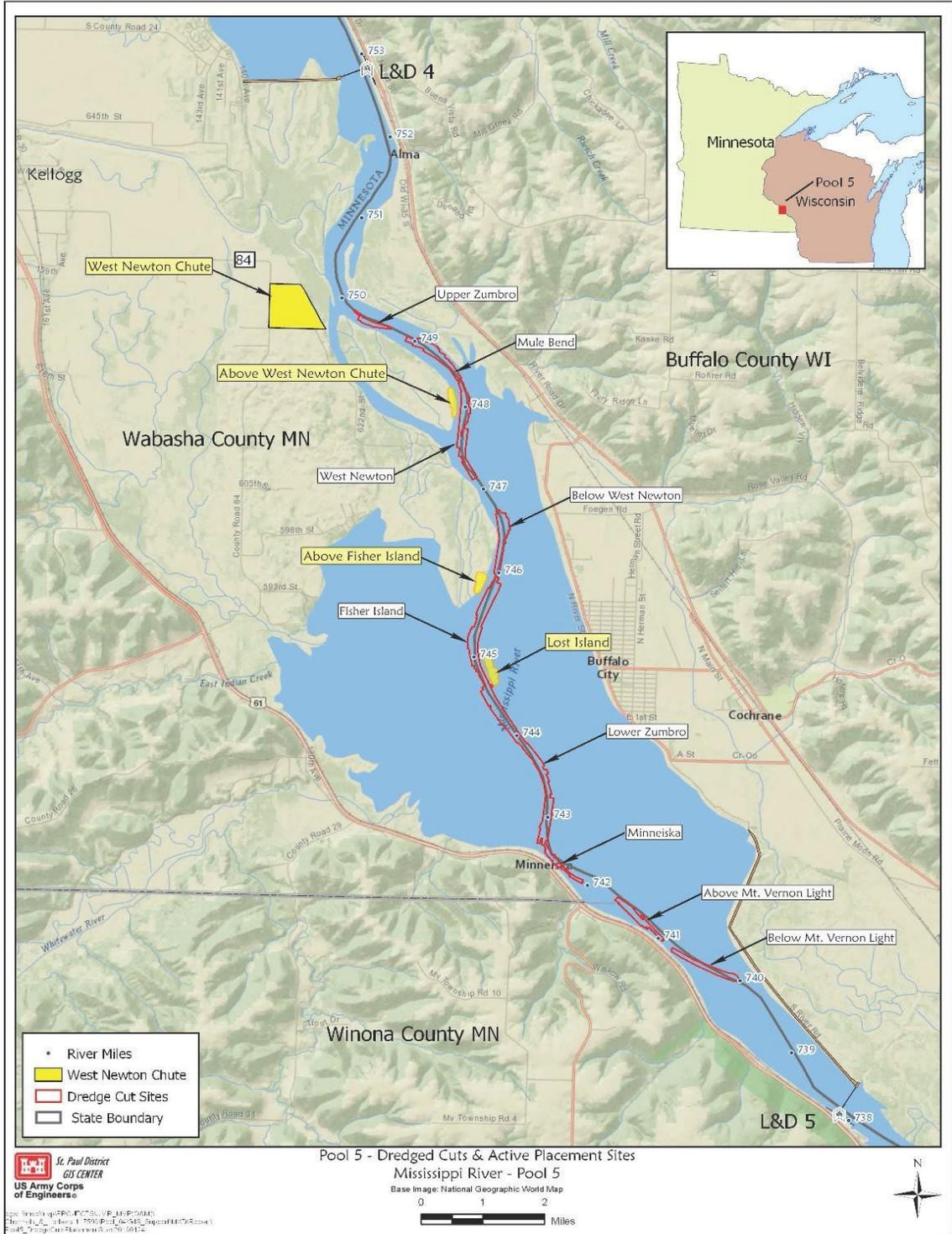


Figure 1. Pool 5’s River Cuts and Current Permanent and Temporary Placement Sites.

1.3 AUTHORITY:

The U.S. Army Corps of Engineers (Corps) is responsible to maintain a navigable channel on the Mississippi River. Authority for continued operation and maintenance of the Mississippi River 9-Foot Channel project is provided in the Rivers and Harbors Acts of 1930 and 1932. Original authority for the Corps of Engineers to work on the Mississippi River was provided in the Rivers and Harbors Act of 1878. In addition, pursuant to Section 1103(i) of the Water Resources Development Act of 1986 (33 U.S.C. § 652(i)), Congress authorized the Corps to dispose of dredged material from the system pursuant to the recommendations of the Great River Environmental Action Team (GREAT) I study, which were implemented, in part, in the Channel Maintenance Management Plan (CMMP). The proposed project is authorized by the referenced legislation and its purpose is compatible with the annual Operations and Maintenance appropriation.

(1) The River and Harbors Act of 3 July 1930, which authorized the Mississippi River 9-Foot Channel Project and which states in part:

“Mississippi River between mouth of Illinois River and Minneapolis, MN: The existing project is hereby modified so as to provide a channel depth of nine feet at low water with widths suitable for long-haul common-carrier service.”

(2) 33 USC 591, which authorized condemnation, purchase, or donation of land or right-of-way for the improvement of rivers.

(3) Section 1103 of the Water Resources Development Act of 1986, 33 USC 652(i)(I), which authorized the purchase of the subject tracts in fee. It further states that:

“the Secretary shall, as he determines feasible, dispose of dredged material from the system pursuant to the recommendations of the GREAT I, GREAT II, and GRRM studies.”

The GREAT I Study contains the following recommendation as Policy/Funding Item 6 on Page VII-23:

“The Corps of Engineers should change its policy and allow the acquisition of private land for stockpiling of dredged material to implement the channel maintenance plan and make material available for beneficial use.”

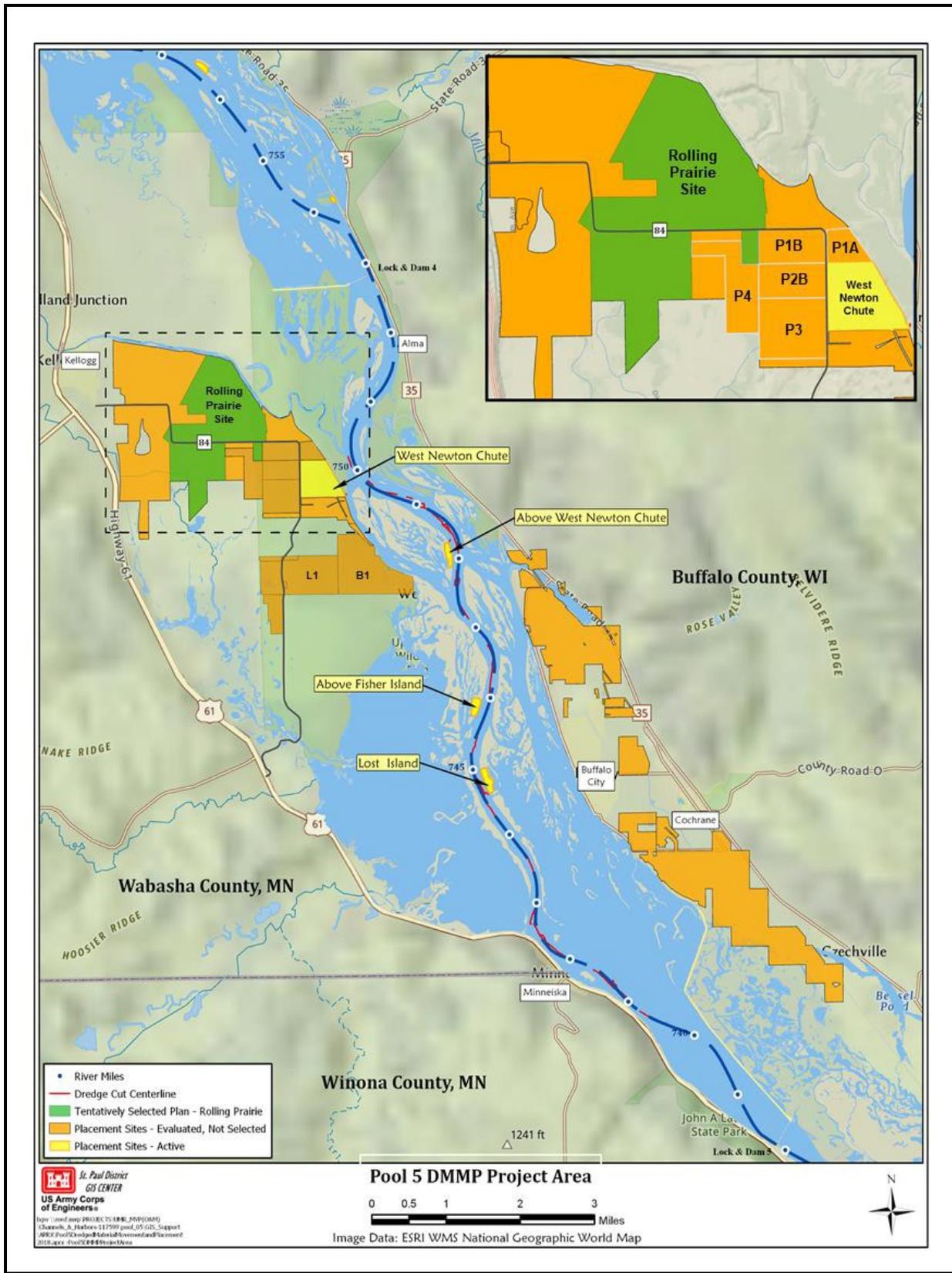


Figure 2. Pool 5's Map of Active, Evaluated and Recommended Placement Sites.

**2.0 PROJECT LANDS, EASEMENTS, RIGHT-OF-WAYS, RELOCATIONS,
AND DREDGE OR EXCAVATED MATERIAL DISPOSAL AREAS (LERRD)**

2.1 FEE ACQUISITION OF ROLLING PRAIRIE:

The Corps proposes to acquire the Rolling Prairie permanent dredged material placement site in fee through a direct purchase from the land owners (Figure 3).

2.2 RECOMMENDED PLAN:

In addition to selecting the Rolling Prairie Site, to be purchased in fee simple, as part of the Recommended Plan, West Newton Chute (currently the only Corps owned onshore transfer/permanent placement site in Pool 5) was also selected as part of the plan (Figure 4). The three Corps owned islands in Pool 5 will likewise be retained as part of the recommended plan. The combination of the sites selected meet the planning objectives for the Pool 5 DMMP.

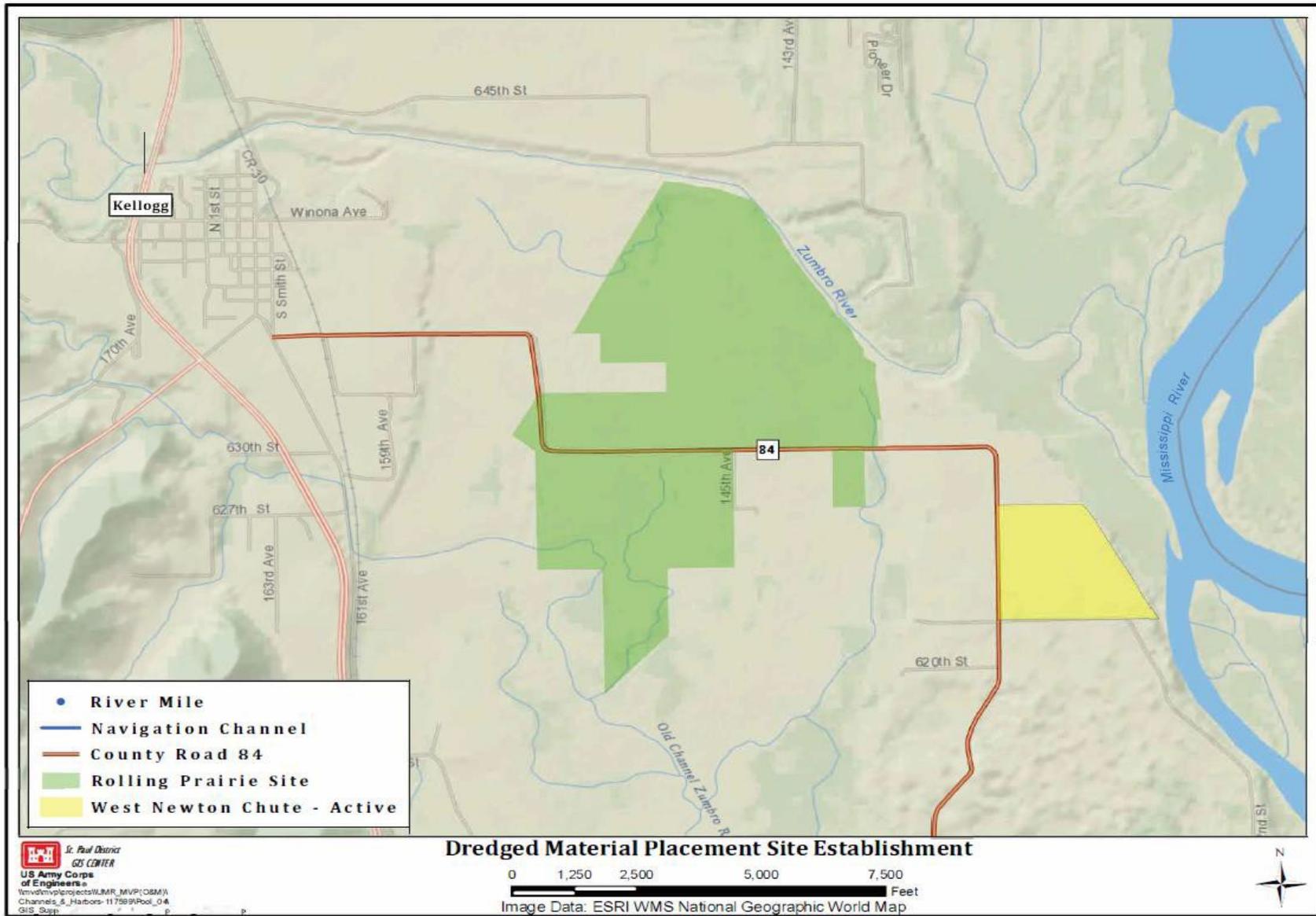


Figure 3. Recommended Plan for Long-Term Placement Dredged Material in Pool 5.



Figure 4. West Newton Chute - Permanent Placement Site

3.0 SPONSOR OWNED LANDS

3.1 This is a full Federal Project and there is no involvement of a local non-federal sponsor.

4.0 ESTATES TO BE ACQUIRED

4.1 The District proposes to acquire fee title for the Rolling Prairie placement Site.

4.2 FEE SIMPLE: The fee simple title to (the land described in (Schedule A)(Tracts Nos. , and), subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

5.0 FEDERALLY-OWNED LANDS OR OTHER INTEREST

5.1 West Newton Chute is the only upland-based site currently being used for Pool 5's permanent upland placement while Above West Newton, Fisher Island, and Lost Island are active temporary island placement sites. Fee title is held in the name of the United States for all of these properties.

6.0 NAVIGATION SERVITUDE

6.1 Navigation Servitude is not applicable to this project. Dredging operations will be conducted within the river, however the material will be placed on upland sites.

7.0 PROJECT MAPS

7.1 Location of Pool 5's Dredge Cuts, West Newton Chute upland permanent placement site, the temporary island placement sites and the newly proposed Rolling Prairie upland permanent placement site are depicted on the following map (Figure 5).

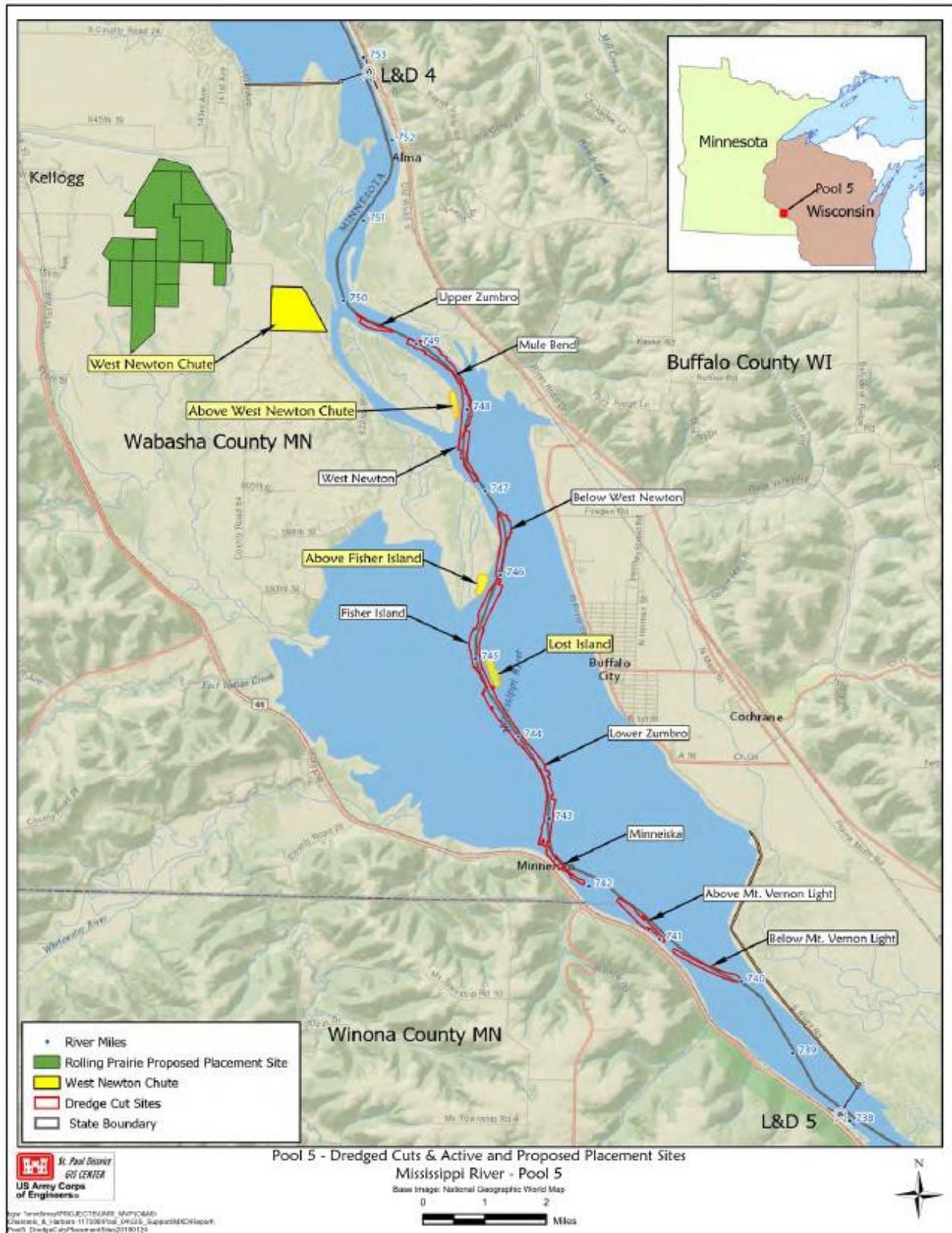


Figure 5. Pool 5 Dredge Cuts & Active and Proposed Placement Site

8.0 INDUCED FLOODING

8.1 Flooding will not be induced by the Recommended Plan.

9.0 REAL ESTATE BASELINE COST ESTIMATE

9.1 The Real Estate Baseline Cost Estimate has been prepared based on an appraisal of the Rolling Prairie property. Administrative expenses have been estimated based on knowledge of past acquisitions. Real Estate costs for acquisition activities are estimated to be a total of \$10,237,000.00.

10.0 MINERAL ACTIVITY

10.1 There is no present or anticipated oil/gas/mineral extraction activities occurring that will impact the acquisition, operation, or maintenance of the Rolling Prairie upland placement site in particular or any current or proposed temporary and/or permanent Pool 5 placement site in general.

11.0 RELOCATION ASSISTANCE BENEFITS "PL91-646" ANTICIPATED

11.1 There are no Public Law 91-646 Relocation Assistance Benefit payments anticipated for this acquisition.

12.0 ZONING ORDINANCE REQUIREMENTS

12.1 No application or enactment of zoning ordinances is proposed.

13.0 ACQUISITION SCHEDULE

TASK	Duration
Survey and Mapping	90 Days
Tract Appraisal	60 Days
Secure Title Commitment(s)	60 Days
Preliminary Title Opinion	30 Days
Offer to Purchase / Negotiations	120 Days
Title Curative	120 Days
Closing / Conveyance of Title	30 Days

13.1 Major acquisition milestones (Table 4) will be more accurately identified and timelines set once potential sellers within the Recommended Plan have identified which specific parcels they would like to sell.

14.0. PUBLIC UTILITY OR FACILITY RELOCATIONS, ALTERATIONS, OR REPLACEMENT

14.1 There will be no public utility or facility relocations, alterations, or replacements associated with the proposed placement sites.

15.0 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

15.1 A preliminary Phase I HTRW assessment, to include site reconnaissance of the Recommended Plan placement sites, was completed. No obvious indicators of the presence (historic or current) of HTRW were observed at that time.

15.2 Once the snow cover dissipated and the ground thawed, a Phase II HTRW inspection along with a cultural assessment was conducted to further investigate the recognized environmental condition (REC) observed on land parcel 5 of the Rolling Hills property in Wabasha County, MN. The REC was defined as intermittent black soil staining, distressed vegetation, and a chemical odor within an area of 75 sf. A 500 gallon Petroleum Aboveground Storage Tank (AST) and fuel pump were believed to be the source of contamination. Both the diesel range organics (DRO) and gasoline range organics (GRO) were detected at concentrations exceeding screening levels developed by the Minnesota Pollution Control Agency. Although DRO and GRO concentrations were elevated, their spatial extent was limited, and localized to an area of <75 sf. Further, the source (AST and fuel pump) have been removed. The potential for exposure of GRO and DRO to human health and the environment is de minimis. This study recommends that the contaminated soil is left in place to naturally attenuate.

16.0 NON-FEDERAL SPONSOR REAL ESTATE ACQUISITION CAPABILITIES ASSESSMENT

16.1 Not applicable, this is a full Federal project.

17.0 LANDOWNER ATTITUDE(S)

17.1 Local land owners approached USACE about the acquisition of the Rolling Prairie property and have been very cooperative throughout the real estate process. A public meeting was held on 26 September 2019, during which there was some concern expressed by the attendees on the loss of tax revenue to the county due to the Federal acquisition of nearly 1000 acres of farmland. These comments were addressed and information regarding the payment in lieu of taxes (PILT) program was provided.

18.0 RISK OF ACQUIRING LANDS BEFORE EXECUTION OF THE PPA

18.1 N/A

19.0 A DESCRIPTION OF ANY OTHER REAL ESTATE ISSUE RELEVANT TO PLANNING, DESIGNING OR IMPLEMENTING THE PROJECT

19.1 The contents of this REP provide the reader with all relevant real estate related issues. There are no other known real estate issues at this time.

Date: 16 April 2019



Prepared by:

Peter Crary
Realty Specialist
Planning & Acquisition
Branch St. Paul District

Date: 16 April 2019



Reviewed by:

Penny Caldwell
Realty
Specialist
Planning & Acquisition
Branch St. Paul District

Date: _____

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Date: 2019.10.30 14:44:02 -05'00'

Approved by:

Kevin Sommerland
Chief of Real Estate
St. Paul District

Appendix H

Public and Agency Comments with Responses

Pool 5 Dredged Material Management Plan

Upper Mississippi River

Wabasha and Winona Counties, Minnesota

Buffalo County, Wisconsin



**US Army Corps
of Engineers**

St. Paul District

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Summary Statement for Comments and Responses

The DRAFT Pool 5 Dredged Material Management Plan (DMMP) was released on September 16, 2019 and closed on October 18, 2018. The review period generated a few concerns, questions, suggestions, and some general comments about the initial draft feasibility report. All of the original comments that were received during the public comment period are provided at the end of this appendix.

All comments have been reviewed by the St. Paul District of the Army Corps of Engineers. Many of the comments were unique and many have been reiterated in comments by multiple individuals or groups. Comments that were submitted during the public comment period were carefully evaluated and considered in the final version of the Pool 5 DMMP. Submitted comments/alternatives have been consolidated and responded to accordingly.

Public Comments

1. County Road 84 Repairs
2. Taking Farmland out of Tax Roll
3. Wetland Concerns
4. Use Material to Create More Islands
5. Fix the Chippewa River
6. Minnesota vs. Wisconsin
7. Water Level and Contaminant Testing
8. Compression of the Existing Soil and Localized Flooding Concerns
9. Original Public Comment Letters

Agency Comments

10. MNDNR Comments
11. Corps Response to MNDNR Comments
12. WIDNR Comments
13. Corps Response to WIDNR Comments
14. EPA Comments
15. Corps Response to EPA Comments

Public Comments

1. County Road 84 Repair

The report states that the material would be mostly transferred from West Newton Chute to the Rolling Prairie Site via County Road 84. Who will be responsible for the repairs and maintenance of this road?

Response: County Road 84 is public roadway which means that as long as the trucks that move dredged material from West Newton Chute to the Rolling Prairie Site abide by any restrictions (weight, axel limits, etc.) that are placed upon the road, then they are not to be held liable for any repairs needed to the road after movement of material.

2. Taking Farmland out of Tax Roll

Approximately 962 acres of farmland will be purchased as part of the Pool 5 DMMP. Will the 962 acres be taken out of the tax roll then? Is there any federal reimbursement for such a lose?

Response: Yes, the ~962 acres will be taken out of the county tax rolls; however, payments in lieu of taxes (PILT) are made to local governments on an annual basis to help offset their inability to tax federal property. PILT compensates counties for some of this lost revenue and allow local governments to provide critical health, education, road maintenance, and emergency services to their residents and federal lands visitors. These payments are one example of the United States striving to be a good neighbor to local communities.

Using a statutory formula, the annual PILT payments to local governments are computed based on the number of acres of federal land within each county or jurisdiction and on the population of that county or jurisdiction. The lands include the national forest and national park systems; lands in the FWS Refuge System; areas managed by the BLM; areas managed by the U.S. Army Corps of Engineers; U.S. Bureau of Reclamation water resource development projects; and others.

The Department of Interior collects more than \$11.9 billion in revenue annually from commercial activities on public lands, such as oil and gas leasing, livestock grazing, and timber harvesting. A portion of these revenues is shared with States and counties. The balance is deposited in the U.S. Treasury, which in turn pays for a broad array of federal activities, including PILT funding.

Wabasha County received \$14,384 for 5,202 acres in 2019. A full list of funding by state and county is available at www.doi.gov/pilt.

Source: <https://www.doi.gov/pressreleases/interior-disperses-5147-million-funding-local-communities>

3. Wetland Concerns

There are several wetland areas throughout the Rolling Prairie site, how will those be avoided and managed going forward? Will the placement of sand impact the neighboring water table and will excess water be managed within the property?

Response: A wetland delineation will be conducted on the entire Rolling Prairie property which will inform the Corps as to where the wetlands are located. The Corps will avoid all wetland acres to the greatest extent possible. If avoiding wetlands becomes impracticable due to capacity needs, the District would follow all wetland sequencing procedures (avoid, minimize, and compensate) that comply with Section 401(b)(1) requirements. During the implementation of the project, the site will be designed so that flooding will not impact the neighboring landowners.

4. Use Material to Create More Islands

Previous projects within the Pool 5 project area involved the creation of islands (i.e Weaver Bottoms), why isn't the Corps looking into expanding those islands and/or creating new ones to use the dredged material?

Response: Dredged material has periodically been used for habitat improvement on the Upper Mississippi River. Locally, dredged material has been used to create islands (e.g., Spring Lake Island, Swan Island and Mallard Island in Pool 5), as well as raise floodplain elevations to create topographic diversity and conditions favorable for floodplain forest (L/D 4 Embankment). Indirect benefits also occur as other construction materials, such as fine material used to cap dredged sand, can be obtained from the river. This benefits aquatic backwater habitats via increased water depth. Beneficial use of dredged material for habitat purposes can be performed if the project costs are generally similar to other methods for permanent placement of dredged material. This presents a unique opportunity to benefit river habitat without use of traditional funds for river restoration.

The potential to improve habitat in Pool 5 by the use of dredged material is always being considered; however, this is a only a partial solution to managing dredged material within the project area and a more comprehensive long term solution is needed. Currently, dredged material is available at numerous beneficial use facilities up and down the river if there is an immediate need to use material to build and improve habitat. In cooperation with agency partners, Wisconsin and Minnesota Departments of Natural Resources as well as the USFWS Refuge offices, the use of dredged material to rebuild and improve habitat within the Pool 5 project area could be a possibility in the future. Funding from the Upper Mississippi River Habitat Rehabilitation and Enhancement Program (HREP) or via a cost share agreement through the Corps' Continuing Authorities Program (CAP) for feasibility planning and construction are funding options to use material for habitat restoration if cooperating agencies agree to such a project.

5. Fix the Chippewa River

The Chippewa River is the main source of all of the sediment that is getting transported within the Pool 5. Why can't the Corps solve the problem and fix the Chippewa River?

Response: In the early 1980s, the Corps and research experts in sediment transport, investigated both the geomorphic response time and stabilization measures for reducing sediment loads originating from the Chippewa River. The results of the study indicated that there were no low-cost bank stabilization measures and the cost for stabilization would be high (e.g. nearly 9.5 million dollars in present day cost) based on only armoring the nearly 5-mile length of identified and prioritized eroding stream banks. More telling than overcoming the initial investment cost is how the extensive sediment transport modeling and field assessment indicated that the geomorphic response time after improvements are placed would be realized well into the future. It was estimated that if only the prioritized 5-miles of stream banks were armored, a 10% reduction in the sediment supply would be seen 50-years from the construction date. If all of the eroding banks assessed at the time of the study were armored and cost was not a factor, it was estimated that dredging in Lower Pool 4 would be gradually decreased but only by about 30% by year 50. This reduction is significant but again it only occurs at year 50. The energy of the river system (i.e. transport capacity) under a bank armoring system might be increased, resulting in sediment sourcing to switch from erosion of the stream banks to degradation of the stream bed. At some point in time, equilibrium may be achieved but most likely on a different time scale than agencies and the public will desire related to downstream dredging operations.

Following the sediment transport study for the Chippewa River, the Corps held a conference with international experts in this field to specifically examine means to reduce sediment loads originating from the Chippewa River. The attendees concluded that bank protection would not substantially reduce the river's material load and a less expensive alternative was not reached.

Alternative options for reducing sediment loads may be viable but need to account for the innate lag in the geomorphic timeframe and overcome the associated impacts to items such as but not limited to the substantial capital investment, terrestrial and aquatic ecology, water quality, tourism and recreational industry, infrastructure, real estate, etc.

6. Minnesota vs. Wisconsin

The plan looked at sites within Pool 5 that were in both Minnesota and Wisconsin but ultimately the recommended plan only considers sites in Minnesota. How come Wisconsin doesn't get any of this material, especially considering it is coming down the Chippewa River from Wisconsin?

Response: Corps policy requires that we manage dredged material in the least cost environmentally acceptable manner. The original source of the material does not affect available management options. Wisconsin was not included as an option due to a significant cost increase that would be incurred from dredging, transporting, and placing the material in Wisconsin versus the identified properties on the Minnesota side. Additionally, the Corps chose a plan that was operationally feasible, socially acceptable, and cost effective.

7. Water Level and Contaminant Testing

Will there be test wells monitoring the water levels and contamination within the property? Would this testing also extend to neighboring properties as well?

Response: Material from Pool 5 DMMP will be mechanically placed at the Rolling Prairie site. There will be no impact to ground water levels or contamination of ground water. Because mechanical placement will be performed, there will not be any testing wells on the placement site or testing of adjacent property. If hydraulic placement will be done in the future, then appropriate monitoring testing wells and the testing of adjacent properties will be performed. The testing of sediment quality occurs on a periodic basis and the testing procedure is highlighted in section 2.5.1 of the main report.

8. Compression of the Existing Soil and Localized Flooding Concerns.

Has the Corps studied the effects that the compression of existing soils will have on the groundwater to surface water flow in the area? Will the placement of the dredged material have an impact on the localized flood elevations and the surface water flow routes?

Response: The Corps does not anticipate that the placement of dredged material will have an impact on groundwater to surface water flow within the area. Material will be placed mechanically (as opposed to hydraulic pumping a slurry of river water and sand) at the Rolling Prairie site such that groundwater will not be impacted and in such a manner that it will avoid impeding natural drainage patterns as much as possible. Compression of existing soils and impacts to groundwater levels at other placement sites such as the West Newton Chute placement site has not been observed. Infrastructure, such as additional culverts, may be added if needed to facilitate drainage once material is placed. Upon the completion of this report, a land management plan for the site will be developed by the Corps, for the long-term management of the site. Coordination with the natural resource agencies and the community will be taken into consideration when determining the restoration actions that are to be considered.

From: [Edstrom, Robert K CIV USARMY USACE \(USA\)](#)
To: [Dunham, Nicholas R CIV USARMY CEMVP \(USA\)](#)
Cc: [Machajewski, Paul R CIV USARMY CEMVP \(US\)](#); [Kelner, Daniel E CIV USARMY CEMVP \(US\)](#)
Subject: FW: POOL 5 DREDGED MATERIAL Comment Card (UNCLASSIFIED)
Date: Thursday, October 17, 2019 2:36:49 PM

CLASSIFICATION: UNCLASSIFIED

Pool 5 DMMP NEPA Comments - See below.

-----Original Message-----

From: Bruce [<mailto:bruce@bakerswelding.com>]
Sent: Thursday, October 17, 2019 2:26 PM
To: Edstrom, Robert K CIV USARMY USACE (USA) <Robert.K.Edstrom@usace.army.mil>
Subject: [Non-DoD Source] POOL 5 DREDGED MATERIAL Comment Card

Hello - this is Bruce & Beverly Baker - we own land on the East side of the Dredging project - 62739 145th Ave, Kellogg, MN 55945. Our concerns would be the following.

Will there be test wells monitoring the water levels and contamination and would that also include our residence testing annual as to contaminants since we live adjacent?

We were told sand would be trucked not pumped in, within the 100 year plan is that correct?

We already live in wet lands - will this placement of sand affect our water table - in other words -we will be lower than the piles of sand where will the excess rain water be channeled?

We have lived here for over 40 years and plan to sale as we retire - do not want to see our property value decrease - has there been similar projects that we can look into as to the valuation?

Bruce & Beverly Baker

62739 145th Ave

Kellogg, MN 55945

Bruce Cell 651-564-0371

Bev's Cell 651-764-1325

Work 651-565-3517

Home 507-767-2263

bruce@bakerswelding.com <<mailto:bruce@bakerswelding.com>>

Please do not publish the following comment:

Sorry we did not send earlier - Bruce had medical issue which delayed our comments.

CLASSIFICATION: UNCLASSIFIED

From: [Edstrom, Robert K CIV USARMY USACE \(USA\)](#)
To: [Dunham, Nicholas R CIV USARMY CEMVP \(USA\)](#)
Cc: [Machajewski, Paul R CIV USARMY CEMVP \(US\)](#)
Subject: RE: Pool 5 Dredged Material Management Plan (DMMP) (UNCLASSIFIED)
Date: Wednesday, October 2, 2019 11:02:59 AM

CLASSIFICATION: UNCLASSIFIED

See below from Wabasha County for the report.

-----Original Message-----

From: Flesch, Dietrich [<mailto:dflesch@co.wabasha.mn.us>]
Sent: Wednesday, October 2, 2019 10:47 AM
To: Machajewski, Paul R CIV USARMY CEMVP (US) <Paul.R.Machajewski@usace.army.mil>; Edstrom, Robert K CIV USARMY USACE (USA) <Robert.K.Edstrom@usace.army.mil>
Subject: [Non-DoD Source] RE: Pool 5 Dredged Material Management Plan (DMMP) (UNCLASSIFIED)

Gentlemen

Regarding the proposed Management Plan, Wabasha County Highway Department has the following comments/questions:

- at sometime in the future when CR 84 pavement is near the end of its service life (estimated 10+ years); the County may consider reconstructing CR 84 in locations adjacent to and on the proposed Corps property acquisition areas. Conceptually, CR 84 would remain straight except at horizontal road curve in Section 26. Road reconstruction would require additional width of right of way for potential widening, slope, and vertical and/or horizontal alignment changes. Design could be accomplished in consideration of (potential ample) use of dredged materials and design that meets the needs of the public and as the Corps may find beneficial. On the recent County Hwy 59 project in Wabasha, the Corps was great to work with in granting the necessary easement for road purposes; I look forward to the same working relationship on CR 84.
- the County is the sponsoring agency for the previous Corps levee system project along the Zumbro River. As the sponsor, the County is required to maintain not only the levee(s) but also the channel which was also constructed under the project. The County holds flood control easements for the levee system, and the County Highway Department has been responsible for maintenance and compliance with Corps levee program and inspections. The purpose of the levee was for agricultural production protection. Maintenance of the levee system has proved difficult with sedimentation and the Zumbro naturally attempting to meander. The County encourages further discussions on a different management approach to the levee system including channel that may have benefits to the Corps dredge operations mission, sustainable flood protection and environmental stewardship.

Please contact me if you have any questions or would like to discuss further.

Thanks,

Dietrich Flesch
Wabasha County Engineer
821 Hiawatha Drive West
Wabasha, MN 55981
Phone 651.565.3366 ext.113
Fax 651.565.4696

-----Original Message-----

From: Machajewski, Paul R CIV USARMY CEMVP (US) [<mailto:Paul.R.Machajewski@usace.army.mil>]
Sent: Friday, September 13, 2019 1:21 PM
To: Baumgard, Kevin L CIV USARMY CEMVP (USA); Baylor, Sharonne; Beckham, Amy (UMWA); Benjamin, Gretchen (TNC); Berg, Kevin F CIV (US); Bernhardt, Jacob T CIV USARMY CEMVP (US); Birkenstock, Terry J CIV USARMY CEMVP (US); Brennan Dispatch; Cameron, Tamara E CIV USARMY CEMVP (USA); Carstens,

Jess (WDNR); Clark, Steven J CIV USARMY CEMVP (US); Cook, Travis (USCG Wyaconda); Cottrell, Daniel J CIV USARMY CEMVP (USA); Denzer, Judith M CIV USARMY CEMVP (USA); Dieterman, Dan (MDNR); DLL-CEMVP PA; Doneen, Randall (MDNR); Fasbender, Pete (FWS); Fischer, Jim (WDNR); Gray, Brian P CIV USARMY CEMVP (USA); Havlik, Marian; Heath, David (WI DNR); Heffner, Joseph P CIV USARMY CEMVP (USA); Hendrickson, Jon S CIV USARMY CEMVP (US); Heyer, Rojean E CIV USARMY CEMVP (US); Horton, Becky (MDNR); Johnson, Thomas R CIV USARMY CEMVP (USA); Kelner, Daniel E CIV USARMY CEMVP (US); Kimmel, Zachary R CIV USARMY CEMVP (USA); Kowal, Kathleen (EPA); Krause, Brian M CIV USARMY CEMVP (USA); Kwok, Angel M LT (USCG - St. Paul); Loewenhagen, Adrian J CIV USARMY CEMVP (US); Machajewski, Paul R CIV USARMY CEMVP (US); River Port Captains; Mathison, Jane Marie CIV USARMY CEMVP (USA); McCracken, Chandi (MPCA); Mcfarlane, Aaron M CIV USARMY CEMVP (USA); McMurl, Curt (FWS); Miller, Tim (FWS); Moe, Kristin M CIV USARMY CEMVP (USA); Moore, Megan (MDNR); Moser, Delene J CIV USARMY CEMVP (USA); Nelson, Lee MVS External Stakeholder; Noren, James B CIV USARMY CEMVP (USA); Olson, Brandon L CIV USARMY CEMVP (USA); Perkl, Bradley E CIV (US); Peterson, Bryan D CIV USARMY CEMVP (USA); Patrick Phenow; Potter, David F CIV USARMY CEMVP (US); Rand, Jimmy T CIV USARMY CEMVP (USA); Rasmussen, Kurt (WDNR); Robbins-Fenger, Alan (NPS); Rude, Neil (MDNR); Schnick, Emily (MPCA); Sipos, Brian A CIV USARMY CEMVP (USA); Sorensen, Jenifer (MDNR); Stai, Christopher J CIV USARMY CEMVP (USA); Stefanik, Elliott L CIV USARMY CEMVP (USA); Stefanski, Mary (FWS); Strassman, Sara L (WDNR); Studenski, David A CIV USARMY CEMVP (USA); Sutton, John (Pilot); Tabery, Timothy D CIV USARMY CEMVP (USA); Tapp, Steven D CIV USARMY CEMVP (US); UMW (umwamail@gmail.com); Urich, Randall R CIV USARMY CEMVP (US); Utrup, Nick (FWS); Vanguilder, Alan Scott CIV USARMY (USA); Weeks, Jordan (WDNR); Yager, Tim (FWS); Zeller, Kriss R CIV USARMY CEMVP (USA); taylor.huinker@state.mn.us; Althoff, Jess (DNR); Greg Genz; Flesch, Dietrich; Buhmann, Brian

Cc: Edstrom, Robert K CIV USARMY USACE (USA); Dunham, Nicholas R CIV USARMY CEMVP (USA); Moes, Patrick N CIV USARMY CEMVP (USA); Dupey, Stephanie T CIV USARMY CEMVP (US); Caldwell, S Penny (Penny) CIV USARMY CEMVR (USA); Robinson, Benjamin C CIV USARMY CEMVD (USA); Emery, Benjamin E CIV USARMY CEMVD (USA)

Subject: Pool 5 Dredged Material Management Plan (DMMP) (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

* Please disregard if this does not pertain to you *

Pool 5 On Site Inspection Team members -

See attached Public Notice regarding the release and public review of the DRAFT Pool 5 Dredged Material Management Plan (DMMP). As noted in the notice this is a DRAFT management plan for the material generated by our dredging operations in Pool 5 for the next 40 years. Questions or comments during this comment period can be addressed to robert.k.edstrom@usace.army.mil, 651-290-5026 or the undersigned.

The DRAFT report will be posted on our St. Paul District website on Monday, September 16th, 2019.

A Public Meeting regarding this DRAFT Pool 5 DMMP is scheduled for Thursday, September 26th from 6 - 8 pm at St. Agnes Church in Kellogg, MN. A separate News Release will be published regarding the Public Meeting as well.

Please note that this is a separate planning effort from the Pool 4 Dredged Material Management Plan in the Wabasha, MN area.

Paul Machajewski
Dredged Material Manager
St. Paul District, US Army Corps of Engineers
431 North Shore Drive

PO Box 397
Fountain City, WI 54629
651.290.5866 (o)
651.724.4259 (c)

CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

From: [Edstrom, Robert K CIV USARMY USACE \(USA\)](#)
To: [Machajewski, Paul R CIV USARMY CEMVP \(US\)](#)
Cc: [Dunham, Nicholas R CIV USARMY CEMVP \(USA\)](#)
Subject: FW: [Non-DoD Source] Pool 5 dredging plans (UNCLASSIFIED)
Date: Wednesday, October 9, 2019 9:13:00 AM

CLASSIFICATION: UNCLASSIFIED

Paul,

See below. Please respond directly. I copied Nick Dunham so this can be recorded as a comment.

Thanks,

Bob

-----Original Message-----

From: Bill Deming [<mailto:bdeming36@gmail.com>]

Sent: Tuesday, October 8, 2019 6:05 PM

To: Edstrom, Robert K CIV USARMY USACE (USA) <Robert.K.Edstrom@usace.army.mil>

Subject: [Non-DoD Source] Pool 5 dredging plans

Robert, was unable to attend the recent meeting in Kellogg on plans for the sand disposal from pool 5 dredging. I have voiced this idea before but could you tell me why more islands could not be constructed in the Weaver Bottoms area as were done a few years ago?? These islands cut down on wind erosion in the lake plus create a wildlife bonanza as I can attest to having lived in the area all my life. I see no negative wildlife impact in doing this plus it would provide a great area to dispose of some of this river sand...the more islands the better to curb wind issues in the Fall and Spring. It would certainly be easier than piping and trucking...This may not be the answer for all the sand but would disposition a good deal of it. Would appreciate a response..thank you

Bill Deming

bdeming36@gmail.com <<mailto:bdeming36@gmail.com>>

CLASSIFICATION: UNCLASSIFIED



Pool 5 Dredged Material Management Plan | COMMENT CARD

Please check ONE category below that best describes you and your interest in the Pool 5 DMMP:

- General Public
- Business/Industry
- Environmental Group
- Media
- Federal Government
- State Government
- City/County Government
- Other (please specify)

We neighbor the land that you are putting sand on. Maybe thinking about placing sand -

Please provide your comments in the sections below:

What happen to the irrigation system?

Concerns about road use

test wells

Noxious weeds on farmer's side of fence. Will that be kept up?

All the questions we had were kind of answered at the meeting. Thank you for informing us of what may happen.

All comments received will be made available to the public, to include the possibility of being posted on a publicly accessible website. Individuals are requested not to include personal privacy information in their comments unless they do not object to such information being made available to the public.

If you would like to leave your contact information, please complete the following:

Name Gary & Sharon Reese

Address 63252 Co. Rd 84 P.O. Box 25

City Kellogg State MN ZIP 55945

Phone 507-767-4920 Email gsreese@gmail.com

You can email your comments to robert.k.edstrom@usace.army.mil or mail them to U.S. Army Corps of Engineers Attn: PD-F, 180 East 5th Street, Suite 700, Saint Paul MN 55101
Comments are requested by **October 18, 2019**

SAINT PAUL MN 551

02 OCT 2019 PM 1 L



TO:
U.S. Army Corps of Engineers
Attn: PD-F
180 East 5th Street
Suite 700
Saint Paul MN 55101

55101-160075



-----Original Message-----

From: Jeff Fosmo [mailto:jeff.fosmo@gmail.com]

Sent: Tuesday, October 29, 2019 12:21 PM

To: Edstrom, Robert K CIV USARMY USACE (USA) <Robert.K.Edstrom@usace.army.mil>

Cc: Jerry Grabowski <watopa_township_clerk@yahoo.com>

Subject: [Non-DoD Source] Mississippi Pool 5 Dredge plan and Watopa Township Road 618th st.

Mr. Edstrom,

I am e-mailing you on behalf of Watopa Township in Wabasha County in my role as one of the three supervisors. We discussed the dredging material plan for pool 5. Watopa township owns and maintains an existing gravel road, 618th st, about 1 mile south of the Rolling Prairie Site as shown on the attached map. There is an existing roadway culvert which is maintained by the township and acts as a water leveler between two areas of the wetlands. It is sensitive to high groundwater within the area and surface water flows during spring runoff.

Although the Rolling Prairie site is not within the one-percent floodplain, it does flood on a regular basis (portions every year) either from local run-off or seasonally high groundwater. The placement of significant fill will compress the existing soils and introduce a different soil type into elevations where groundwater is present during portions of the year.

I have the following questions regarding the Dredged Material Management Plan:

- * Has the Corps studied the effects that the compression of existing soils will have on the groundwater to surface water flow in the area?
- * Has the Corps studied the effects that the placement of fill will have on the localized flood elevations and whether this will result in any changes to surface water flow routing or rates?
- * Will any of these impacts cause any change to the expected flow rates through the township roadway culvert crossing shown in the attached map?

* If so this is likely to impact the upstream surface elevation which would be concerning to the township considering the current susceptibility of the roadway and culvert.

* If there are impacts to the township road, would the Corps be proposing to mitigate these impacts as part of their dredged material management operations?

Thank you in advance for reviewing and responding to our comments and concerns. I would welcome the opportunity to discuss these with you directly or at one of our monthly township meetings. My contact information is listed below. If you would wish to join one of our township meetings Jerry can get you the schedule of our upcoming meetings

Thank You

Jeff Fosmo

email – jeff.fosmo@gmail.com <mailto:jeff.fosmo@gmail.com>

Cell – 507-421-0572

Jerry Grabowski

Email - Watopa_township_clerk@yahoo.com <mailto:watopa_township_clerk@yahoo.com>

CLASSIFICATION: UNCLASSIFIED

October 17, 2019

Mr. Bob Edstrom
Regional Planning and Environment Division North
180 Fifth Street East
Suite 700
St. Paul, Minnesota 55101-1638.

RE: Mississippi River Pool 5 Dredged Material Management Plan

Dear Mr. Bob Edstrom,

The Minnesota Department of Natural Resources (DNR) has reviewed the Mississippi River Pool 5 Dredged Material Management Plan. Regarding matters for which the DNR has regulatory responsibility or other interests, we offer the following comments for your consideration.

Section 4.1.2 – This section states that a qualitative climate change analysis was conducted by the Corps in accordance with Engineering and Construction Bulletin, 2018-214 Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Work Studies, Designs, and Projects (USACE 2018) and that the full analysis is presented in Appendix C: Climate Change. However, Appendix C does not contain this Climate Change analysis, rather it contains a Draft FONSI for the Mississippi River Pool 5 Dredged Material Management Plan Feasibility Report and Integrated Environmental Assessment.

Section 4.1.3 – The future effects of climate change on hydrologic conditions described in this report do not accurately reflect observed changes in hydrology and the potential for sediment transport. Calculation of average annual dredging and use of those quantities for projecting future volumes of dredge material from Pool 5 are likely under estimated due to use of inappropriate metrics for determining changes in hydrologic conditions, sediment transport, and sources. The statement “annual dredging volumes in Pool 5 and average annual discharge (AAD) on the Mississippi River at L/D 4 and the Chippewa River at the USGS gage at Durand, WI for the period 1981 to the present do not indicate upward trends” does not accurately reflect the data and narrative presented in Appendix D. Data presented in Appendix D only includes data from 1981-2015, not to the present and the narrative in Appendix D actually states: “there appears to have been an increase in the AAD and the number of days that the bankfull flood event was exceeded annually starting with this decade. Future projected dredging volumes should be based on data from this more recent time period, with adjustments made to the beginning year as needed based on dredging records”. Additionally, there is no reference to climate change effects on hydrologic conditions and potential internal sediment mobilization from within lower Pool 4 and Pool 5 and from the Zumbro River, a significant tributary and source of sediment to Pool 5.

Section 4.2.1 – The Chippewa River is identified as the primary source of sediment to Pool 5, but there is no reference or citation to relevant information supporting this statement. Other potentially significant sources of sediment not mentioned in this section include existing sediment from within

Lower Pool 4 and Pool 5, and three tributary rivers, the Buffalo River (lower Pool 4), Zumbro River (Pool 5) and the Whitewater River (Pool 5).

Section 5.1 - The definition of Emergency Dredging was discussed at the River Resources Forum in August. The Corps would like to change the official definition of Emergency Dredging in their CMMP to include “natural shoals in the channel that arise from weather-related events that prevent safe vessel passage.” The discussion at the Forum was tabled until a later date so that the partnership agencies can have time to discuss and agree to common language. It would be inappropriate to use the new Emergency dredging language in this document until the partnership has come to an agreement.

Section 5.3 – The characterization of agency partner’s lack of support for use of dredge material for habitat restoration purposes is inaccurate. Agency partners (MN DNR, WI DNR, and USFWS) have consistently and repeatedly asked the USACE to explore options and Channel Maintenance economic justification for use of dredge material for habitat restoration purposes. USACE policy and inflexibility in cost accounting are much more responsible for the decision and statement in this report. Furthermore, this section contains contradictory statements related to cost effectiveness of using dredge material for habitat restoration as stated: “dredge material placement....not being a cost effective solution” vs “Cost difference for these options were not well understood, and would take further planning to potentially reach a point where the cost-effectiveness of habitat restoration with dredge material could be determined.”

Section 6.1 – Use of the tentatively selected plan’s (TSP) Rolling Prairie Site for permanent dredge material placement may have much more flood stage and wetland impacts than described in the report. The geomorphic low lying “floodplain” area of the Rolling Prairie Site historically conveyed flood flows from both the Mississippi River and Zumbro River, and if not for the lower Zumbro River flood control dikes, probably still would. Permanently filling this area with dredge material without consideration of the future flood conveyance role this area might function as or provide for in a wetter climate is missing from the report. This report should include channel restoration and flow conveyance opportunities as part of the detailed description of the TSP. Potential wetland impacts from placement of dredge material at the Rolling Prairie Site described in this section contradict the description and information provided in Appendix E (see comments below for Section 7.2.2). An analysis of wildlife value and potential recreational use of the Rolling Prairie Site over the next 40 years, if it were managed as such, versus agricultural use, would be very useful in identifying the most appropriate short and long-term use of the site. A wetland delineation will be needed in the location identified for initial placement of dredge material at the Rolling Prairie site within the northern portions of the parcel immediately south of and abutting Co. Rd. 84

Section 7.2.2 – The statement that Appendix E contains results of a wetland delineation is incorrect, since it was only a wetland assessment, not a delineation. In conducting the wetland assessment, the parcel was divided into 8 separate units and the percentage of each unit containing wetlands was presented in Appendix E. The total wetland acreage (approx. 273 acres) within the entire 990-acre parcel, as determined by the wetland assessment, differs from the amount of wetlands (160 acres) referenced throughout the main report.

A potential action to reduce future dredging in Pool 5 that the TSP of this DMMP provides, is the ability to intercept a significant proportion of bedload (sand) material from the Zumbro River before it enters

Pool 5. An assessment or evaluation of this option added to this Report would be very useful in determining cost/benefit analyses of dredge material management in Pool 5.

Section 7.2.4 – This section discusses that a Natural Heritage Information System review was conducted to identify state-protected species that may be found within the vicinity of the project site, however it does not discuss potential impacts to these species, or how these impacts may be mitigated. As noted in Table 7, Blanding’s turtle and Wood turtle (both state-listed as threatened) have been found within 1 mile of the project area. Before the Rolling Prairie site is utilized as a placement site for sediment, the DNR recommends that the Corps consult with DNR staff regarding project plans and details. Blanding’s turtles and wood turtles utilize sandy soils for nesting, and there is a concern that this placement site could be attempted to be used for nesting, which could result in burial of adults, nests, and hatchlings. Due to the presence of these state-protected species, and the potential for impact by the project, avoidance measures, such as installing fencing along the perimeter of the project area to exclude turtles, will likely be required by the DNR. As the plan to utilize this site proceeds, DNR Environmental Review Coordinator Lisa Joyal should be contacted to discuss avoidance measures and implementation.

On behalf of the DNR, thank you for consideration of these comments.

Sincerely,

/s/Rebecca Horton
Planner Principal

CC:
Dan Dieterman
Lisa Joyal
Megan Moore
Dan Lais



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY

ST. PAUL DISTRICT, CORPS OF ENGINEERS

180 FIFTH STREET EAST, SUITE 700

ST. PAUL, MN 55101-1678

5 November 2019

Ms. Rebecca Horton
Minnesota Department of Natural Resources
Ecological and Water Resources
1200 Warner Road
St. Paul, MN 55106

RE: Mississippi River Pool 5 Dredged Material Management Plan

Dear Ms. Rebecca Horton,

Thank you for your review comments provided in a letter dated 17 October, 2019 regarding the Mississippi River Pool 5 Dredged Material Management Plan. Below are our responses to your comments. Your letter along with the Corps' responses will be added to the Appendix H: Agency and Public Comments with Responses for the record. Suggested updates, where applicable, will be added to the final report.

Section 4.1.2.

Concur with comment. The correct appendix for the Climate Change Assessment is Appendix D. Updates to the main report were made.

Section 4.1.3.

Concur with comment. An updated Climate Change Assessment has been prepared (Appendix D) and includes data from 1981-2018. Section 4.1.3. in the main body of the report has also been updated to reflect more recent data and conclusions from the updated Climate Change Assessment. Climate change effects on specific hydrologic conditions and internal mobilization from within Pool 4 and Pool 5 and from the Zumbro River are included in the larger context of the Upper Mississippi-Black-Root River Basin (Hydrologic Unit Code "HUC" 0704) which contains the project area at Mississippi River Pool 5.

Section 4.2.1

Concur with the comment. There is no recent reference as to the sediment contribution of sediment into Pool 5 from the Chippewa River except for annual dredged quantities, an indicator of sediment input. However, from estimates of the Upper Mississippi River and Illinois Waterway Cumulative Effects Study in 1999 (USACE – Nakato, 1999), the Chippewa River contributes approximately 600,000 yd³ per year into Lower Pool 4 and Pool 5. Annual average dredge quantities since 1981 from Lower Pool 4 and Pool 5 are approximately 270,000 and 117,000 yd³, respectively. The Zumbro contributes approximately 113,000 yd³ to Pool 5 and it's estimated that the Buffalo River contributes unmeasurable amounts and the Whitewater River sediments are deposited in Weaver Bottoms. Given that this section of the report is identifying

the Problems and Opportunities in managing dredged material in Pool 5, we propose to keep the language in Section 4.2.1 as is with the Chippewa River identified as the primary source of sediment into UMR Pool 5.

Section 5.1.

Concur with the definition of Emergency Dredging in the report as not a finalized agreed upon statement. The report was changed to reflect the existing definition of Emergency Dredging as defined in the CMMP.

Section 5.3.

Concur with the comment. The section in the report has been updated to reflect the agencies interest in using dredged material for habitat restoration.

Section 6.1.

The scope of this study is for the acquisition of the Rolling Prairie site and placement of dredged material placement and not necessarily channel restoration of tributaries or modification of the Zumbro River flood control levee to improve flood conveyance. The Rolling Prairie site was referred to the Corps by the MNDR for acquisition under federal ownership and used as a dredged material placement site and will be managed long term for natural resources and public use. A land management plan for the site will be conducted by the Corps for the long term management of the site and will be coordinated with our partner resource agencies of which restoration actions can be considered.

We do concur a detailed wetland delineation is required for the entire Rolling Prairie site. Wetland delineations are scheduled for and will be conducted prior to first placement of any dredged material.

Section 7.2.2.

Concur with the comment that Appendix E contains results of a wetland delineation as only a wetland assessment was conducted. Also we concur that there are inconsistencies in wetland acreages identified on the Rolling Prairie site. Currently the 160 acre wetland estimate is accurate as the site is actively farmed with pumping and drain tiling in operation. Once farming stops and pumping ceases, areas are likely to return to wetlands. Once wetland delineations are completed, a more accurate wetland acreage of the parcels will be known. As identified in the report, wetlands will be avoided if upland placement areas are available. If no upland acreages are available, wetland mitigation sequencing will take place prior to placement and mitigated for per Corps policy.

The scope of this project is not to identify potential actions to reduce dredging in Pool 5 but to prepare a long term plan for managing dredged material for the next 40 years. Even so, if the bedload from the Zumbro River could be eliminated from entering the Mississippi River, doing so would have a minimal impact on dredging quantities due to the bedload from the Chippewa River.

Section 7.2.4.

Concur with comment on the recommendation that the Corps should consult with MNDNR staff for implementing avoidance measures to state listed species, such as the Blanding's turtle and wood turtle. This coordination has been updated in the report. Prior to placement of dredged material at the Rolling Prairie site, when specific areas identified for material are known, avoidance measures will be coordinated with MNDNR Environmental Review Coordinator Lisa Joyal.

Again, thank you for reviewing and providing comments to the Mississippi River Pool 5 Dredged Material Management Plan. For additional clarification or questions please feel free to contact Dan Kelner at Daniel.e.kelner@usace.army.mil or via phone at 651-290-5277.

Robert Edstrom

Robert K. Edstrom
Project Manager
PM-B, St. Paul District



October 18, 2019

Mr. Bob Edstrom
Regional Planning and Environmental Division North
United States Army Corps of Engineers - St. Paul District
180 Fifth Street East
Suite 700
St. Paul MN 55101-1638

Subject: Mississippi River Pool 5 DMMP

Dear Mr. Bob Edstrom:

Thank you for the opportunity to review the draft Feasibility and Integrated Environmental Assessment for the Pool 5 Dredged Material Management Plan (DMMP). The plan identifies a tentative long-term solution for managing dredged material in Pool for the Upper Mississippi River (UMR) for the purposes of continued operations and maintenance of the 9-foot Navigation Channel Project. The Wisconsin Department of Natural Resources (Department) has reviewed the plan and provided comments in a sequential order that follows the DMMP outline. Those comments are attached to this letter.

The Department recognizes that the UMR is an important resource to our state and our nation. In 1986, Congress declared the Upper Mississippi River system as a nationally significant ecosystem and a nationally significant commercial navigation system and stated that the system shall be administered and regulated in recognition of its several purposes. As a partner in the management of this system, the Wisconsin Department of Natural Resources recognizes the role the U.S. Army Corps of Engineers (Corps) has in managing the river as multipurpose system and would like to commend the Corps' efforts in developing a long-term dredge material management plan that efficiently removes the dredge material from the floodplain, is to be acquired through a willing seller, and accounts for environmental and social concerns.

The detailed comments are provided as an attachment, but there are a few items that can improve the final DMMP and its outcomes:

- The Rolling Prairie site has both floodplain reconnection and wetland mitigation opportunities. While the priority for the site must be dredge material placement, it would behoove the Corps to develop site setbacks and layouts that allow for floodplain reconnection for the Zumbro River and wetland reestablishment as a bank for the Corps' future mitigation needs.
- It is inaccurate to state that the agencies are not interested in pursuing habitat restoration opportunities. While it is agreed that the majority of the material within this plan must be removed from the floodplain, the Department has been a strong proponent for habitat restoration measures that can provide constructive use of the excess sand from navigation dredging. This is something that the public advocates for as a win-win. If planning aspects of these types of projects are not undertaken as part of a DMMP, the partner agencies lack the necessary comparative economic and operational costs that are needed to take action when opportunities arise. For example, in 2014 and 2018, the Corps sought expedited, habitat-oriented placement sites to be utilized to address emergency channel closures and overfull temporary placement sites. While this plan is a positive step toward retaining a broader suite of options for placement by adding

a large capacity upland site, it fails to deliver any of those short-term, immediate use habitat placement options that were recently sought.

- The failure to consider utilization of the DPC facility just below Lock/Dam 4 seems inconsistent with the Corps' assertion that "land availability near the river is seldom available so when there is an opportunity to pursue land that is for sale it is necessary for the Corps to explore the acquisition of the property." A site with such optimal proximity to the peak dredging needs of the Corps and with facilities in place for offloading barges should not be excluded from evaluation, particularly in light of the possibility of future scenarios that include barging material dredged from Pool 4 into the TSP site in Pool 5.

Again, thank you again the opportunity to comment on the Pool 5 DMMP. If you have any questions or need any clarification on the items included in this letter, please contact Kurt Rasmussen, Mississippi River Planner, at (608) 785-9003 or by email at Kurt.Rasmussen@Wisconsin.gov.

Sincerely,



Kurt A. Rasmussen
Wisconsin Department of Natural Resources - Mississippi River Planner
3550 Mormon Coulee Road
La Crosse, WI 54601
Phone: (608) 785-9003
Kurt.Rasmussen@Wisconsin.gov

cc: Steve Galarneau (WDNR), James Fischer (WDNR)

Encl: WDNR Comments on the Pool 5 Dredged Material Management Plan

WDNR Comments on the Pool 5 Dredged Material Management Plan

Section 2.5.1 – Water Quality. *“This section of the river has relatively high water quality because Lake Pepin is a sink for sediment and contaminants from the Minnesota River and the Twin Cities Metropolitan Area. This section of the river does not appear on the State's impaired waters list, which identifies pollutants, stressors or indicators (such as turbidity, polychlorinated biphenyls (PCBs), fecal coliform) that would affect aquatic life and/or recreation. Except for isolated sloughs and backwater lakes, the dissolved oxygen content of the water remains above levels required to sustain a quality fishery.”*

Comment: Pool 5 of the Mississippi River is listed as an 303d impaired water in Wisconsin due to Total Phosphorus and Mercury. Pool 5 also has a contaminated fish tissue impairment for Mercury and PCBs.

Section 2.5.1 – Hydrology

Comment: The Zumbro and Whitewater Rivers deliver sediment to the mainstem and Weaver Bottoms, respectively. In both places, sedimentation occurs, forming deltas and shoals. The contributions should not be minimized, even though they are localized to this pool.

Section 2.5.2 – Mussels. *“The zebra mussel is present in Pool 5 and its numbers have steadily been increasing since its first reported occurrence in 1991.”*

Comment: This statement appears to be dated. Data now suggests populations have stabilized.

Section 4.1.2 – Climate Change. *“The Corps performed a qualitative climate change analysis in accordance with Engineering and Construction Bulletin, 2018-214 Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Work Studies, Designs, and Projects (USACE 2018). The full analysis is presented in Appendix C: Climate Change. Relevant components of river discharge that affect sediment transport and engineering resilience include its magnitude, frequency, and duration. Average annual discharge and the number of days that discharge exceeds a bank full flood event was evaluated to explain the potential for increased sediment loading in Pool 5. This data is available for the Mississippi River at Winona, Minnesota and the Chippewa River at Durand, Wisconsin. The gage located at Durand represents hydrologic conditions on the primary source of sediment to Pool 5. The gage at Winona is located near River Mile 726 at the upstream end of Pool 6, 13 miles downstream of Pool 5, and only separated by Pool 5A. It adequately represents flow conditions in Pool 5.”*

The evaluation found no statistically significant trends in either average annual discharge or the number of days the flow exceeded a bank full flow event at these two gages for the 1981 to 2015 time period (see Appendix C). From a longer term perspective when analyzing data from overall time period 1938 to 2015 at Winona, there is a statistically significant increasing trend for annual discharge and number of days flow exceeded a bank full event (see Appendix C). However, at the project scale level it's most important to consider more recent flow data to evaluate discharges on sediment transport and lessons learned from projects constructed during the 1981 to 2015 time period.”

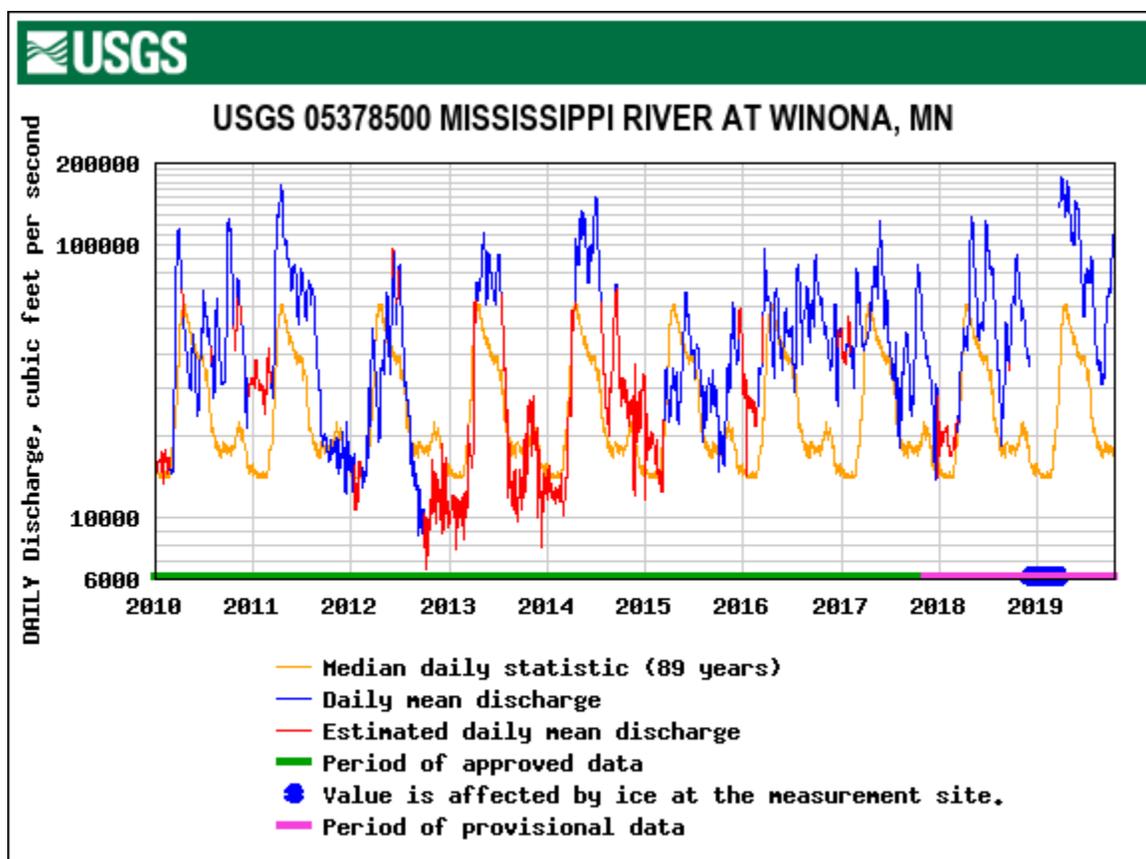
Comment: This section references Appendix C (Finding of No Significant Impacts). Please change to reference Appendix D (Climate Change).

Section 4.1.3 – “Projected Future Conditions. *“The basis for projecting future dredging quantities in Pool 5 over the next 40 years is the dredging record from 1981-2018. Although qualitative climate change analysis suggests higher river discharge in the future, it is suggested that the annual dredging volumes in Pool 5 and average annual discharge on the Mississippi River at L/D 4 and the Chippewa River at the US Geological Survey (USGS) gage at Durand, Wisconsin for the period 1981 to the present do not indicate upward trends. Assuming*

that dredging volumes remain consistent with recent history, it is estimated that 4.7 million CYs of dredged material will be generated over the 40-year period of analysis.”

Comment: This section inaccurately states that the “average annual discharge on the Mississippi River at L/D 4 and the Chippewa River at the US Geological Survey (USGS) gage at Durand, Wisconsin for the period 1981 to the present do not indicate upward trends”. First, the average annual discharge was calculated for the time period from 1981 to 2015, not from 1981 to present. Second, Appendix D goes on to state that “there appears to have been an increase in the AAD and the number of days that the bankfull flood event was exceeded annually starting with this decade. Future projected dredging volumes should be based on data from this more recent time period, with adjustments made to the beginning year as needed based on dredging records. These statements appear to contradict each other and warrant correction. It is recommended that the data be updated to include data from 2015 to 2018. It is possible that utilizing bankfull statistics is failing to account for short-duration, high intense events that recruit material from tributaries.

The regional scale section of Appendix D also quotes a NOAA report that states that the “Upper Midwest extreme heat, heavy downpours, and flooding will affect infrastructure, health, agriculture, forestry, transportation, air and water quality, and more. Climate change will tend to amplify existing risks climate poses to people, ecosystems, and infrastructure. Direct effects will include increased heat stress, flooding, drought, and late spring freezes”. The failure to account for this change in hydrology and the role it plays in sediment transport may result in under estimates of average annual dredging volumes and projected placement site capacities.



Section 4.3.3 – Constraints. “Environmental Acceptability. Plan must avoid and minimize to the extent practicable any impacts to the 1 Percent Annual Exceedance Probability (“100-Year”) Flood Stage. Avoid impacts to high value habitat and threatened and endangered species.”

Comment: Add statement on avoiding wetland impacts.

Section 5.1 – No Action Alternative. Emergency Dredging. *“Emergency Dredging is defined as dredging required to free a grounded vessel or remove shoals (submerged bars) in the channel as a result of a vessel freeing itself, or to remove natural shoals in the channel that arise from weather-related events that prevents safe vessel passage.”*

Comment: The definition of Emergency Dredging above differs from that listed in the Channel Maintenance Management Plan (CMMP). This subject was discussed at the August River Resources Forum and subsequently tabled until the partner agencies have time to discuss and agree to common language. Recommend the Corps continues to use the Emergency Dredging definition from the CMMP until this issue is resolved.

Section 5.3 – Pool 5 Habitat Restoration through the Use of Dredged Material. *“Collectively, there was little interest expressed in these options by the natural resource agencies. Although there is potential to build more islands in the Weaver Bottoms area, the volume needed for islands is small relative to the volume of dredged material needing placement as well as it not being a cost effective solution.”*

Comment: The statement above does not accurately reflect the partners position on the use of dredge material in Pool 5 for habitat restoration. Agency partners have collectively encouraged the Corps to explore habitat restoration options through the Corps’ Channel Maintenance program. The biggest deterrents for pursuing habitat restoration have been Corps policy (interpretation of the Federal Dredging Standard) and inability for a project to reach a point where it is cost-effective.

While it is agreed that the majority of the material within this plan must be removed from the floodplain, the Department has been a strong proponent for habitat restoration measures that can provide constructive use of the excess sand from navigation dredging. This is something that the public advocates for as a win-win. If planning aspects of these types of projects are not undertaken as part of a DMMP, the partner agencies lack the necessary comparative economic and operational costs that are needed to take action when opportunities arise. For example, in 2014 and 2018, the Corps sought expedited, habitat-oriented placement sites to be utilized to address emergency channel closures and overfull temporary placement sites. While this plan is a positive step toward retaining a broader suite of options for placement by adding a large capacity upland site, it fails to deliver any of those short-term, immediate use habitat placement options that were recently sought.

Section 6.1 – Rolling Prairie Site: Site Preparation. *“Placement of material near the levee bordering the Zumbro River along the northeast portion of the site will be set back sufficiently so that the levee can be maintained and existing drainage patterns are not disturbed.”*

Comment: The northern boundary of the Rolling Prairie Site borders a heavily channelized and leveed portion of the lower Zumbro River. The Corps should explore options to restore the flood plain and the channel of the Zumbro River. This may result in a net loss of dredge material capacity for the property but would provide flood flow capacity and the possibility of diverting sediment destined for the Mississippi River. Beyond that, this site would provide excellent opportunities for the Corps to do on-site wetland mitigation.

Section 6.1 – Rolling Prairie Site: Natural Resources. *“Wetland areas would be avoided as part of the permanent placement of dredged material within the 815-acre area of proposed use.”*

Comment: This statement accounts for 815 acres available for dredge material placement. The remainder of the document uses 830 acres. Please clarify.

Table 6. Environmental Assessment Matrix. Lists the TSP as “No Effect” on recreational opportunities.

Comment: Consider moving recreational opportunities associated with the TSP to minor adverse effects. The TSP will require the West Newton Chute boat landing to be closed more often.

Section 7.2.1 – Natural Resource Effects: Physical Setting – Hydrology. *“Placement of material near the levee bordering the Zumbro River along the northeast portion of the site will be set back sufficiently so that the levee can be maintained and existing drainage patterns are not disturbed.”*

Comment: The northern boundary of the Rolling Prairie Site borders a heavily channelized and leveed portion of the lower Zumbro River. The Corps should explore options to restore the flood plain and the channel of the Zumbro River. This may result in a net loss of dredge material capacity for the property but would provide flood flow capacity and additional wetland areas. Beyond that, this site would provide excellent opportunities for the Corps to do on-site wetland mitigation. Any increase in wetland would also aid in meeting goals set forth by the North American Waterfowl Management Plan.

Section 8.3 – Coordination. *“Planning for the overall project has been coordinated with the public, state and Federal agencies, and other interested parties.”*

Comment: It was disappointing that the partner agencies were not provided an opportunity to comment on the DMMP prior to the Public Review. In the future, it would be appreciated if that opportunity was arranged.

Appendix B – Sediment Containment

Comment: Please consider revising the title to read “Sediment Contaminant Datasheet”

Appendix E – Wetland Delineation 2018

Comment: Please consider revising the title to read “Wetland Assessment 2018”



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY

ST. PAUL DISTRICT, CORPS OF ENGINEERS

180 FIFTH STREET EAST, SUITE 700

ST. PAUL, MN 55101-1678

5 November 2019

Mr. Kurt Rasmussen
Wisconsin Department of Natural Resources
Mississippi River Planner
3550 Mormon Coulee Road
La Crosse, WI 54601

RE: Mississippi River Pool 5 Dredged Material Management Plan

Dear Mr. Kurt Rasmussen,

Thank you for your review comments provided in a letter dated 18 October, 2019 regarding the Mississippi River Pool 5 Dredged Material Management Plan. Below are the our responses to your comments. Your letter along with the Corps' responses will be added to the Agency and Public Comments with Responses - Appendix H for the record and updates when applicable added to the final report.

General Comments.

Concur with the comment concerning possible development of the Rolling Prairie site for wetland mitigation opportunities. We will consider mitigation opportunities within the site for future wetland banking. After we acquire the site, we will begin planning the site's development in detail.

Also concur with the comment that the agencies are interested in pursuing habitat restoration opportunities using dredged material and the assertion to the contrary in the report is inaccurate. The report was updated to reflect the following;

The potential to improve habitat in Pool 5 by the use of dredged material is always being considered; however, this is a partial solution to managing dredged material within the project area and a more comprehensive long term solution is needed. Currently, dredged material is available at numerous beneficial use facilities up and down the river if there is an immediate need to use material to build and improve habitat. In cooperation with agency partners, Wisconsin and Minnesota Departments of Natural Resources as well as the USFWS Refuge offices, the use of dredged material to rebuild and improve habitat within the Pool 5 project area could be a possibility in the future. Funding from the Upper Mississippi River Habitat Rehabilitation and Enhancement Program (HREP) or via a cost share agreement through the Corps' Continuing Authorities Program (CAP) for feasibility planning and construction are funding options to use material for habitat restoration if cooperating agencies agree to such a project.

The use of Dairyland Power Cooperative (DPC) property below LD 4 at Alma, WI was not an oversight but was considered for placement of dredged material. During discussions, DPC determined that the site would not be suitable for Mississippi River dredged material due to contaminant testing requirements.

Section 2.5.1 – Water Quality.

Concur with the statement that Pool 5 is a 303d-listed impaired water in Wisconsin. The report has been updated.

Section 2.5.1 – Hydrology

Concur with the comment on the importance of delta formation in Pool 5 from tributaries but no action taken on the report.

Section 2.5.2 – Mussels.

Concur with the comment that zebra mussels have been increasing since 1991 is dated. Report has been updated to reflect more current conditions.

Section 4.1.2.

Concur with comment. The correct appendix for the Climate Change Assessment is Appendix D. Updates to the main report were made.

Section 4.1.3.

Concur with comment. An updated Climate Change Assessment has been prepared (Appendix D) and includes data from 1981-2018. Section 4.1.3. in the main body of the report has been updated to reflect more recent data and conclusions from the updated Climate Change Assessment and the assessment added as the new Appendix D. Climate change effects on specific hydrologic conditions and internal mobilization from within Pool 4 and Pool 5 and from the Zumbro River are included in the larger context of the Upper Mississippi-Black-Root River Basin (Hydrologic Unit Code “HUC” 0704) which contains the project area at Mississippi River Pool 5.

Section 4.3.3 – Constraints

Concur with the comment, report has been updated.

Section 5.1.

Concur with the definition of Emergency Dredging in the report as not a finalized agreed upon statement. The report was changed to reflect the existing definition of Emergency Dredging as defined in the CMMP.

Section 5.3.

Concur with the comment. The section in the report has been updated to reflect the agencies interest in using dredged material for habitat restoration.

Section 6.1.

The scope of this study is for the acquisition of the Rolling Prairie site and placement of dredged material placement and not necessarily channel restoration of tributaries or modification of the

Zumbro River flood control levee to improve flood conveyance. A land management plan for the site will be prepared and coordinated with the partner agencies.

We do concur with the inconsistency of 815 vs 830 acres available for placement of dredged material. The total available acreage available is 830. The report was updated.

Table 6.

Concur with comment that impacts to recreational use from the closing of the West Newton Chute boat landing will have minor adverse effects. Updates to the report were made.

Section 7.2.1.

The scope of this study is for the acquisition of the Rolling Prairie site and placement of dredged material placement and not necessarily channel restoration of tributaries or modification of the Zumbro River flood control levee to improve flood conveyance. The Rolling Prairie site was referred to the Corps by the MNDNR for acquisition under federal ownership and used as a dredged material placement site and managed long term for natural resources and public use. A land management plan for the site will be conducted by the Corps for the long term management of the site and will be coordinated with our partner resource agencies of which restoration actions can be considered.

8.3 – Coordination

Concur, will take into account more time allowed for agency partners to provide comments prior to public review.

Appendix B – Sediment Containment

Concur on changing title to “Sediment Contaminant Datasheet”. Updated accordingly.

Appendix E - Wetland Delineation 2018

Concur on changing title to “Wetland Assessment 2018”. Updated accordingly.

Again, thank you for reviewing and providing comments to the Mississippi River Pool 5 Dredged Material Management Plan. For additional clarification or questions please feel free to contact Dan Kelner at Daniel.e.kelner@usace.army.mil or via phone at 651-290-5277.

Robert Edstrom

Robert K. Edstrom
Project Manager
PM-B, St. Paul District



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

OCT 17 2019

Dan Kelner
CEMVP-PD-C
U.S. Army Corps of Engineers, St. Paul District
180 Fifth Street East, Suite 700
St. Paul, Minnesota 55101

REPLY TO THE ATTENTION OF:

Re: Feasibility Report and Integrated Environmental Assessment for Pool 5 Dredged Material Management Plan, Upper Mississippi River, Wabasha and Winona Counties, Minnesota and Buffalo County, Wisconsin

Dear Mr. Kelner:

The U.S. Environmental Protection Agency has reviewed the Environmental Assessment (EA) for the project referenced above. Our comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR 1500-1508), and Section 309 of the Clean Air Act. The U.S. Army Corps of Engineers (USACE) is the lead agency under NEPA.

The EA assesses the long-term management of material dredged from the Upper Mississippi River, between river miles 752.8 and 738.1, to facilitate operation and maintenance of a navigation channel. The proposed plan includes using the existing West Newton Chute Site as a transfer location prior to hauling material to the new Rolling Prairie Site. Three island sites used in the past for temporary placement would also be retained. The scope of this EA is limited to the selection of placement sites for dredged material and does not address dredging activities. The EA is tiered off the June 6, 1997 Final Environmental Impact Statement for the 9-Foot Navigation Channel Project. We appreciate information provided in the EA on sediment contamination as well as beneficial reuse of dredged material.

Please see EPA's enclosed recommendations related to air quality, noise, transportation, wetlands, and species. We appreciate the opportunity to comment. If you would like to discuss our recommendations, please contact Jen Tyler, the lead reviewer for this project, at 312-886-6394 or tyler.jennifer@epa.gov.

Sincerely,

Kenneth A. Westlake
Deputy Director
Office of Tribal and Multi-Media Programs

Enclosures: (1) EPA's Detailed Comments, (2) Construction Emission Control Checklist

Local Operational Impacts

The EA explains that use of the new Rolling Prairie Site would require trucking material 1.5 to 2.5 miles from the West Newton Chute Site via County Road 84. During trucking operations, 200 or more additional heavy truck round trips per day could occur on County Road 84. Such activities would likely occur once every 5 to 10 years. The EA states that hauling would likely not occur more than 180 days per year (page 56). Smaller scale hauling could occur annually (page 43). Trucks would travel past 3 rural residences along County Road 84 (page 54). While the number of people impacted would likely be small, EPA recommends fully assessing and seeking to minimize impacts.

Recommendations for the Final EA:

- Provide the number of daily truck trips associated with annual activities in order to clarify the magnitude of impacts.
- Assess impacts on the three residences along the proposed truck route from heavy truck operations and routine annual operations. Estimate changes in noise levels, air pollution, and traffic safety from the proposed project.
- Discuss outreach efforts to ensure nearby residents are aware of the proposed project and to gain local input to inform project decision-making.
- Identify measures to minimize air emissions during construction. Consider encouraging construction teams to use applicable practices in the enclosed Construction Emission Control Checklist.
- Consider best practices to minimize local operational impacts on residents during periods of heavy truck traffic. Examples could include: (1) noise curfews for truck hauling and machinery operations, (2) promoting use of trucks with the cleanest engine technologies and/or filters, and (3) notifying residents well in advance of the start to periods of heavy truck traffic. In addition, depending on the proximity of individual residences to the roadway and existing vegetation, new vegetation barriers may also be a way to help offset air and noise impacts.¹

Wetlands

The EA states that the proposed project would have no effect on wetlands (page 53). The Rolling Prairie Site is a multi-parcel mixed agriculture and upland placement site located on a sandy terrace of the Mississippi River valley. Of the available 990 acres, USACE proposes to use 830 acres for permanent placement of dredged material to avoid filling wetlands (page 41). The EA states that if, in the future, the USACE deems it necessary to fill wetlands, then USACE would follow all mitigation sequencing (i.e. avoid, minimize, and then mitigate) and prepare a Section 404(b)(1) evaluation before filling wetlands (page 43 and 51). The EA explains, "if over the course of the project it is determined that the impacts of placing dredged material differ from

¹ EPA's Recommendations for Constructing Roadside Vegetation Barriers to Improve Near-Road Air Quality is available at:

https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NRMRL&dirEntryId=321772&simpleSearch=1&searchAll=Recommendations+for+constructing+roadside+vegetation+barriers+to+improve+near+road+air+quality

what is described here, those affects will be reevaluated and additional environmental compliance documentation will be prepared and coordinated as required” (page 51).

Recommendations for the Final EA:

- Describe anticipated indirect impacts to wetlands from the proposed project as well as measures to avoid and minimize such impacts. Consider requiring buffers around wetlands to avoid fill migrating via wind or rain into wetlands.
- Describe how the USACE would determine if impacts of placing dredged material differ from what was described in the EA and need to be reevaluated, as described on page 51 of the EA. If a monitoring strategy would be employed, included details in the EA stating who would monitor wetlands and how often.

Species

The EA explains that the effects of channel dredging were evaluated in the 1997 Final Environmental Impact Statement (EIS) for the 9-Foot Navigation Channel Project, and there are no new circumstances or information related to the environmental effects of channel dredging since the EIS (page 52).

Recommendations for the Final EA:

- Consider whether or not the analysis of state and federally-listed threatened and endangered species in 1997 EIS remains valid. Consider changes in species listed as threatened and endangered as well as the health and prevalence of listed species.

U.S. Environmental Protection Agency
Construction Emission Control Checklist

Mobile and Stationary Source Diesel Controls

Purchase or solicit bids that require the use of vehicles that are equipped with zero-emission technologies or the most advanced emission control systems available. Commit to the best available emissions control technologies for project equipment in order to meet the following standards.

- On-Highway Vehicles: On-highway vehicles should meet, or exceed, the EPA exhaust emissions standards for model year 2010 and newer heavy-duty, on-highway compression-ignition engines (e.g., long-haul trucks, refuse haulers, shuttle buses, etc.).²
- Non-road Vehicles and Equipment: Non-road vehicles and equipment should meet, or exceed, the EPA Tier 4 exhaust emissions standards for heavy-duty, non-road compression-ignition engines (e.g., construction equipment, non-road trucks, etc.).³
- Locomotives: Locomotives servicing infrastructure sites should meet, or exceed, the U.S. EPA Tier 4 exhaust emissions standards for line-haul and switch locomotive engines where possible.⁴
- Marine Vessels: Marine vessels hauling materials for infrastructure projects should meet, or exceed, the latest U.S. EPA exhaust emissions standards for marine compression-ignition engines (e.g., Tier 4 for Category 1 & 2 vessels, and Tier 3 for Category 3 vessels).⁵
- Low Emission Equipment Exemptions: The equipment specifications outlined above should be met unless: 1) a piece of specialized equipment is not available for purchase or lease within the United States; or 2) the relevant project contractor has been awarded funds to retrofit existing equipment, or purchase/lease new equipment, but the funds are not yet available

Consider requiring the following best practices through the construction contracting or oversight process:

- Establish and enforce a clear anti-idling policy for the construction site.
- Use onsite renewable electricity generation and/or grid-based electricity rather than diesel-powered generators or other equipment.
- Use electric starting aids such as block heaters with older vehicles to warm the engine.
- Regularly maintain diesel engines to keep exhaust emissions low. Follow the manufacturer's recommended maintenance schedule and procedures. Smoke color can signal the need for maintenance (e.g., blue/black smoke indicates that an engine requires servicing or tuning).
- Retrofit engines with an exhaust filtration device to capture diesel particulate matter before it enters the construction site.
- Repower older vehicles and/or equipment with diesel- or alternatively-fueled engines certified to meet newer, more stringent emissions standards (e.g., plug-in hybrid-electric

² <http://www.epa.gov/otaq/standards/heavy-duty/hdci-exhaust.htm>

³ <http://www.epa.gov/otaq/standards/nonroad/nonroadci.htm>

⁴ <http://www.epa.gov/otaq/standards/nonroad/locomotives.htm>

⁵ <http://www.epa.gov/otaq/standards/nonroad/marineci.htm>

vehicles, battery-electric vehicles, fuel cell electric vehicles, advanced technology locomotives, etc.).

- Retire older vehicles, given the significant contribution of vehicle emissions to the poor air quality conditions. Implement programs to encourage the voluntary removal from use and the marketplace of pre-2010 model year on-highway vehicles (e.g., scrappage rebates) and replace them with newer vehicles that meet or exceed the latest EPA exhaust emissions standards.

Fugitive Dust Source Controls

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative, where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.
- When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

Occupational Health

- Reduce exposure through work practices and training, such as maintaining filtration devices and training diesel-equipment operators to perform routine inspections.
- Position the exhaust pipe so that diesel fumes are directed away from the operator and nearby workers, reducing the fume concentration to which personnel are exposed.
- Use enclosed, climate-controlled cabs pressurized and equipped with high-efficiency particulate air (HEPA) filters to reduce the operators' exposure to diesel fumes. Pressurization ensures that air moves from inside to outside. HEPA filters ensure that any incoming air is filtered first.
- Use respirators, which are only an interim measure to control exposure to diesel emissions. In most cases, an N95 respirator is adequate. Workers must be trained and fit-tested before they wear respirators. Depending on the type of work being conducted, and if oil is present, concentrations of particulates present will determine the efficiency and type of mask and respirator. Personnel familiar with the selection, care, and use of respirators must perform the fit testing. Respirators must bear a NIOSH approval number.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY

ST. PAUL DISTRICT, CORPS OF ENGINEERS

180 FIFTH STREET EAST, SUITE 700

ST. PAUL, MN 55101-1678

5 November 2019

Mr. Kenneth A. Westlake
Deputy Director
Environmental Protection Agency – Region 5
Office of Tribal and Multi-Media Programs
77 West Jackson Boulevard
Chicago, IL 60604-3590

RE: Mississippi River Pool 5 Dredged Material Management Plan

Dear Mr. Kenneth A. Westlake,

Thank you for your review comments provided in a letter dated 17 October, 2019 regarding the Mississippi River Pool 5 Dredged Material Management Plan. Below are our responses to your comments. Your letter along with the Corps' responses will be added to the Agency and Public Comments with Responses - Appendix H for the record and updates when applicable added to the final report.

Local Operational Impacts.

Concur with the comments pertaining to identifying operational impacts. However, the EA identifies trucking impacts as it relates to noise, air pollution, and traffic safety to the local area adequately as stated in Section 7.1 Socioeconomics Effects.

A public meeting was held 26 September 2019 in Kellogg, MN to describe the project and address questions from the local public. Press releases and the public notice announcing the availability of the Environmental Assessment and public meeting describing the project and seeking input have been made available.

Trucking of material and operation times will be dependent upon local traffic ordinances. Best management practices for emissions and noise are required in contracting specifications for the work to be conducted.

Best Management Practices include;

Air Resources

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with State rules. The location of any booster pumps used shall not be within 500 feet of any residential areas. Noise levels shall not exceed the levels as specified in the Safety Manual ME 385-1-1. In addition, booster pumps shall be housed and soundproofed to limit noise to a maximum of 70 decibels at a distance of 50 feet from the pumps.

Wetlands.

Concur with comments pertaining to wetland impacts. However, indirect impacts to wetlands are not anticipated as dredged material will be placed on upland sites with best management construction practices in place to include appropriate buffers and silt fences. The Corps will determine if future impacts from placing dredge material at the Rolling Prairie site differs from what was identified in the existing EA. Wetlands will be delineated by the Corps prior to placement of dredged material and a long term land management plan will be developed for the site identifying wetland restoration and banking opportunities of which monitoring of wetlands will be integral.

Species.

Concur with ensuring current state and federally listed species are used in assessing environmental effects. Albeit the 1997 EIS was prepared 20+ years ago and there have been some species reclassifications, there have not been substantial changes to the Corps' channel dredging operations since 1997 that are relevant to this assessment. In addition, there are no significant new circumstances or information related to the environmental effects of channel dredging. This study's environmental assessment is tiered off of the 1997 EIS for the 9-Foot Navigation Project. Up to date species lists for the project area have been obtained from the Minnesota DNR's Natural Heritage Database (2019) and from the 2019 USFWS (Information for Planning and Consultation (IPaC) database.

Again, thank you for reviewing and providing comments to the Mississippi River Pool 5 Dredged Material Management Plan. For additional clarification or questions please feel free to contact Dan Kelner at Daniel.e.kelner@usace.army.mil or via phone at 651-290-5277.

Robert Edstrom

Robert K. Edstrom
Project Manager
PM-B, St. Paul District



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

ERRATA SHEET

**MISSISSIPPI RIVER POOL 5 DREDGED MATERIAL MANAGEMENT PLAN
FEASIBILITY REPORT AND INTEGRATED ENVIRONMENTAL ASSESSMENT
WABASHA AND WINONA COUNTIES, MINNESOTA; BUFFALO COUNTY,
WISCONSIN**

17 November 2021

1. Purpose:

This Errata Sheet includes revisions to the Feasibility Report and Integrated Environmental Assessment (EA) dated February 2020. A Finding of No Significant Impact (FONSI) on the subject EA was executed on 10 February 2020. These documents determined that the proposed action would not have significant impacts on the quality of the human environment. This Errata Sheet addresses specific changes that needed to be made to the FONSI, Appendix C to the EA. A draft version of the FONSI was inadvertently used in lieu of a finalized version. In addition, this Errata Sheet clarifies that all references in the EA to Rolling Prairie being a “newly acquired” site are intended to convey a future intent by the Corps to acquire the property upon approval of the recommended plan and signing of the FONSI. The site was later acquired on 23 July 2020. None of the information provided in this Errata Sheet results in a significant change to the environmental conditions, impacts, or the project activity. This Errata Sheet is issued as the result of internal review, is not implemented to address a regulatory requirement, and no public comments were directed at the clarifications or changes identified.

2. The following changes were made to the FONSI, Appendix C to the EA:

- A. Appendix C FONSI. Title of FONSI, “Draft Finding of No Significant Impact” is changed to read “Finding of No Significant Impact”.
- B. Appendix C FONSI. Page 5, first paragraph, second to last sentence is changed to read: “When hydraulic dredging methods are used to place material at the West Newton Chute placement site, excess carriage water would be returned to the river.”

3. Point of contact regarding the EA FONSI Errata Sheet: Mr. Dan Keiner, CEMVP-PDC.

Date

17 November 2021

KARL D. JANSEN
Colonel, Corps of Engineers
District Commander

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