



National Park Service
U.S. Department of the Interior

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Grand Portage National Monument
Grand Portage, Minnesota

Mile Creek Road Realignment and Bridge Construction

Environmental Assessment
February 2023



Executive Summary

Cook County, Minnesota and the Grand Portage Band (the Band) of Lake Superior Chippewa (Ojibwe), in partnership with Grand Portage National Monument (the park), propose to realign a segment of Mile Creek Road / County State Aid Highway 17 (CSAH 17) and construct a new bridge across Grand Portage Creek. The purpose of this project is to reduce the hazard caused by a blind curve, eliminate traffic and plowing impacts on an existing historic bridge, and increase pedestrian access.

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide a decision-making framework as follows: 1) Assess a reasonable range of alternatives to meet the purpose of the proposed action; 2) Evaluate potential issues and impacts to the natural and cultural resources of the park; and 3) Identify required mitigation measures to lessen the degree or extent of any potential adverse environmental impacts.

The EA evaluates two alternatives, Alternative A: No Action, and Alternative B: County Road 17 Re-Route (Preferred Alternative). Under Alternative A, the road would not be realigned. Under Alternative B, an existing blind curve would be removed, a portion of the original asphalt would be left in place as a walking path, and the road would be re-routed across a new bridge. The alternatives are described in detail in Chapter 2.

This EA identifies the categories of resources, or Impact Topics, found within the project area that are most likely to be affected by the actions described in each alternative. These topics have undergone a detailed analysis by agency staff to determine the most likely effects on the resources, and the mitigations required to avoid resource damage. The Impact Topics are identified in section 1.5 of this document and in Table 1. The preferred alternative, Alternative B, would result in no significant impacts to resources of the park.

Public Comment

This EA will be available for public review for 30 days. The National Park Service (NPS) Planning, Environment and Public Comment (PEPC) site provides access to current plans and related documents that are available for public review. If you wish to comment on this EA, you may post comments online at <http://parkplanning.nps.gov/MileCreekRd> or mail comments by March 4, 2023 to:

Superintendent
Grand Portage National Monument
170 Mile Creek Road
PO Box 426
Grand Portage, MN 55605

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

ON THE COVER

Historic stone bridge on Mile Creek Road at Grand Portage National Monument. NPS Photo.

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CHAPTER 1: INTRODUCTION

1.1 Background

Congress created Grand Portage National Monument (the park) on October 2, 1958 “for the purpose of preserving an area containing unique historical values” (72 Stat. 1751). The park’s primary resource is the Grand Portage Trail, an 8.5-mile canoe portage that was a critical link in a trade network established by indigenous peoples thousands of years prior to European contact. European explorers and fur traders reused the route from the early 1700s to mid-1800s to shuttle personnel, equipment, furs, and trade goods between Lake Superior and the vast interior of the North American continent.

Although the park has focused primarily on the fur trade since its inception, more attention has been paid in recent years to post-fur-trade occupancy and use of the site. Approximately 150 Ojibwe families lived near the trading post when the British arrived in the 1760s, and Ojibwe continued to live in the area following the decline of the fur trade in the early 1800s. In 1854, the local tribes ceded their lands in exchange for several reservations (including the Grand Portage Reservation), annuities for a 20-year term, and usufructuary rights, among other provisions (Kappler 1904).

The park’s enabling legislation emphasized ancestral ties to the area and pledged economic and partnership opportunities for the Band, but few such prospects arose in the following decades. The commitment to the Band was renewed in 1999 through establishment of a cooperative maintenance agreement and an Annual Funding Agreement, and the park is now cooperatively managed by the Band and the NPS. It encompasses 710 acres at the northeastern tip of Minnesota on the shore of Lake Superior, within the Grand Portage Indian Reservation (Figure 1).

The Band and park share a common interest in providing safe road access to community members and park visitors, while protecting resources. CSAH 17 is a main road through the Grand Portage Reservation, and provides connections to key locations throughout the community and park.

1.2 Purpose and Need for Action

The purpose of this project is to reduce the hazard caused by a blind curve on CSAH 17, eliminate safety, traffic and plowing impacts on an existing historic bridge, and increase pedestrian access. The project is needed to improve safety and protect park resources.

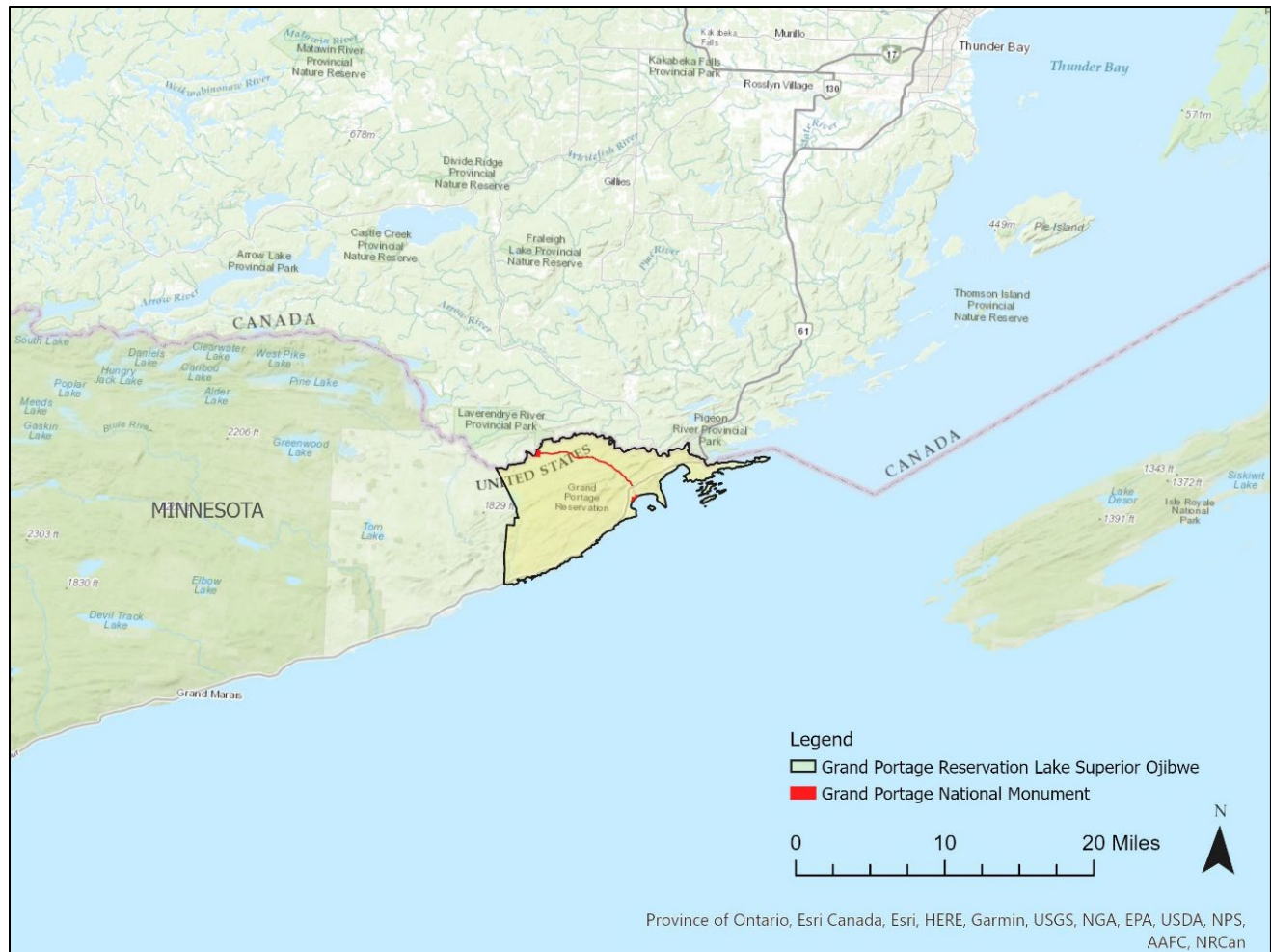


Figure 1. Grand Portage National Monument and Grand Portage Indian Reservation.

1.3 Relationship to Existing Plans and Programs

Current plans and policies related to management of park resources are consistent with the activities outlined in this document, including:

1.3.1 General Management Plan (2003)

This document specifies resource conditions and visitor experiences to be achieved in the park and provides the basic foundation for management decisions. The GMP guides the management, development, and interpretation of the park over a 20+ year period.

1.3.2 Foundation Document (2016)

This document describes the park's purpose, significance, fundamental resources and values, other important resources and values, and interpretive themes. It also includes special mandates and administrative commitments, an assessment of planning and data needs that identifies planning issues,

planning products to be developed, and the associated studies and data required for park planning.

1.3.3 Cultural Landscape Report (2009)

This document assesses and seeks to enhance the integrity of the park's historic landscape. It documents the degree to which vegetation communities have changed since the eighteenth century and devises treatment and management recommendations that would support restoration of conditions present during the fur trade period. In addition to documenting general site conditions and plant communities, the Cultural Landscape Report (CLR) considers the role that vegetation has played in the cultural history of the Grand Portage landscape and the ways that different management strategies may affect its character in the future.

1.4 Impact Topics

Impact topics are the resources or issues of concern that could be impacted by the range of alternatives. NPS specialists used federal laws, regulations, and management policies to identify the impact topics retained for further analysis. Identification of impact topics facilitates the analysis of environmental consequences and allows for a standard comparison between alternatives based on the most relevant information.

Issues related to cultural resources, human health and safety, and water resources are analyzed in detail in this EA. This analysis is found in Chapter 3, Affected Environment and Environmental Consequences.

Issues related to air quality, environmental justice, Indian trust resources, land use, socioeconomics, soils, soundscapes, special status species, vegetation, visitor use and experience, and wildlife have been dismissed from detailed analysis because they are not central to the proposal or do not assist with making a reasoned choice between alternatives.

Table 1 below summarizes which topics were retained or dismissed and includes the rationale for dismissal.

Table 1. Impact Topics Retained or Dismissed

Impact Topic	Retain	Dismiss	Rationale for Dismissal
Air Quality		X	Diesel equipment would be used during construction. Air quality in the immediate vicinity may be slightly affected by dust generated from disturbing soils as well as the exhaust from diesel engines. These impacts would be limited to the duration of construction activities and would be unlikely to affect local or regional air quality. Air quality was therefore dismissed from further analysis in this EA.

Impact Topic	Retain	Dismiss	Rationale for Dismissal
Cultural Resources	X		
Environmental Justice		X	Federal agencies are required to identify and address any disproportionately high and adverse human health and environmental effects their actions may have on minority and low-income populations. Neither alternative would have disproportionate effects on minority or low-income populations.
Human Health and Safety	X		
Indian Trust Resources		X	The park is located within the Grand Portage Reservation, and establishment of the park was predicated on the relinquishment of title to trust lands held by the U.S. for the Minnesota Chippewa Tribe and Grand Portage Band of Chippewa Indians (72 Stat. 1751). The NPS and the Band co-manage the park. The project to re-route CSAH 17 is a proposal by the Band to work in partnerships with Cook County and the NPS. Connections between various parts of the Grand Portage community via CSAH 17 would be maintained throughout project implementation under Alternative B, and Indian Trust Resources would not be impacted by either alternative.
Land Use		X	Alternative B would require a Highway Easement Deed (HED), which would be issued upon completion of the EA process. The existing easement (which includes the current road and bridge) would be rescinded, and management of the land would revert back to the park and Band. The project would also require a Clean Water Act Section 404 permit issued by the U.S. Army Corp of Engineers (USACE) and a land use permit from the Grand Portage Band for construction of the new bridge. These permits would be issued following completion of the EA. Issuance of the HED and permits are administrative actions, which are not central to the proposal and do not assist in making the choice between alternatives. Therefore, land use is dismissed from further analysis.
Socioeconomics		X	The proposed action would have minor beneficial impacts on local employment opportunities, and some beneficial impacts to the local economy. These effects would be temporary, during construction activities. Therefore, socioeconomics has been dismissed from further analysis.
Soils		X	The Grand Portage area consist primarily of clayey materials, deposited as glacial ice was subsiding, roughly 10,000 years ago. Soils are sandy to loamy, and shallow to bedrock. Construction would disturb approximately 3.60 acres of soils in the project area. Revegetation would include importation of top soil from local sources within the Grand Portage Reservation. Stipulations and mitigations outlined under Alternative B would be implemented to minimize impacts to soils (see Chapter 2 and Appendix A).
Soundscape		X	Diesel equipment would be used during construction. The soundscape in the immediate vicinity may be affected by noise generated during construction activities, however these impacts are anticipated to be site-specific and limited to the duration of construction activities. Therefore, soundscapes have been dismissed from further analysis.
Special Status Species		X	Four wildlife species listed under the Endangered Species Act could occur in the project area: Canada lynx (<i>Lynx canadensis</i> –threatened), gray wolf (<i>Canis lupus</i> - threatened), piping plover (<i>Charadus melodus</i> - endangered), and northern long-eared bat (<i>Myotis septentrionalis</i> – endangered listing to be effective 3/31/2023). The park consulted with U.S. Fish and Wildlife Service (USFWS) regarding the northern long eared bat in 2021. At the time, the species was listed as threatened, and the proposed road realignment project was determined to

Impact Topic	Retain	Dismiss	Rationale for Dismissal
			be consistent with the Northern Long Eared Bat Programmatic Biological Opinion (USFWS 2016). The species will be reclassified as endangered effective March 31, 2023. Consultation will be reinitiated once USFWS's new consultation tools are made available (see Chapter 4). The project would occur in a developed area near several residences, where no Canada lynx or gray wolf are present. The project would have no effect on the Canada lynx or gray wolf, or on designated gray wolf critical habitat. The project would also have no effect on the piping plover, which does not occur in the project area but are occasionally seen on the Lake Superior shoreline. The coaster brook trout (<i>Salvelinus fontinalis</i>) is a special-status species protected by the Band. The proposed bridge design would not impact water flow in Grand Portage Creek and would have no effect on the coaster brook trout. The bald eagle (<i>Haliaeetus leucocephalus</i>) and golden eagle (<i>Aquila chrysaetos</i>) are protected under the Bald and Golden Eagle Protection Act, and several migratory bird species are protected under the Migratory Bird Treaty Act. Although eagles and migratory birds could occasionally occur in the project area, there are no known nests or potential nesting trees in the vicinity of the proposed road realignment or new bridge. The stipulations and mitigations outlined in Chapter 2 would ensure protection of these species. No federally listed plant species occur in the project area. The stipulations and mitigations outlined in Chapter 2 and Appendix A would ensure protection of rare plant species such as black fruited hawthorn (<i>Crataegus douglasii</i>).
Vegetation (Non-Special Status Species)		X	Under Alternative B, native vegetation in the project area would be disturbed or removed during construction. A revegetation plan has been developed (Appendix A), and native seed or nursery grown plants would be used to re-establish native vegetation. Impacts to vegetation are expected to be site-specific and mitigated, and vegetation has been dismissed from further analysis in the EA. Impacts to vegetation communities identified as integral to the cultural landscape are described under the Cultural Resources impact topic. Potential impacts to Cultural Resources are discussed in Chapter 3.
Visitor Use and Experience		X	During construction there may be short term impacts to visitor experience. The re-route project would have beneficial impacts on visitor use and experience by increasing safety and providing improved pedestrian access. These effects are analyzed in Chapter 3, under Human Health and Safety.
Water Resources	X		
Wildlife (Non-Special Status Species)		X	Negligible impacts to wildlife species are anticipated during construction, due to noise and increased human activity. These impacts are anticipated to be of limited duration and intensity. The bridge design would not result in impacts to Grand Portage Creek (flow or geomorphology), and impacts to aquatic species are not anticipated. Therefore, wildlife has been dismissed from further analysis in the EA.

CHAPTER 2: ALTERNATIVES

Two alternatives were considered and are carried forward for analysis in this EA: the no action alternative and an action alternative. A no action alternative is required by the National Environmental Policy Act (NEPA) as a baseline to compare proposed action alternatives. The action alternative presents a reasonable and feasible approach that meets the purpose and need for action. This section also identifies the NPS preferred alternative.

2.1 Alternative A: No Action

The no action alternative would retain the existing alignment of Mile Creek Road / CSAH 17, including the portion that crosses Grand Portage Creek via the historic stone bridge and a 90-degree blind curve. Snow plows would continue to remove snow from the historic bridge in the winter months. Repairs would continue to be made by the NPS as needed to preserve the stone bridge.

2.2 Alternative B: Road Realignment (Preferred Alternative)

Under Alternative B, Mile Creek Road / CSAH 17 would be realigned to remove a blind, 90-degree turn and eliminate vehicular traffic across the historic stone bridge. The proposed realignment would require construction of a straight segment running from the T-intersection of Mile Creek Road and Store Road, roughly north-northeast, which would connect with Mile Creek Road at the park's decommissioned maintenance shop (Figure 2).

The realignment would consist of an approximately 70-foot-wide raised roadbed that would cross Grand Portage Creek at a point approximately 200 feet north, or upstream, of the existing stone bridge. Where the new alignment crosses the creek, a new 32-foot-wide by 56-foot-long wooden bridge would be constructed (Figure 3). The bridge would be built with three spans; two 18-foot spans on the north and south sides of the creek, and one 20-foot span in the center. Two piers would be placed in the floodplain above the ordinary high water mark, to a depth of 3 feet below the channel bottom. All construction would occur above the ordinary high-water mark.

A corridor would be cleared and brushed prior to construction. Clearing would include approximately 48 individual black fruited hawthorn shrubs and other shrub species (such as willow). Approximately 40 mature jack pine and approximately 0.2 acres of young balsam would be removed in the area where the realignment would connect with Mile Creek Road at the far eastern end. Approximately 10 red pine would be cleared from the upland area where the proposed realignment meets the junction of Store Road and Mile Creek Road.

The existing road between the Mile Creek Road / Store Road intersection and picnic area parking would be closed to all vehicular traffic and would be converted to a 10-foot-wide trail that would provide pedestrian access across the historic bridge.

2.2.1 Stipulations and Mitigations

Archeology

- In 2022, a systematic archeological survey of the project area was completed by the park archeologist, who meets the Secretary of Interior's Standards for Archeology and Historic Preservation (Clayton 2022). One area was documented during this survey that could contain archeological deposits, and it would not be disturbed during construction. In consultation with the Band, it was determined that this location would instead be covered over (encapsulated) by the new road prism.
- Archeological monitoring would occur during any ground-disturbing construction activities. Monitoring would be completed by qualified archeologists meeting the Secretary of Interior's Standards, including the park archeologist, the Band's archeological technician, and the Band's Tribal Historic Preservation Officer (THPO).
- Any cultural resources discovered during monitoring would be evaluated for their eligibility for listing in the National Register of Historic Places (NRHP). Procedures would follow those outlined in 36 CFR 800, Protection of Historic Properties. If significant finds are uncovered, the project design would be modified (if feasible), to avoid sensitive resources.
- If significant archeological resources are discovered that cannot feasibly be avoided, systematic data recovery would occur, in collaboration with the Band.
- The construction contract and on-site crew orientation would include the need to protect any cultural resources encountered and the prohibition of artifact collection on federal lands.
- It is not anticipated that human remains would be encountered; however, in advance of ground-disturbing activities, instructions would be given to construction personnel regarding respectful treatment of human remains and notification of the appropriate personnel in the event such remains are discovered. In the case of any inadvertent discoveries, proper notification and reporting processes would be followed in compliance with the Native American Graves Protection and Repatriation Act (NAGPRA, 43 CFR 10.4).
- To minimize ground disturbance, all staging areas, materials stockpiling, parking, and vehicle storage would be limited to previously disturbed areas or located on hardened surfaces to the extent possible. Impacts to undisturbed areas would be minimized with ground protection matting.

Natural Resources

- To protect the northern long eared bat, USFWS conservation measures would be followed for all tree clearing activities (see Chapter 4).
- To protect migratory birds, all tree removal will occur prior to the migratory bird breeding season (mid-May to mid-August).
- Stumps would preferably be flush cut; however, if construction specifications require removal of root wads, a stump grinder would be used to minimize ground

disturbance.

- Stormwater mitigation measures would be implemented to prevent sedimentation and minimize disturbance to special status flora habitat.
- Revegetation of all disturbed areas will occur in accordance with the revegetation plan in Appendix A, using native seed or mature transplants.
- A black fruited hawthorn inventory was conducted to document the number and location of these plants in the project area and determine their suitability for transplanting. No individuals young enough to be transplanted were found (B. Seitz, personal communication, December 12, 2022). Live, nursery grown plants will be installed post-construction in suitable habitat. Care will be taken to ensure the population is stable and the plants can continue to regenerate (see Revegetation Plan, Appendix A).
- All imported material including topsoil, gabions, rivet mattresses, or rip rap will be weed free.
- Erosion control blankets will be installed on all slopes greater than 3:1 after hydroseeding drill seeding, and installation of live plants.
- Impacts to the cultural landscape would be evaluated and mitigated following completion of a Visual Resource Inventory (VRI) of the Lake Superior unit of the park. The VRI is in progress and is anticipated to be completed in 2023, prior to construction.



Figure 2. Project Map: Alternative B - Road Realignment.

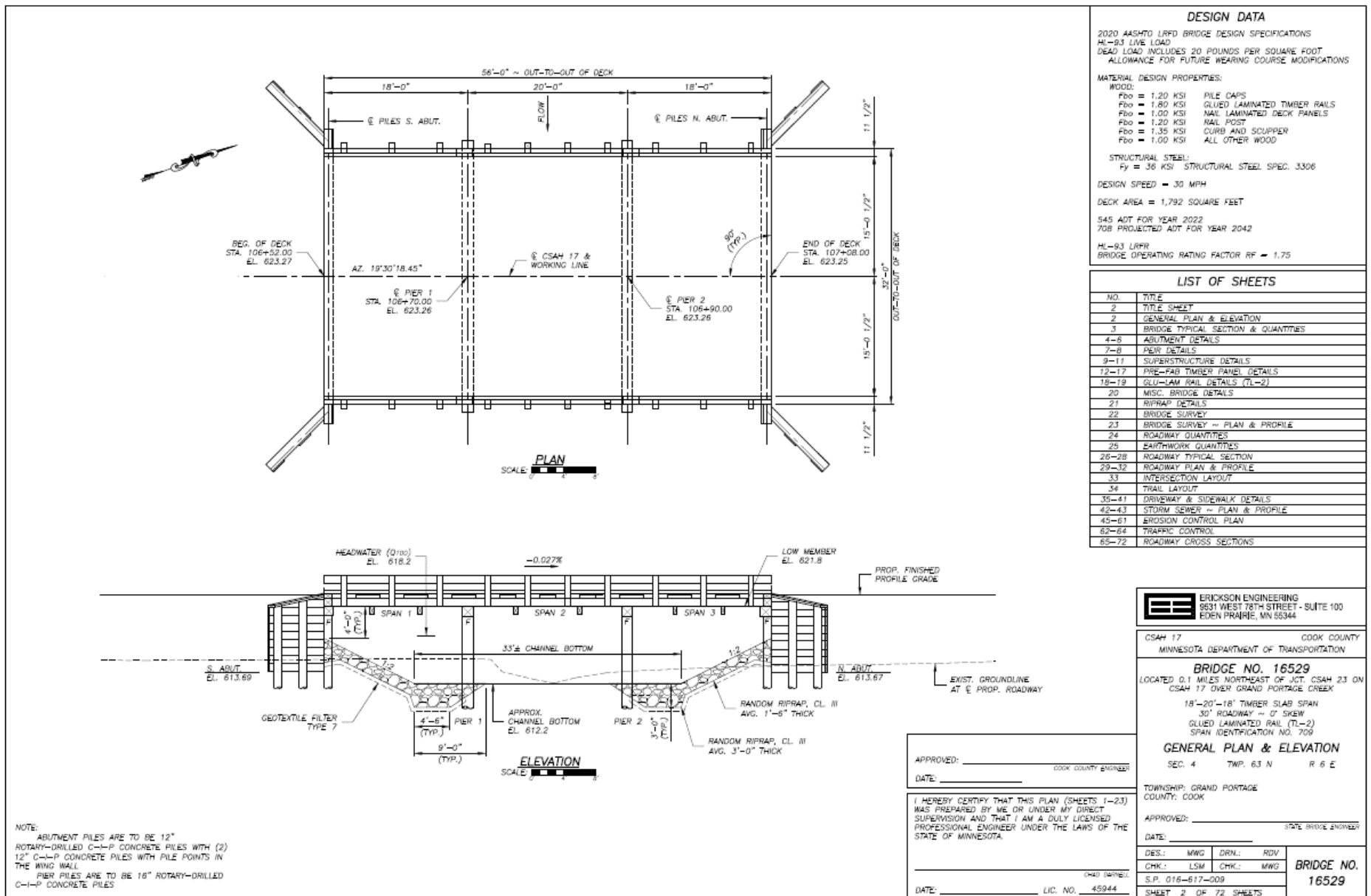


Figure 3. Proposed Bridge Design.

2.3 Alternatives Considered but Dismissed

The following alternate road realignment and bridge designs were considered but dismissed (Figure 4):

2.2.1 Cemetery Alternative

This alternative would include a raised road corridor and bridge located approximately 650 feet upstream from the stone bridge. The route would connect Store Road on the west side to Mile Creek Road on the east side, just below the historic Holy Rosary Catholic Church and associated cemetery. A small portion of the cemetery is inside the park boundary. The alternative would take advantage of a topographic narrowing of the stream valley on the west side, but would exit onto Mile Creek Road at the foot of the cemetery hill. In addition to the cemetery's known graves, historic photographs indicate there are likely many unmarked graves in the area. Ethnographic evidence also suggests some internments dating to the 1700-1800s may exist in the slopes below the current cemetery boundary. Historic records and pedestrian surveys also suggest the presence of archeological features in the slopes below Holy Rosary Cemetery that may date to the 18th century fur trade and 19th century Grand Portage Village periods. These features have not been evaluated for NRHP eligibility. This alternative would also add a traffic crossing on the Grand Portage Trail, which would break up the hiking experience for park visitors. Ground disturbance adjacent to the cemetery, the potential for inadvertent discoveries and impacts to human remains or archeological resources, visual impacts, traffic noise, and impacts to visitor experience make this alternative unacceptable.

2.2.2 Powerline Corridor Alternative

This alternative would require a raised roadbed and bridge constructed within an existing powerline corridor, approximately 1,450 feet upstream and north of the historic stone bridge on Mile Creek Road. This option would intersect Store Road across the street from the Grand Portage community pow-wow grounds and cut across the edge of an allotment. This alternative would be constructed close to the home of a Band member and create a traffic hazard during the Grand Portage community's annual pow-wow celebration. Increased traffic in this area would also increase traffic noise and exhaust near the home and during the celebration. This alternative would also alter or relocate the community ball field, which is an area suspected to contain archeological deposits and possible burial sites. This alternative could have significant adverse impacts on unrecorded graves and archeological remains from the 18th and 19th centuries.

2.2.3. Alternate Bridge Designs

Alternative bridge designs were considered, including single-span and two-span options. These designs were dismissed due to engineering limitations on the length of each span and the overall length of the proposed stream crossing.

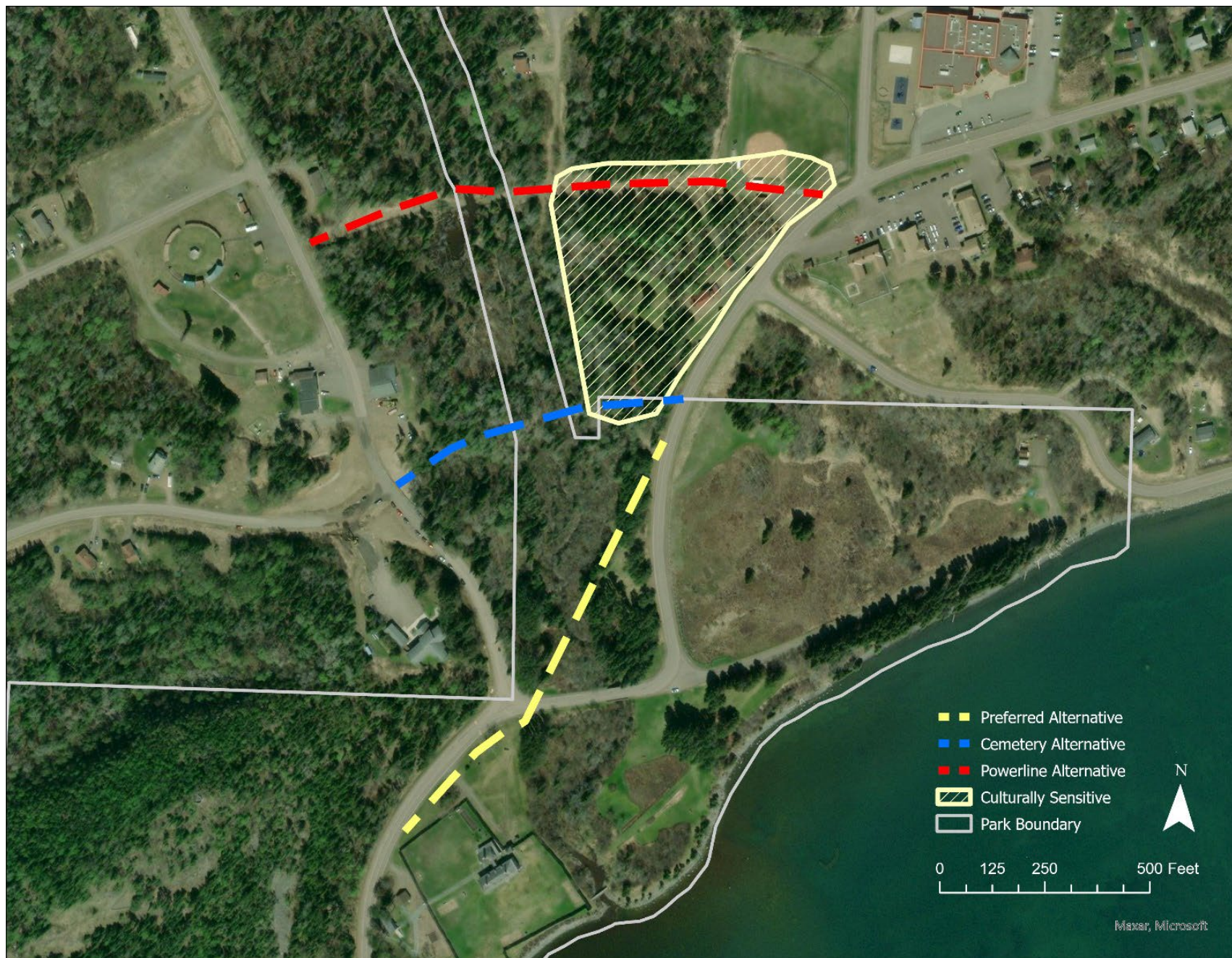


Figure 4. Preferred Alternative Alignment and Alternative Routes Considered but Dismissed.

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction and Definitions

This chapter summarizes the natural and cultural resources which could be affected by the alternatives and analyzes the impacts (or “environmental consequences”) of each alternative. The affected environment description is followed by the environmental consequences analysis for each impact topic. The impact topics analyzed in this chapter correspond to the impact topics retained for analysis in Chapter 1.

Affected Environment: The affected environment describes existing conditions for those elements of the natural and cultural environment (including human health and safety and the visitor experience) which could be affected by the actions proposed in the alternatives. These descriptions serve as a baseline for understanding the resources that could be impacted by implementation of the proposed action.

Impacts: According to the 2022 Council on Environmental Quality (CEQ) revised regulations, “effects or impacts” are changes to the human environment that include reasonably foreseeable (1) direct effects, (2) indirect effects and (3) cumulative effects [40 CFR §1508.1(g)].

Agencies consider the potentially affected environment and degree of effects in order to determine the significance of an action’s impacts. The degree of effects are assessed in the context of the park’s purpose and significance and any resource-specific context that may be applicable. When assessing the degree of effects, agencies consider:

- o Both short- and long-term effects.
- o Both beneficial and adverse effects.
- o Effects on public health and safety.
- o Effects that would violate Federal, State, Tribal, or local law protecting the environment. [40 CFR § 1501.3(b)]

None of the alternatives analyzed in this EA would violate any federal, state, tribal, or local laws that protect the environment.

The methods used to assess impacts vary depending on the resource considered, but generally are based on a review of pertinent literature and park studies, the information provided by on-site experts and other agencies, professional judgment, and park staff knowledge and insight.

3.1.1 Cumulative Impacts Methodology

In accordance with the CEQ revised regulations, this EA also considers cumulative impacts, “which are effects on the environment that result from the incremental

effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” (§1508.1(g)(3) Cumulative impacts have been addressed in this EA by resource and are considered for each alternative.

3.1.2 Trends and Reasonably Foreseeable Planned Actions

In assessing potential impacts of each alternative, the following trends and reasonably foreseeable actions have also been considered:

- The informal parking at the picnic area will be expanded and formalized as part of a future project to improve visitor services. This is anticipated to occur in 2025.
- To mitigate backflow effects from the historic stone bridge during flood events, a culvert is anticipated to be added near the historic bridge in 2025. Culvert design is pending hydrologic evaluation.
- Climate change could result in increased flood events.

3.2 Cultural Resources

3.2.1 Affected Environment

Cultural resources that could be affected by the proposed action include archeological resources, the cultural landscape, and historic structures. Section 106 of the National Historic Preservation Act (NHPA) requires that effects to historic properties be considered when evaluating federal undertakings. Federal agencies are directed to coordinate Section 106 and NEPA compliance efforts (36 CFR 800.8).

Archeology

Much of the park has high potential to contain archeological resources, including resources that have not been previously identified or excavated (Birk 2005). The entire park is listed in the NRHP and is considered significant under Criterion A for contributing to the broad patterns of North American history in the area of archeology (among other areas), including historic aboriginal and non-aboriginal archaeology. The park is also significant under NRHP Criterion D for having provided important archeological and cultural information about Indian and non-Indian peoples and their activities at Grand Portage during the period of significance (1731-1951), and for its potential to yield additional information through further studies (Birk 2005).

Much of the eastern portion of the proposed road corridor, and some of the western portion, have been heavily disturbed in the past from the construction of park maintenance buildings and work areas, as well as the installation and maintenance of utilities and roads. In 2022, an archeological survey was conducted by the park to determine which portions of the project area still contain intact artifact deposits and what portions are disturbed. Approximately 0.1 acres within the proposed project area were determined to be undisturbed.

In accordance with Section 304 of the Archeological Resource and Protection Act of 1979, and the NHPA, location information of archeological resources on federal lands is restricted from public access. Therefore, the specific context and exact location of archeological sites within the project area are not disclosed. Since much of the park has not been extensively surveyed, there is potential for additional sites to be identified.

Known archeological resources located in the project area include artifacts and features from both 18th century fur trade operations and 19th and 20th century Grand Portage Village settlement and subsistence activities. Possible pre-contact period deposits may be extant as well. Investigations to date have yielded a variety of artifacts, including glass beads and other objects of adornment, ceramic and glass fragments, building materials, fragments or whole metal tools, and firearm parts.

Cultural Landscape

A landscape's vegetation can reflect past patterns of land use. The CLR identifies plant species of historic, cultural, and/or ecological significance as contributing features to the park's cultural landscape within the project area. These include meadow-subarea grasses and forbs, red pine, and ethnobotanical plants (paper birch, hawthorn, wild strawberry, yarrow, raspberry, wild rose, sweet grass, caraway, and Jerusalem artichoke). These species are significant because they likely were present during the period of significance, and they have documented historical and cultural uses or values.

Dating of two black fruited hawthorn plants from the floodplain of Grand Portage Creek upstream of the historic bridge revealed that the specimens dated to 1973 and 1962 and are more recent than the park's period of significance. The report also indicated that the growth patterns and establishment of hawthorn are likely influenced by flooding (Williams 2022).

Circulation networks, which also contribute to a cultural landscape, vary widely in scale, items transported (people or goods), and users (a rural community or the surrounding region). The Grand Portage cultural landscape is still part of, and situated in the original living community. Not only are circulation networks still being utilized, but new routes are constantly being developed and connected to old networks as the community continues to thrive.

Historic Structures

The entire park was listed in the NRHP in 1976, and the NRHP registration form was updated in 2005 (Birk 2005). The revision identifies as contributing resources three archeological sites, four replica fur trade era buildings, one replica fur trade era structure, and one early twentieth century stone highway bridge. Among the noncontributing resources are four buildings, ten structures, and one object.

The CCC stone highway bridge carries Mile Creek Road / CSAH 17 over Grand Portage Creek and was designed and built by the CCC Indian Division-Cass Lake

for the village of Grand Portage in 1938. The revised NRHP registration form identifies this bridge, and its associated hand-laid stone wing-wall, as a contributing feature of the park, and as an individually eligible property for listing in the NRHP. The CCC stone highway bridge is significant for its association with government relief programs in the 1930s, the initial development of Grand Portage as a national monument, and as an example of rustic CCC-era design that uses indigenous materials reflecting its surroundings. The bridge also has substantial cultural significance to the Band (Birk 2005), and the CLR identifies it as a contributing feature to the cultural landscape.

The CLR also identifies Grand Portage Creek as a contributing natural feature to the park's cultural landscape that survives from the period of significance (Bahr Vermeer Haecker Architects 2009).

3.2.2 Environmental Consequences

3.2.2.1 Alternative A: No Action

Archeology: There would be no impacts to archeology as a result of this alternative.

Cultural Landscape: Under this alternative there would be no impacts to the cultural landscape. In addition, there would be no impacts to the historic circulation pattern as a result of this alternative.

Historic Structures: Superficial and structural damage to the historic bridge would continue under the no action alternative. The no action alternative would cause continued degradation of the inside surfaces of the bridge's stone parapet walls from the high impact scraping action of seasonal snow plowing. Modern traffic flow, which exceeds the original design load for the roadbed and bridge foundation, would also cause structural degradation. The stone parapet would continue to be damaged from occasional vehicular impacts. This alternative would result in long-term, adverse, direct impacts to historic structures, and no indirect effects.

Cumulative Impacts:

Impacts to cultural resources under the no action alternative, when combined with past, present, and reasonably foreseeable future actions and trends, would remain adverse, direct, and long term.

3.2.2.2 Alternative B - Road Realignment

Archeology: This alternative could have negligible, direct, long term (permanent) adverse impacts on archeology if previously undiscovered archeological resources are uncovered and affected during construction. The stipulations and mitigations outlined in Chapter 2, including archeological monitoring, would reduce the potential for adverse impacts. 2022 pre-construction archeological inventory and

testing documented one area that could contain archeological deposits. This location would not be disturbed during construction, and would instead be covered over (encapsulated) by the new road prism. Any potential resources in this area would be made inaccessible, but would not otherwise be adversely impacted.

Approximately 90% of the project would occur in areas disturbed by previous construction and utility line installation. The realignment route proposed under this alternative was selected to avoid impacting areas with dense intact archeological deposits; therefore, the proposed realignment would impact only heavily disturbed areas or areas with minimal artifact density.

Cultural Landscape: Under this alternative, there would be minor, short-term impacts to the cultural landscape and culturally important views during construction and until new plantings become established (approximately 1-2 years). The new road alignment and bridge would be shielded by vegetation over the long term and would not impact the cultural landscape or culturally important views of or from the historic stone bridge (which would be maintained as a pedestrian route). As described in Chapter 2, impacts to the cultural landscape would be evaluated and mitigated following completion of a VRI of the Lake Superior unit of the park.

This alternative would have negligible, long term (permanent) impacts on the historic circulation pattern from the road realignment and repurposing of the old road to a pedestrian trail. The circulation networks identified in the CLR are recognized to continually be evolving, since this is a living community. This alternative would provide a new connecting pathway to the community network and provide safe pedestrian passage between the center of the park and Bay Road.

Historic Structures: This alternative would result in direct, long term (permanent) beneficial impacts to the historic stone bridge, as well as indirect long term (permanent) adverse impacts from the change in use. Structural degradation to the stone parapet walls from traffic and accidental vehicular impacts would be eliminated. Frequent seasonal snow plowing would not occur under this alternative, which would protect the bridge from damage. The bridge was originally designed for vehicle access, and the change in use to a pedestrian trail would adversely impact the cultural use of the structure.

Cumulative Impacts:

Impacts to cultural resources under this alternative, when combined with past, present, and reasonably foreseeable future actions and trends, would be minor, and both adverse and beneficial. Over the long term, cumulative impacts to cultural resources would be beneficial. The NPS has determined that this alternative would have ‘no adverse effect’ on historic properties under NHPA Section 106. Consultation with the Band has been ongoing throughout this project, and the THPO concurred with the NPS determination on 9/20/2021 (see Chapter 4).

3.3 Human Health and Safety

3.3.1 Affected Environment

CSAH 17 serves as a major corridor between two population centers for both Band members and park visitors, with approximately 1,450 commuters per day. Along this corridor, children travel to schools and community members travel to the local health center. Park staff and community members have reported multiple accidents and injuries in the vicinity of the bridge and the 90-degree bend in the road. This sharp bend has an approximately 95-foot curve radius and does not meet the current MnDOT guidelines, which specify a minimum curve radius of 250 feet for a 30-mph design speed (MnDOT 2022). Additionally, since the bridge is so narrow, it is a safety hazard for pedestrians and vehicles to share this crossing. Vehicles are forced to the side to allow other vehicles to pass or to avoid pedestrians, and park staff have reported multiple instances of the historic stone bridge being hit by vehicles as a result.

3.3.2 Environmental Consequences

3.3.2.1 Alternative A: No Action

The no action alternative would result in long term indirect adverse effects to human health and safety, which would persist as long as the 90-degree bend in CSAH 17 is in use by vehicular traffic. If the road is not realigned, the safety issues posed by the sharp bend in the road and the narrow bridge would remain.

Cumulative Impacts:

Impacts to human health and safety under the no action alternative, when combined with past, present, and reasonably foreseeable future actions and trends, would remain adverse.

3.2.2.2 Alternative B: Road Realignment

Alternative B would result in indirect, long term (permanent) beneficial impacts to human health and safety, by eliminating the hazard posed by the existing 90-degree bend in CSAH 17 and creating a safer crossing for pedestrians. The existing road alignment does not conform to MnDOT guidelines for the minimum bend radius. This alternative would correct this deficiency and bring the road into compliance with MnDOT guidelines. The new bridge would also be wider than the currently used historic bridge, which would increase safety for vehicular traffic. Under this alternative, the safety issues posed by pedestrians and vehicles utilizing the same narrow bridge would be removed. This alternative would therefore have long-term, beneficial impacts to human health and safety.

Cumulative Impacts:

Impacts to human health and safety under Alternative B, when combined with past, present, and reasonably foreseeable future actions and trends, would remain beneficial.

3.4 Water Resources

3.4.1 Affected Environment

Lakes and streams are important natural features in northeastern Minnesota, and their protection is of management interest for both the Band and the park (Lafrancois et al. 2009). The water quality of Reservation waters is in good condition, in part due to the relatively undisturbed second growth northern hardwood and boreal forests (Winterstein 2002). Overall, Reservation lakes and streams tend to be dilute, with intermediate nutrient levels, low transparency, high dissolved organic carbon concentrations, and water chemistry and groundwater inputs that are influenced by local geologic features. Streams show more seasonal variation than lakes, being strongly influenced by hydrologic patterns (Winterstein 2002, Lafrancois et al. 2009).

The Band has U.S. EPA-approved water quality standards that define each waterbody's designated uses and serve as the foundation for water quality assessments. Water quality assessments use physical, chemical, and biological criteria defined in these standards to protect each designated use. Water quality criteria are intended to serve as early warning benchmarks of the aquatic resources of the Reservation and help prevent water quality impacts. The Grand Portage Band has been monitoring water quality in the area since 1994, and water quality assessments of Grand Portage Creek confirm it is a high-quality aquatic resource. Through the park, the creek flows unimpeded, and few man-made structures exist in the stream channel.

Hardened impervious surfaces, including existing roads, cause minor runoff during storm events. Most flooding has been mitigated through the addition of culverts or other stormwater management systems.

A wetland delineation was completed in 2021 (Figure 5), which identified 0.76 acres of Type 6 (riverine and palustrine scrub/shrub and forested) wetland in the vicinity of the project area. Wetlands that could be impacted by the proposed road realignment project (0.33 acres) are shown in Figure 6 of the Wetland Statement of Findings (Appendix B).

The project area is located within the Grand Portage Creek Watershed (Kraft et al 2014). The Federal Emergency Management Agency (FEMA) online Flood Map Service was used to identify any mapped floodplains in the area. FEMA has not completed studies to determine flood hazards in Grand Portage National Monument, and detailed floodplain maps in the project area are not available.

The project is located in the Grand Portage Creek riverine floodplain and is subject to potential flooding along the creek. Lake Superior has a long-term mean surface water elevation, recorded from 1860 to 2015, of approximately 601 feet above sea level, with very little fluctuation in average monthly water levels over that same period. The highest monthly water elevation that Lake Superior has reached is 604 feet above sea level, in 1860 (NOAA 2022). This elevation is below the elevation of the project area. The project area is therefore unlikely to be affected by flooding from rises in Lake Superior.



Figure 5. Wetland Delineation

3.4.2 Environmental Consequences

Alternative A: No Action

The no action alternative would result in no new adverse impacts to water resources, including water quality, wetlands, and floodplains. The existing road alignment and hardened surfaces would remain in place, and runoff would continue to cause minor flooding during storm events. Existing adverse impacts to water resources under the no action alternative would be negligible.

Cumulative Impacts:

Impacts to water resources under the no action alternative, when combined with past, present, and reasonably foreseeable future actions and trends, would continue to be negligible, adverse, and long term (for the life of the current alignment).

Alternative B: Road Realignment

Under Alternative B, short term adverse impacts to water quality are anticipated for the duration of construction activities, including sedimentation of the streambed that could cause a slight increase in water temperature with a corresponding decrease in dissolved oxygen concentrations. The project is not expected to degrade water quality through introduction of hazardous materials or long term alteration of temperature, pH, dissolved oxygen or salinity. Implementation of the stipulations and best management practices outlined in this document, in coordination with federal and state regulatory authorities and as required by federal permits, will reduce potential adverse impacts to minor. This alternative is not anticipated to have any long term adverse impacts on water resources.

Executive Order 11990 “Protection of Wetlands” directs all federal agencies to avoid, to the maximum extent possible, long and short-term adverse impacts associated with the occupancy, destruction, or modification of wetlands, and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Based on NPS Director’s Order #77-1: Wetland Protection (2002) and NPS Procedural Manual #77-1: Wetland Protection (2016), a Statement of Findings (SOF) must be prepared if a preferred alternative would have adverse impacts on wetlands.

A wetland delineation and impact map was completed in 2021 (Figure 5), which defined approximately 0.76 acres of Type 6 (riverine and palustrine scrub/shrub and forested) wetland in the vicinity of the project area. 0.33 acres of these wetlands would be impacted by the proposed road realignment project. These impacts would be long term (permanent) and minor. The Wetland Statement of Findings (Appendix B) defines the area of wetland impacts and compensatory actions that would be taken to offset these impacts if Alternative B is implemented. As

compensation for the wetland impacts, invasive species would be removed from 5.4 acres of wetlands in the park.

Executive Order 11988 “Floodplain Management” directs all federal agencies to “reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.” Based on NPS Director’s Order #77-2: Floodplain Management (2003) and NPS Procedural Manual #77-2: Floodplain Management (2002), a Statement of Findings (SOF) must be prepared if a preferred alternative would have adverse impacts to human health and life or to NPS capital investment.

Under Alternative B, there would be negligible (not measurable) adverse long-term impacts to stream flow and geomorphology, which would persist for the life of the new bridge. Hydraulic analysis (Anderson 2022, Appendix C) indicates that the bridge design would result in <0.1 feet of rise in Grand Portage Creek during 100-year or 500-year flood events. Under this alternative, there would be no downstream impacts to aquatic habitat, fish passage, or infrastructure, no adverse impact to human health and life, and no adverse risk to NPS capital investment and therefore, a Floodplain Statement of Findings is not required.

This alternative would result in a net increase of 0.30 acres of impervious surfaces, which is anticipated to cause a negligible increase in runoff.

Cumulative Impacts:

Impacts to water resources under Alternative B, when combined with past, present, and reasonably foreseeable future actions and trends, would be minor, adverse, and long term (for the life of the proposed new alignment and bridge). As a cumulative impact, the addition of a culvert near the historic stone bridge (anticipated in a future project; see Section 3.1.2) would improve natural flow in Grand Portage Creek over the long term.

CHAPTER 4: CONSULTATION AND COORDINATION

The following entities were consulted or provided technical expertise on this project:

- Grand Portage Band of Lake Superior Chippewa
- Federal Highway Administration
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers

The Band partnered with the NPS on this project, and has been consulted throughout the planning process under NHPA Section 106. Several meetings and site visits with the THPO and Reservation Tribal Council have occurred, beginning in 2020. The NPS determined that the project would have ‘no adverse effect’ on historic properties under Section 106.

The NPS worked with the Federal Highway Administration (FHWA) on the Highway Easement Deed (HED) process. The HED will provide for road maintenance within the new highway corridor, and will be signed following completion of the compliance process. FHWA is also a cooperating agency in the NEPA process, and will review the NPS environmental assessment to ensure it can be adopted by FHWA.

Consultation with U.S. Fish and Wildlife Service (USFWS) regarding the northern long eared bat was originally initiated on April 15, 2021 through the Information for Planning and Consultation (iPaC) tool (<https://ipac.ecosphere.fws.gov/>), using the Endangered Species Act (ESA) 4(d) rule. At the time, the northern long eared bat was listed as threatened, and the proposed road realignment project was determined to be consistent with the Northern Long Eared Bat Programmatic Biological Opinion (USFWS 2016).

The northern long eared bat is being reclassified as endangered, effective March 31, 2023. ESA Section 7 consultation will need to be reinitiated for federal projects not expected to be completed by the effective date if: 1) the consultation was completed while the northern long-eared bat was listed as threatened, and 2) the project may affect the species (whether or not adverse effects are anticipated).

Although the park previously consulted with USFWS using the 4(d) rule, consultation will be reinitiated once the new consultation tools are made available by USFWS. The project will not proceed until ESA Section 7 consultation is complete.

The Band, NPS, and Cook County coordinated with U.S. Army Corps of Engineers (USACE) to determine the ordinary high water level mark in Grand Portage Creek to guide design specifications. Under the Clean Water Act, a Section 404 permit will be issued by USACE for construction of the new bridge following completion of the NEPA process.

CHAPTER 5: LIST OF PREPARERS AND CONTRIBUTORS

The persons responsible for the review of the proposed action, the supporting information and analyses, and the preparation of this EA are listed below:

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CHAPTER 6: REFERENCES

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APPENDIX A: REVEGETATION PLAN

Revegetation Plan Grand Portage National Monument Mile Creek Road Re-Route and Bridge Construction

Draft Date: January 10, 2023

Park Unit: Grand Portage National Monument (GRPO)

Project Title: Mile Creek Road Re-Route and Bridge Construction

PMIS Number: 317984

Estimated Total Area for Revegetation: 4.5 acres

Anticipated Construction Dates: Summer 2023

Plan Prepared by: Stefanie Wacker, Vegetation Ecologist, Denver Service Center, Transportation Division

Plan Reviewed By: Ken Stella, Section Chief, Revegetation, Denver Service Center, Transportation Division, and Bill Clayton, Grand Portage National Monument

Project Purpose: This document describes the strategy for revegetation of the disturbed area associated with the Mile Creek Road re-route and bridge construction, constructed by Minnesota Department of Transportation. The project will disturb about 3.6 acres, defined by the Limits of Disturbance (LOD) boundary on the 90% plan set. Restoration area is planned for 4.5 acres to include any incidental areas not accounted for on plans and for any areas where seed did not germinate.

Park Location and Description: Grand Portage National Monument (GRPO) is in northeast Minnesota, on the shore of Lake Superior. It is 710 acres, consisting of the fur trade depot, 8.5 miles of portage trail to Fort Charlotte, located at the intersection of the Pigeon River which is the US/Ontario, Canada border. GRPO preserves the history of the cross-cultural interaction and exchange between the Ojibwe people and early Europeans during the eighteenth-century expansion of the Great Lakes fur trading business.

GRPO has an agreement with the Grand Portage Band of the Lake Superior Chippewa (the Band), where the maintenance of the Monument is done by Band employees. The Band will take on the role of outplanting, watering, and seeding on this project.

Project Description: Mile Creek is a Cook County managed road on the tribal lands of the Grand Portage Band of Lake Superior Chippewa that runs through GRPO. This project aims to protect the historic bridge and create a safer corridor for pedestrian and auto traffic. Construction is scheduled to begin in 2023.

Revegetation Goals:

- Re-establish all ethnobotanically significant plant communities/species that occurred in the Limit of Disturbance (LOD)
- Control invasive plant introduction and movement through the salvage of topsoil, exposed mineral soil, and cleaning of contaminated equipment used in construction.
- Mitigate the impacts to rare plant species.
- Maintain the natural landscape.

- Maintain the park vegetation diversity by using locally sourced seed of native species and outplanting nursery-grown shrubs and grasses started from locally sourced seed.
- Contain point-source pollution by properly storing topsoil.
- Minimize soil erosion using native vegetation.

Special Considerations: There will be some loss of Douglas hawthorn in the project area, which is considered a species of special concern for the Grand Portage Trust Lands Agency. Mitigations are addressed in the “Greenhouse” section of this document. Additionally, the Park has recently restored a sweetgrass meadow which is near the project LOD; the proximity to the construction disturbance creates a pathway for invasive species, such as reed canary grass (*Phalaris arundinacea*), to re-establish and invade the restored meadow. Controlling reed canary grass invasion within the LOD is high priority due to its high invasion and establishment potential.

Black Hawthorn: A portion of the current stand of black hawthorn will be removed to accommodate the new bridge. The park mapped all hawthorns in the construction zone; approximately 50 plants will be impacted. Live, nursery raised hawthorns will be placed in the disturbed area near the new bridge, approximately 50-100 trees will be planted near the new bridge. The environmental conditions will be adequate to support a 1:1 replacement of hawthorns (accounting for some mortality) within the LOD or other areas of the park if so determined. No hawthorns will be planted adjacent to the road.

Native Roses: Live, nursery raised roses will be planted in the areas near the new bridge, further from the water table than the hawthorns. Roses will be on both sides of the bridge near the stream. Fifty to 80 roses will be planted on about 0.1 ac.

Sweetgrass: Live, nursery raised sweetgrass plugs will be placed in sunny areas with coarse, gravelly soils. Likely locations will be the lowest point in the road ditches. Number of plugs to be determined at the time of restoration (fall 2023). The goal of the plantings is to have plant density similar to undisturbed or restored populations.

Out-planting Nursery materials: The Band or Band hired contractor will pick-up and deliver the live plants to the planting site. An “X” will be cut into the erosion control mat large enough for the live plants, but small enough that wind will not lift the mat during the winter months. Live plants will be protected with mulch layer and supplementally watered as needed. Watering times and amount will be dictated by weather. Following planting, any excess or loose erosion control mat will be secured with ground staples or other appropriate method.

Seed Mix: Native, local ecotype seed is available commercially from local vendors and be purchased by the Government. A custom seed mix will be created and ordered to meet Park specifications. Two different seed mixes will be used, one for open forested areas and another for riparian. Seed will be used to restore about 3.5 acres.

This is an example Native Riparian and Floodplain seed mix from Shooting Star Native Seeds:

Common Name	Scientific Name	% of Mix	Seeds/Ft	Rate/Acre
Grasses				
American Sloughgrass	Beckmannia syzigachne	25.00%	27.5	1.50 PLS Lbs
Blue Joint Grass	Calamagrostis canadensis	1.00%	6.2	0.06 PLS Lbs

Mile Creek Road Realignment and Bridge Construction

Grand Portage National Monument

American Manna Grass	Glyceria grandis	3.00%	4.6	0.18 PLS Lbs
Fowl Manna Grass	Glyceria striata	2.00%	7.1	0.12 PLS Lbs
Rice Cut Grass	Leersia oryzoides	4.00%	3.0	0.24 PLS Lbs
Annual Rye	Lolium italicum	15.00%	5.0	0.90 PLS Lbs
Fowl Bluegrass	Poa palustris	30.00%	86.0	1.80 PLS Lbs

Sedges & Rushes

Tussock Sedge	Carex stricta	1.00%	1.2	0.06 PLS Lbs
Brown Fox Sedge	Carex vulpinoidea	5.00%	11.0	0.30 PLS Lbs
Green Bulrush	Scirpus atrovirens	1.00%	10.1	0.06 PLS Lbs
Woolgrass	Scirpus cyperinus	0.10%	3.7	0.01 PLS Lbs
River Bulrush	Scirpus fluviatilis	4.00%	0.4	0.24 PLS Lbs
Softstem Bulrush	Scirpus validus	2.00%	1.4	0.12 PLS Lbs

Wildflowers

Swamp Milkweed	Asclepias incarnata	2.00%	0.2	0.12 PLS Lbs
Flat-topped Aster	Aster umbellatus	0.50%	0.7	0.03 PLS Lbs
Joe Pye Weed	Eupatorium maculatum	0.50%	1.0	0.03 PLS Lbs
Boneset	Eupatorium perfoliatum	0.40%	1.4	0.02 PLS Lbs
Sneezeweed	Helenium autumnale	0.40%	1.1	0.02 PLS Lbs
Spotted Touch-me-not	Impatiens capensis	1.00%	0.1	0.06 PLS Lbs
Great Blue Lobelia	Lobelia siphilitica	0.20%	2.2	0.01 PLS Lbs
Monkey Flower	Mimulus ringens	0.10%	5.1	0.01 PLS Lbs
Mountain Mint	Pycnanthemum virginianum	0.20%	1.0	0.01 PLS Lbs
Giant Goldenrod	Solidago gigantea	0.40%	2.2	0.02 PLS Lbs
Blue Vervain	Verbena hastata	0.60%	1.2	0.04 PLS Lbs
Common Ironweed	Vernonia fasciculata	0.60%	0.3	0.04 PLS Lbs

This is an example of Dry Forest opening mix from Shooting Star Native Seeds:

Grasses

Slender Wheatgrass	Agropyron trachycaulum	18.00%	6.8	2.70 PLS Lbs
Oats	Avena sativa	34.00%	2.2	5.10 PLS Lbs
Poverty Oats	Danthonia spicata	7.00%	9.6	1.05 PLS Lbs
Canada Wild Rye	Elymus canadensis	20.00%	5.7	3.00 PLS Lbs
Annual Rye	Lolium italicum	6.00%	5.0	0.90 PLS Lbs

Wildflowers

Anise Hyssop	Agastache foeniculum	1.50%	7.4	0.23 PLS Lbs
Large-leaved Aster	Aster macrophyllus	1.50%	2.2	0.23 PLS Lbs
Upland White Aster	Aster ptarmicoides	1.50%	5.3	0.23 PLS Lbs
Northern Bedstraw	Gallium boreale	0.50%	1.9	0.08 PLS Lbs
Showy Sunflower	Helianthus laetiflorus	2.00%	0.4	0.30 PLS Lbs
Early Wild Rose	Rosa blanda	2.00%	0.3	0.30 PLS Lbs
Black-eyed Susan	Rudbeckia hirta	3.50%	17.7	0.53 PLS Lbs
Gray Goldenrod	Solidago nemoralis	0.50%	8.3	0.08 PLS Lbs
Stiff Goldenrod	Solidago rigida	1.00%	2.3	0.15 PLS Lbs

Heartleaf Alexanders

Zizia aptera

1.00%

0.7

0.15 PLS
Lbs

Seeding Methods: The aforementioned seed mixes would be applied to the disturbed lands at a rate of 80 seeds per square foot in a mix of species and proportions similar to those listed. Seeding will occur in conjunction with the live shrubs, to create understory species community.

The method of seeding will be via one of the following four types: 1) hand broadcast seeding with erosion control blanket, 2) hydraulic application of seed with erosion control blanket, 3) hand broadcast seeding with hydromulch, 4) hydraulic application of seed with hydromulch. Seeding methods area described below. ***NOTE: One or more of these seeding methods may be removed from the specifications as the details of the project are refined.***

Erosion Control Blanket

After seed has been placed, by hand or hydraulically, erosion control blanket (ECB) will be installed over the top of the seed. The ECB shall be composed of certified weed free processed all-natural fibers (straw is not acceptable) mechanically bound between two all-natural fiber nettings to form a continuous matrix with a minimum dry weight of 0.4 pounds per square yard according to ASTM D 6475. Ensure materials are protected from weather and/or handling damage prior to install. Utilize U-shaped wire staples with a minimum of 12-inch-long legs and 8-gauge thickness to facilitate installation without bending.

Two-Step Hydroseed Method

First Application (Seed):

Hydroseed Application: In order to ensure that the seed is being applied at the correct rate areas to be seeded shall be marked off/flagged at a minimum of half acre increments prior to seeding. Add 500 lbs/acre of tracer material consisting of virgin wood fiber mulch to the water/seed in the hydraulic equipment to provide visible evidence of uniform application. Adding this 500 lbs/acre during seeding, means that only 1500 lbs/acre will be added during the second application of just mulch, which would result in a total of 2,400 lbs/acre of mulch applied.

Hand Broadcast/Rake/Hydromulch Method (for slopes flatter than 2H:1V)

First Application (Seed):

Hand Application: In order to ensure that the seed is being applied at the correct rate areas to be seeded shall be marked off/flagged at a minimum of half acre increments prior to seeding. Seed shall be applied by hand or with hand seeders such as a belly grinder. Seed will be distributed in such a way as to assure all species in the seed mix are evenly distributed across the area, regardless of seed size. Lightly rake the seed into the soil to a depth of ¼". Do not smooth with the backside of the rake, light furrows in the soil are desired.

Second Application (Mulch):

2,400 lbs./acre of long strand virgin wood fiber and;

Apply mulch with a non-toxic, and natural and biodegradable plant-based psyllium/alpha plantago tackifier. Depending on product apply per the manufacturer's specifications, generally at a rate of 80 lbs. per acre on slopes less than 3H:1V and apply at a rate of 100 lbs./acre on slopes greater than 3H:1V. Apply mulch with a non-toxic, 100% environmentally safe tracer dye material applied per the manufacturer's specification generally at a rate of around 200-300 pounds per acre to provide visible evidence of uniform application.

The hydromulcher must be equipped with a built-in continuous agitation and recirculation system of sufficient operating capacity to produce homogeneous slurry and a discharge system that will apply slurry to the designated areas at a continuous and uniform rate. No fertilizers, mycorrhizae, or other amendments shall be added to the hydroseed slurry.

The Contractor shall spray designated areas with the slurry in a sweeping motion and in an arched stream until a uniform coat is achieved, with no slumping or shadowing, as the material is spread at the required rate. The hydromulch slurry should float down from the arched stream, as opposed to being shot directly at the ground. During hydromulching the existing native vegetation must be protected from damage (including, but not limited to, coating with mulch, damage by direct spray, and dragging hose). Notify the CO/DSC three weeks before hydromulching to ensure that NPS oversight of seeding operations can be coordinated.

Hydroseed/Hydromulch Method (for slopes steeper than 2H:1V)

First Application (Seed):

Hydroseed Application Hydroseed Application: In order to ensure that the seed is being applied at the correct rate areas to be seeded shall be marked off/flagged at a minimum of half acre increments prior to seeding. Add 500 lbs/acre of tracer material consisting of virgin wood fiber mulch to the water/seed in the hydraulic equipment to provide visible evidence of uniform application. Adding this 500 lbs/acre during seeding, means that only 1,900 lbs/acre will be added during the second application of just mulch, which would result in a total of 2,400 lbs/acre of mulch applied.

The hydroseeding shall proceed following the specifications above for the hydromulch application on top of broadcast seed.

Second Application (Mulch):

1,900 lbs./acre of long strand virgin wood fiber and;

Apply mulch with a non-toxic, and natural and biodegradable plant-based psyllium/alpha plantago tackifier. Depending on product, apply at manufacture's specification or at a rate of 80 lbs. per acre on slopes less than 3H:1V and apply at a rate of 100 lbs./acre on slopes greater than 3H:1V.

Apply mulch with a non-toxic, 100% environmentally safe tracer dye material applied per the manufacturer's specification or at a rate of around 200-300 pounds per acre to provide visible evidence of uniform application.

The hydromulching shall proceed following the specifications above for the hydromulch application on top of broadcast seed.

Point-source pollution: To address the potential for point source pollution related to stockpiled soil, the Park has identified a location for temporary storage. The soil must be covered to prevent erosion and movement of soil into stream and lake.



Non-native and invasive Species Control will be executed by the NPS Great Lakes Invasive Plant Management Team, based out of St. Croix Falls, MN. Focus on pre-construction removal of all undesired species, and post-construction removal of reed canary grass.

Site Prep: The road contractors will bring all surfaces to grade and leave soil in condition for planting, with no rocks, all clods less than 3" diameter.

Erosion Control: Excelsior erosion control mat will be used anywhere the grade is greater than 3:1.

Seeding: Seeding will be done by a Conservation Crew or contracted by the Band. Erosion control mat placed on top of seed to protect from winter erosion.

Acres	Pounds	Number of Seeds ft2
Riparian Mix, 2 ac	12	80
Open Forest Mix, 2.5 ac	38	80

Mile Creek Road Realignment and Bridge Construction Environmental Assessment
Appendix B: Wetland Statement of Findings

National Park Service
U.S. Department of the Interior



Grand Portage National Monument
Minnesota

**STATEMENT OF FINDINGS
FOR
EXECUTIVE ORDER 11990 (PROTECTION OF WETLANDS)**

**MILE CREEK ROAD RE-ROUTE AND BRIDGE CONSTRUCTION
COOK COUNTY HIGHWAY DEPARTMENT &
GRAND PORTAGE BAND OF LAKE SUPERIOR CHIPPEWA
MILE CREEK ROAD/COUNTY STATE AID HIGHWAY 17 (CSAH 17)
GRAND PORTAGE NATIONAL MONUMENT
GRAND PORTAGE, MINNESOTA**

Recommended:

Superintendent, Grand Portage National Monument Date

Certification of Technical Adequacy and Service-wide Consistency:

Chief, Water Resources Division Date

Approved:

Regional Director Date

Grand Portage Creek Appendix H: Statement of Findings for Wetlands

**Grand Portage National Monument
February 2023**

Prepared by:

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Project No. 08256023

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Grand Portage Creek Cook County Highway Department

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Appendix A MnRAM Site Assessment Report

1.0 INTRODUCTION

Executive Order (EO) 11990, Protection of Wetlands, and EO 11988, Floodplain Management, require the National Park Service (NPS) and other federal agencies to evaluate the likely impacts of actions in wetlands and floodplains, respectively. NPS Director's Order #77-1: Wetland Protection provides NPS policies and procedures for complying with EO 11990. NPS Director's Order #77-2 provides NPS policies and procedures for complying with EO 11988. The NPS adheres to a "no net loss" of wetlands policy, as well as other federal and agency policies. This statement of findings has been prepared in accordance with Executive Order 11990 (Protection of Wetlands) and NPS Director's Order #77-1.

Based on NPS Directors Order #77-1: Wetland Protection (2002) and NPS Procedural Manual #77-1: Wetland Protection (2016), a Statement of Findings (SOF) must be prepared if a preferred alternative would have adverse impacts on wetlands. This SOF has been prepared to comply with EO 11990 and 11988. A wetland delineation was completed in 2021, which identified 0.76 acres of Type 6 (Riverine and Palustrine scrub/shrub and forested) wetland in the vicinity of the project area. This wetland type is characterized by organic or mineral soil and a water table at or near the ground surface. Common sites for shrub swamp type wetlands include along sluggish streams, drainage depressions and occasionally floodplains (Minnesota Department of Natural Resources, 2022). Approximately 0.33 acres of these wetlands would be impacted by the proposed road realignment project.

Cook County, Minnesota and the Grand Portage Band (the Band) of Lake Superior Chippewa (Ojibwe), in partnership with the Grand Portage National Monument (the Park), propose to realign a segment of Mile Creek Road/County State Aid Highway 17 (CSAH 17) and construct a new bridge across Grand Portage Creek (**Figure 1**). An Environmental Assessment (EA) for the proposed Mile Creek Road Re-Route and Bridge Construction was prepared in compliance with the National Environmental Policy Act (NEPA). The EA identified two alternatives, Alternative A: No Action, and Alternative B: County Road 17 Re-Route (Preferred Alternative). Under the No Action Alternative, the road would not be realigned. Under the Preferred Alternative, an existing blind curve would be removed, and a portion of the original asphalt would be left in place as a walking path, and the road would be re-routed across a new bridge. The purpose of this SOF is to present the rationale for the proposed realignment and document anticipated effects on wetlands.

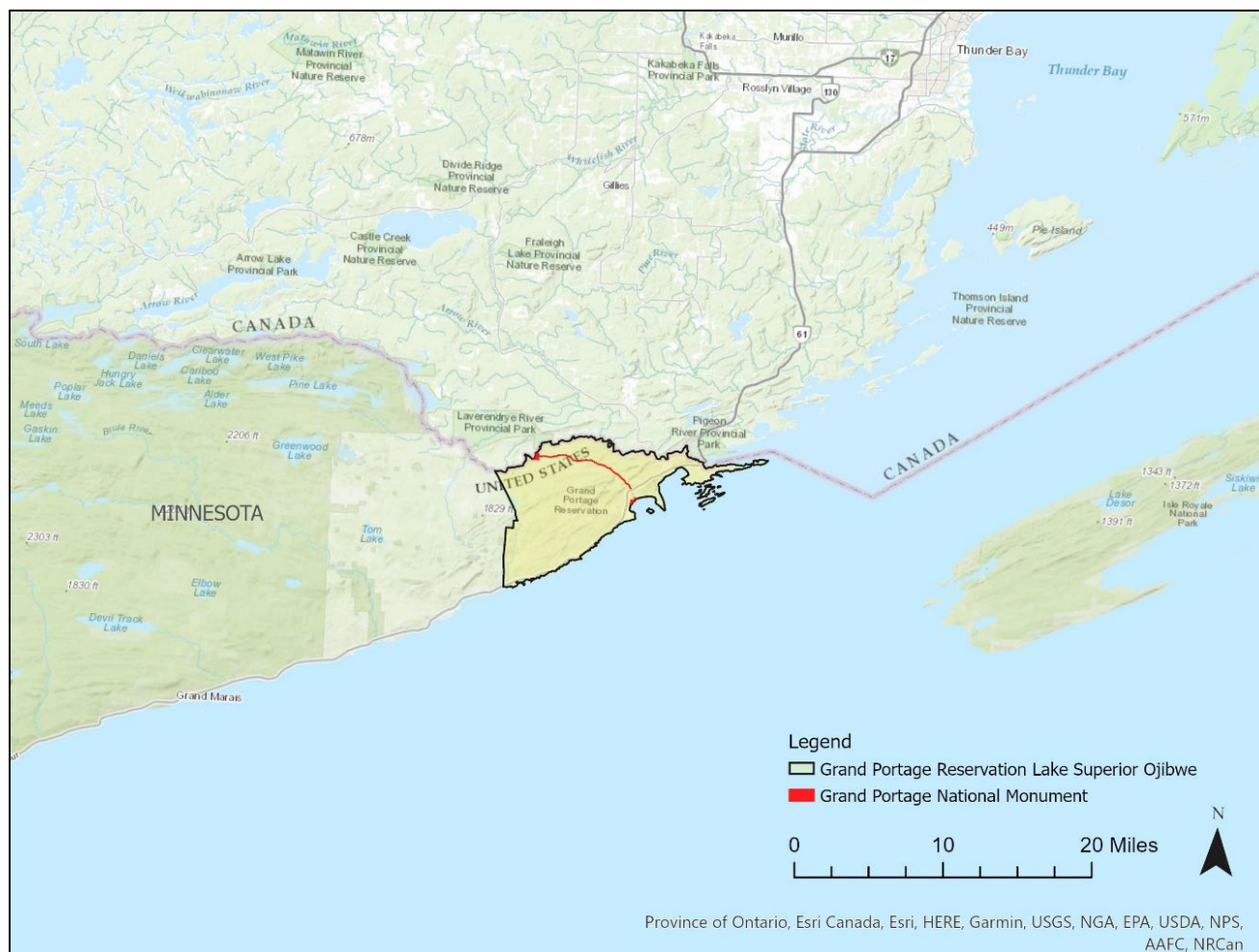


Figure 1. Site Location Map: Grand Portage National Monument and Grand Portage Indian Reservation.

2.0 PROPOSED ACTION

The purpose of this project is to reduce the hazard caused by the blind curve on CSAH 17, eliminate safety, traffic and plowing impacts on the historic bridge and increase pedestrian access. The project is needed to improve safety and protect park resources.

Alternative A: No-Action Alternative

The No-Action Alternative assumes that current management would be continued and no realignment construction would occur. It provides a benchmark for comparative purposes with the Proposed Action Alternative. The No Action Alternative would retain the existing roadway, including the portion that crosses Grand Portage Creek via the historic stone bridge and the existing blind curve. Repairs would continue to be made by the NPS to preserve the stone bridge.

Alternative B: Road Realignment (Proposed Action)

Under the Proposed Action, Mile Creek Road/CSAH 17 would be realigned to remove a blind, 90-degree turn and eliminate vehicular traffic across the historic stone bridge. The proposed realignment would require construction of a 450-foot straight segment that runs from the T-intersection of Mile Creek Road and Store Road, roughly north-northeast, and would connect with Mile Creek Road at the park's decommissioned maintenance shop (**Figure 2**).

The realignment would consist of an approximately 70-foot-wide raised roadbed that would cross Grand Portage Creek at a point approximately 220 feet north, or upstream, of the existing stone bridge. Where the new alignment crosses the creek, a new 20-foot-wide by 56-foot-long wooden bridge would be constructed (**Figure 3**). The bridge would be built with three spans; two 18-foot spans on the north and south sides of the creek, and one 20-foot span in the center. Two piers would be placed in the creek channel to a depth of 3 feet below the channel bottom. All construction would occur above the ordinary high water mark.

A corridor will be cleared and brushed prior to construction. This will include clearing brush and trees and removing stumps. Clearing will include approximately 48 individual black fruited hawthorn shrubs and other shrub species (such as willow). Approximately 40 mature jack pine and approximately 0.2 acres of young balsam will be removed in the area where the realignment will connect with Mile Creek Road at the far eastern end. Approximately 10 red pine will be cleared from the upland area where the realignment meets the junction of the Grand Portage Trail and Mile Creek Road.

The existing road between the Mile Creek Road and Store Road intersection and picnic area parking would be closed to all vehicular traffic and would be converted to a 10-foot-wide trail that would provide pedestrian access across the historic bridge. To protect the historic bridge, the path would not be plowed or otherwise maintained in the winter.

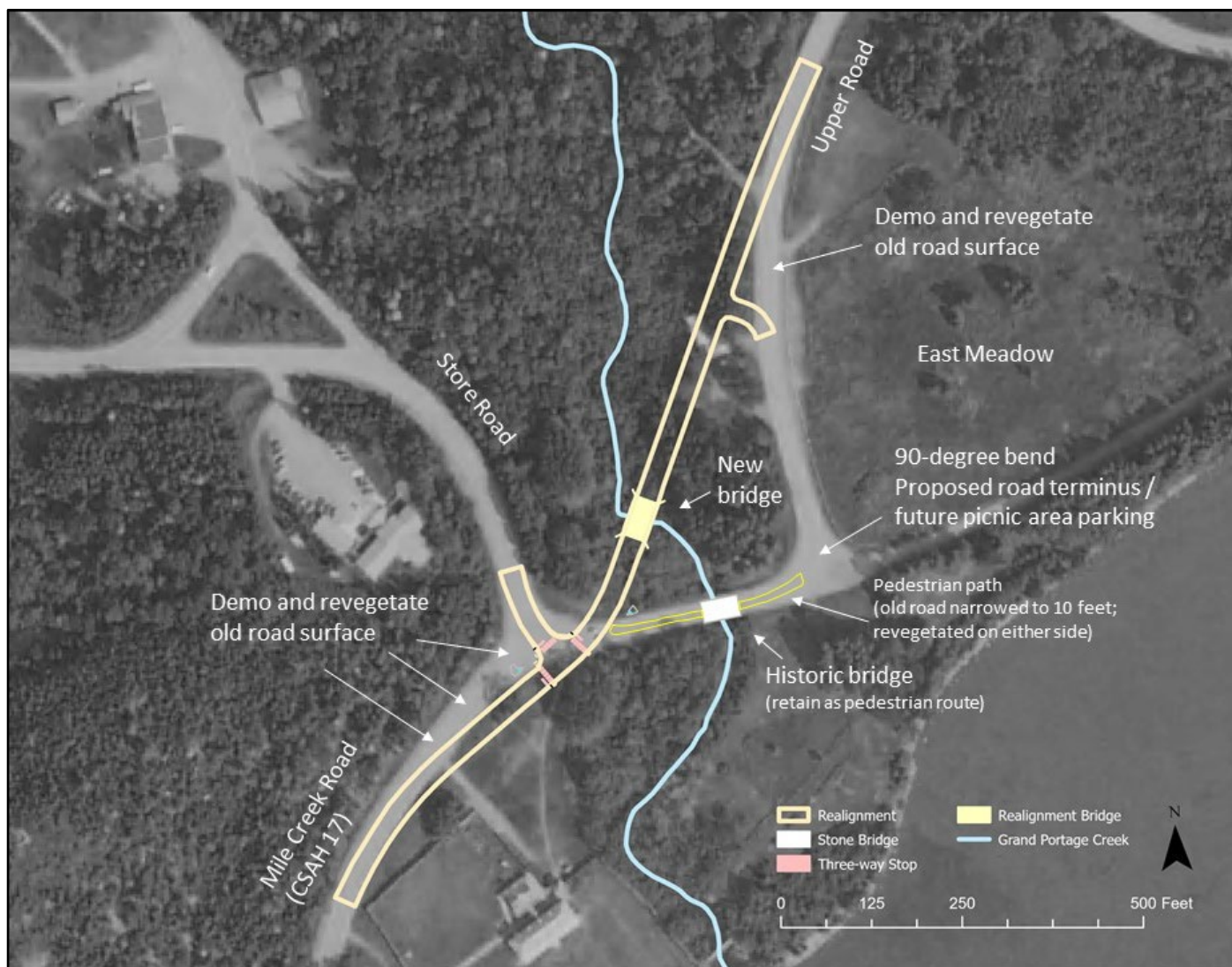


Figure 2. Project Map: Alternative B - Road Realignment.

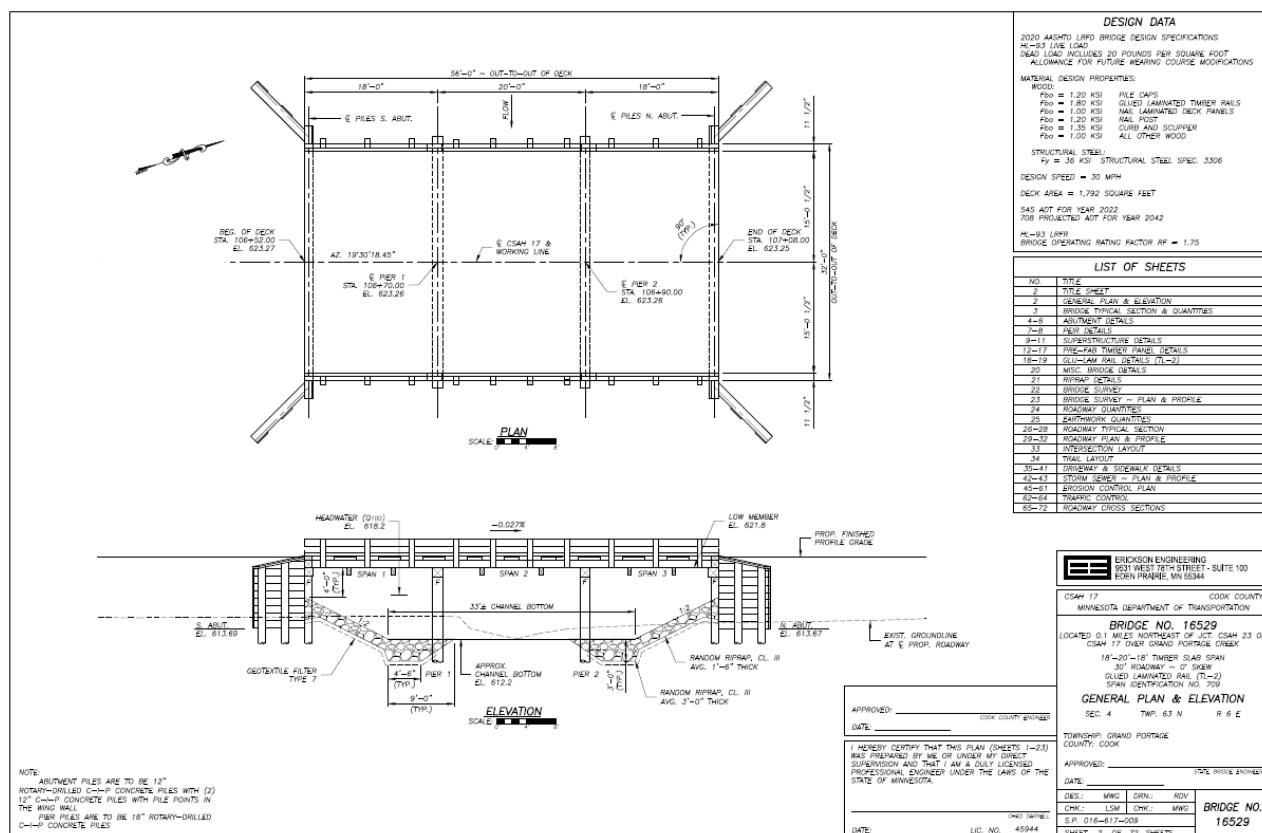


Figure 3. Proposed Bridge Design.

Other Alternatives Considered

The following alternate road realignment bridge designs were considered but dismissed (**Figure 4**):

Cemetery Alternative

This alternative would include a raised road corridor and bridge located approximately 650 feet upstream from the stone bridge. The route would connect Store Road on the west side to Mile Creek Road on the east side, just below the historic Holy Rosary Catholic Church and associated cemetery. A small portion of the cemetery is inside the park boundary. The alternative would take advantage of a topographic narrowing of the stream valley on the west side, but would exit onto Mile Creek Road at the foot of the cemetery hill. In addition to the cemetery's known graves, historic photographs indicate there are likely many unmarked graves in the area. Ethnographic evidence also suggests some internments dating to the 1700-1800s may exist in the slopes below the current cemetery boundary. Historic records and pedestrian surveys also suggest the presence of archeological features in the slopes below Holy Rosary Cemetery that may date to the 18th century fur trade and 19th century Grand Portage Village periods. These features have not been evaluated for NRHP eligibility. This alternative would also add a traffic crossing on the Grand Portage Trail, which would break up the hiking experience for park visitors. Ground disturbance adjacent to the cemetery, the potential for inadvertent discoveries and impacts to

human remains or archeological resources, visual impacts, traffic noise, and impacts to visitor experience make this alternative unacceptable.

Powerline Corridor Alternative

This alternative would require a raised roadbed and bridge constructed within an existing powerline corridor, approximately 1,450 feet upstream and north of the historic stone bridge on Mile Creek Road. This option would intersect Store Road across the street from the Grand Portage community pow-wow grounds and cut across the edge of an allotment. This alternative would be constructed close to the home of a Band member and create a traffic hazard during the Grand Portage community's annual pow-wow celebration. Increased traffic in this area would also increase traffic noise and exhaust near the home and during the celebration. This alternative would also alter or relocate the community ball field, which is an area suspected to contain archeological deposits and possible burial sites. This alternative could have significant adverse impacts on unrecorded graves and archeological remains from the 18th and 19th centuries.

Alternate Bridge Designs

Alternative bridge designs were considered, including single-span and two-span options. These designs were dismissed due to engineering limitations on the length of each span and the overall length of the proposed stream crossing.

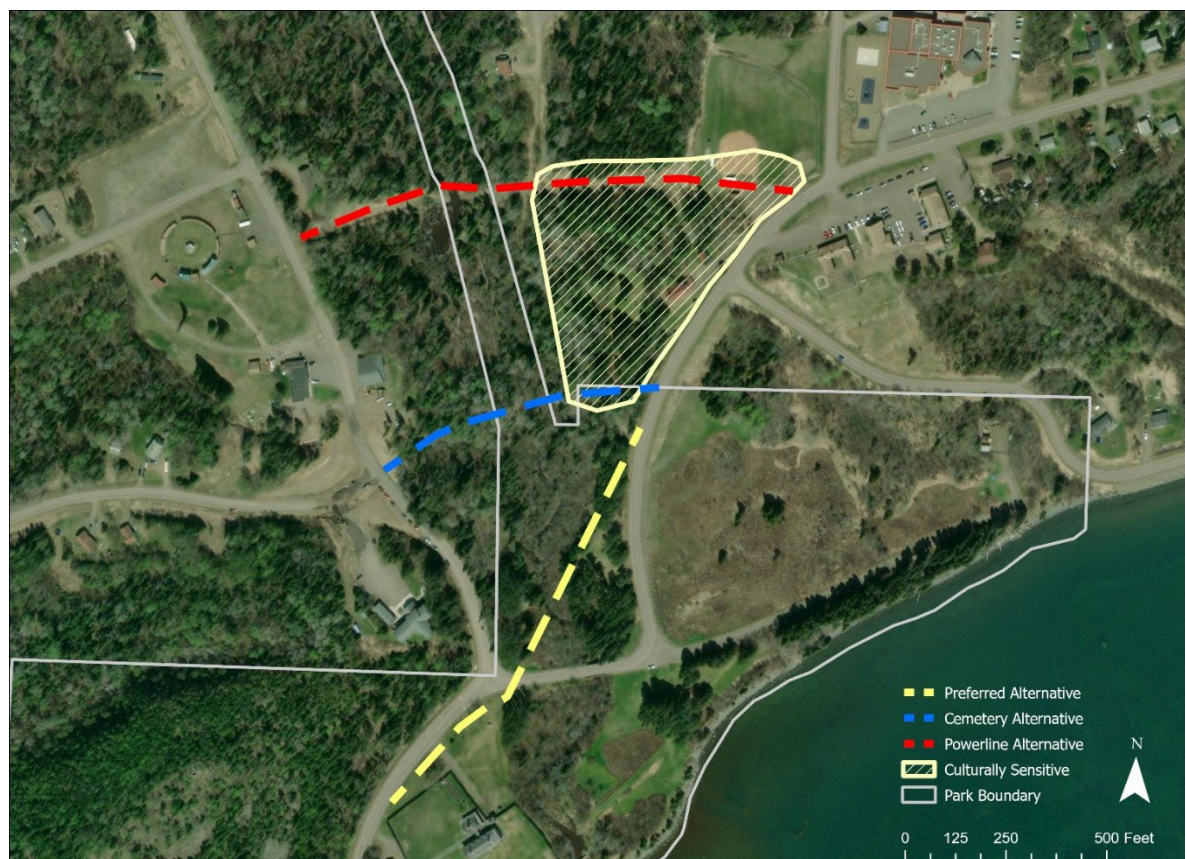


Figure 4. Preferred Alternative and Alternative Routes Considered but Dismissed.

3.0 SITE DESCRIPTION

MSA Professional Services, Inc. (MSA) staff conducted field delineation of wetlands and surface waters within the project area using available, offsite sources (including USGS topographic maps, National Wetland Inventory maps and LIDAR data) and field observations in July 2021. A Routine Onsite Determination was completed for this project. At each observations point (wetland and upland), a Wetland Determination Data Form – Northcentral and Northeast Region was completed. The following information was collected at each of the four observation points:

1. Determination of presence or absence of normal circumstances;
2. Observations of primary and secondary indicators of wetland hydrology;
3. An assessment of dominant hydrophytic and upland plant communities using current approved vegetation assessment methods;
4. The plant species indicator status, following categories outlined in Table 1 of the USACE 1987 Manual; and
5. Soil characteristics, such as color and texture and the presence or absence of redoximorphic features.

The wetland delineation performed by MSA identified a palustrine scrub shrub and forested wetland area on either side of the Grand Portage Creek riverine wetland just to the north of Mile Creek Road (Wetland Area 1). Wetland Area 1 has primary characteristics of a palustrine scrub/shrub wetland which is associated with the Grand Portage Creek riverine and palustrine wetland flood plain (**Figure 5**).



Figure 5: Wetland Delineation Map.

Plant species identified at one or both of the two wetland data points included Speckled Alder (*Alnus incana*, FACW), Mountain Maple (*Acer spicatum*, FACU), Tatarian Dogwood (*Cornus alba*, FACW), Ostrich Fern (*Matteuccia struthiopteris*, FAC), Meadow Horsetail (*Equisetum pratense*, FACW) and Purple Meadow-Rue (*Thalictrum dayscarpum*, FACW).

Wetland hydrology indicators observed at data point DP-1 included: High Water table (A2), Saturation (A3), Sparsely Vegetated Concave Surface (B8) Geomorphic Position (D2) and FAC Neutral Test (D5). Wetland hydrology indicators observed at data point DP-3 included: Saturation (A3), Water marks (B1) Water-stained leaves (B9) and FAC Neutral Test (D5).

The soil in the area of data point DP-1 was classified as a muck with a matrix color of 7.5YR3/2 from 0-10 inches bgs. Hydric soil indicator status 2 cm Muck (A10) was observed at DP-1. The soil in the area of data point DP-2 was classified as a muck with a matrix color of 7.5YR3/2 from 0-16 inches bgs.

3.1 EVALUATION OF WETLAND FUNCTIONS AND VALUES

As part of the technical review, a Minnesota Routine Assessment Method (MnRAM) evaluation of wetland was requested.

The MnRAM for Evaluating Wetland Functions was originally devised after the passage of the Wetland Conservation Act in 1991 as a practical assessment tool that would help local authorities make sound wetland management decisions as the assumed responsibility for regulating wetland impacts. The objective of a wetland management classification system and management standards is to achieve no net loss of wetland functions and values within the management area while providing flexibility for economic development that may require wetland impacts. Impacts to wetlands include not only direct impacts such as filling, draining, and excavating, but also indirect impacts from stormwater inputs, changes to local surface and ground water hydrology, and pollutant loading. The evaluation is conducted by applying field observations into a ranking spreadsheet to evaluate each of the twelve wetland function and value characteristics (ranging from: Low, Medium, High and Exceptional) to produce an overall value for the wetland. A MnRAM Assessment spreadsheet was completed for the evaluation of this wetland and is provided as **Appendix A**. Wetland Functional Values for the area proposed for impact fall within the Medium to High characterizations with no Low or Exceptional ratings. The following is a summary of the results of the MnRAM evaluation for the wetland on the property:

Vegetative Diversity/Integrity

The palustrine wetland vegetation characteristics are limited by a rocky substrate common to streams and watersheds of the North Shore area of Lake Superior. While vegetative diversity is limited by these area characteristics, vegetative quality is high in the area with limited invasive species within this wetland area. Nearby road features have introduced a manipulated setting toward the southern end of the wetland area, which does impact the overall functional rating for the wetland. The spreadsheet rating for vegetative diversity/integrity is considered Medium. The road realignment does not appear to pose a significant impact to the vegetative diversity/integrity of the area. A portion of the project area is already defined by moderate manipulation and bridge design will allow for maintaining the riverine regime.

Hydrology

The wetland is a palustrine system associated with the Grand Portage Creek watershed/flood plain. The wetland exists within a somewhat modified area with nearby impervious surfaces, but generally low-density development. The wetland is considered a discharge wetland based upon its topographic setting, surrounding soils, watershed land use and size. The spreadsheet rating for the hydrology is Medium. The limited footprint of wetland impacts created in the area of wetland immediately adjacent to Grand Portage Creek and already disturbed area near the existing road features lead to a conclusion that the proposed project will have minimal effect on area hydrology (project is a bridge span across the channelized feature).

Flood Attenuation

The wetland area is a flow through, riverine system with limited nearby features/characteristics affecting surface flow. Steep area/regional topography slopes to Lake Superior to the south, with water from adjacent uplands flowing towards the channelized flow within Grand Portage Creek. Because of its importance to providing a natural flow pattern for water within the watershed to enter Lake Superior, the flood attenuation rating for these riverine wetland features is characterized as High. A lower storage capacity, in its natural state, limits the characterization to High in comparison to Exceptional. The project design, including a bridge feature extending over the maintained stream bed have limited impacts to the flood attenuation capacity of the stream and associated wetlands.

Downstream Water Quality

The wetland is a riverine system associated with Grand Portage Creek. Grand Portage Creek is a Minnesota classified Public Water (S-087 and PWI_ID 16087) and it is listed as a trout stream by the Minnesota Department of Natural Resources.

The spreadsheet rating for downstream water quality is High. The project is designed to maintain the hydrologic regime of Grand Portage Creek by bridging the features and appropriate abutment cladding is proposed to prevent project area erosion and downstream sediment loading. Further, the road realignment provides for limited additional impervious surface contributions not already existing due to the current local road system.

Wetland Water Quality

The wetland is 100 percent vegetated with very low evidence of accelerated sediment delivery in the form of sediment fans. Within 50 feet of the wetland there is limited upland buffer; manicured, primarily vegetated adjacent areas; with areas of sparse adjacent vegetation and impervious surfaces; and moderate slopes. There is moderate evidence of disturbance to wetland soils with some degradation near area road features. Upland soils in the area consist mainly of bouldery glacial till. The spreadsheet rating for wetland water quality is High.

Shoreline Wetlands

The wetland is a riverine system associated with Grand Portage Creek. The vegetative and substrate characteristics (rocky) result in relatively small contributions of shoreline protection from the types of vegetation and flow regime of the stream. The spreadsheet rating for shoreline protection is Medium and the minimal footprint of shoreline disturbance and bridging of the actual stream channel both limit impacts to the shoreline protection aspect of the wetland functions.

Characteristic Wildlife Habitat Structure

The wetland has no recognized rare wildlife or plants and the immediate project area is defined by common wildlife characteristics. Wildlife common to the Park include: white-tailed deer; grey wolf; black bear; brown bat; American beaver; southern red-backed vole; North American deer mouse; least chipmunk; red squirrel; mole shrew; Arctic shrew; and common shrew. There are also moderate barriers to wildlife in the area consisting of moderately traveled roads and low to moderate area development. The function is rated as Medium through MnRAM evaluation for the area, with low to moderate overall development.

Maintenance of Characteristic Fish Habitat

The wetland is a riverine system associated with Grand Portage Creek, a MNDNR Public Water and trout stream. The wetlands are not associated with direct tributary or spring feeding conditions for the stream in the area of the proposed project. This functional value is rated High through the spreadsheet evaluation.

Grand Portage Creek and its associated wetlands provide significant habitat to a variety of macroinvertebrates and herpetofauna and is one of several local stream systems integral to a resurgence in coaster brook trout populations in the Lake Superior watershed.

Coaster brook trout are native to Lake Superior and a significant part of the local heritage. The reintroduction and management of coaster brook trout in Grand Portage Creek is part of the overall rehabilitation plan for coaster brook trout in Lake Superior (Newman et al, 2003). Currently, Grand Portage Creek harbors a healthy coaster brook trout population that was successfully reintroduced by a joint effort between the Grand Portage Band and the U.S. Fish and Wildlife Service (USFWS) (Witand et al, 2006).

Macroinvertebrate data for Grand Portage Creek, as provided by the Grand Portage Natural Resources Department, indicate a stable and improving condition. Macroinvertebrate habitat is highly affected by both low and high flow conditions. As proposed work to construct the new bridge crossing will not impact any areas below the ordinary high-water mark (i.e. all work will stay outside the stream bed features) and the amount of new impervious surface generating additional stormwater contributions is considered low, the effect on macroinvertebrate populations in the project area will not be significant. Best management practices to be employed during and after construction activities are further described in a following section of this Report.

Maintenance of Amphibian Habitat

The rocky substrate and narrow band of floodplain wetland lead to limited amphibian related habitat in the wetlands adjacent to the actual stream bed. The open water (stream portion) of the wetland area would rate as High for maintenance of amphibian habitat, but will remain undisturbed as part of the road realignment and bridge construction over Grand Portage Creek. The actual shoreland wetland features are considered Low for amphibian habitat maintenance.

Project plans and associated Best Management Practices (BMPs) call for construction activities to completely avoid working within or moving equipment through the Grand Portage Creek stream bed. Equipment can be staged to accomplish this BMP and will prevent direct impacts to the stream and its inhabitants.

Aesthetics/Recreational/Educational/Cultural

The wetland itself does not provide a unique or rare educational, cultural or recreational opportunity. It will be visible from vantage points, but is not located near a population center and is not located on private property. The spreadsheet rating for aesthetics/recreation/educational/cultural function is Medium.

Commercial Use

The wetland has low potential for recreational use and has not been modified to sustain a commercial product (peat, wild rice harvest or similar commercial use). The spreadsheet rating for commercial use is Low.

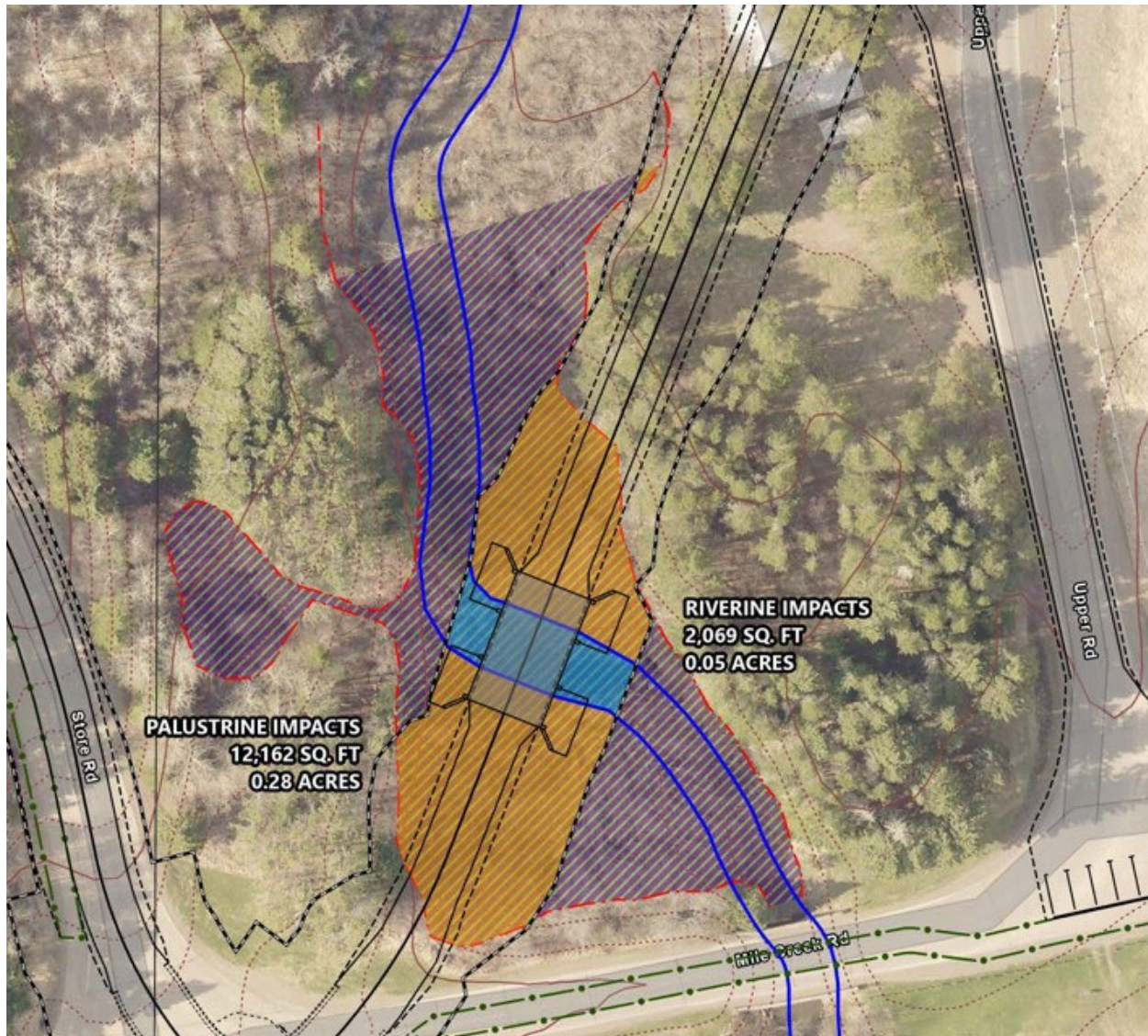


Figure 6: Areas of Wetland Impacts

3.2 IMPACTS TO PALUSTINE AND RIVERINE WETLANDS

The Proposed Action would result in unavoidable impacts to 0.33 acres of wetlands identified within the project area during the July 2021 wetland delineation (see Figure 6 above). Expected impacts would include the construction of the new roadway realignment and bridge crossing within the wetland area. The Proposed Action will result in a net increase of 0.30 acres of impervious surface, which is expected to cause a negligible increase in runoff.

3.3 IMPACTS TO THE STREAM ECOLOGY

The wetland area identified as part of this project is a riverine system existing within the flood plain for Grand Portage Creek. Flow is generally low to moderate with occasional flash conditions created by strong relief to the north and a broad watershed. The stream itself is rocky and provides limited environment for significant submerged aquatic vegetation.

The proposed project includes crossing the creek channel with a bridge span which limits impacts to the stream and its features (as compared to impacts which may be caused through the use of culverts or other closed features designed to allow water movement beneath surface features). The impacts to submerged aquatic vegetation from this proposed project are considered insignificant.

3.3 FLOODPLAINS WITHIN THE PROJECT AREA

The project area is not currently mapped by the Federal Emergency Management Agency (FEMA), however, the project area appears to be located within the Grand Portage Creek flood plain based on observations made during wetland delineation activities. Based on the nature of the project (roadway relocation and bridge construction), complete avoidance of the flood plain is not possible with a build alternative. The Proposed Action will result in a net increase of 0.30 acres of impervious surface, which is expected to cause a negligible increase in runoff.

During review of the bridge design and a selected 3-span timber bridge, the backwater effect caused by the downstream, existing stone bridge was evaluated to determine its potential to affect the new bridge and possible consequences for the stream system during unusual storm events. Hydraulic modeling show stage increases of <0.1 feet for both the 100-year and 500-year events and the low member elevation for the bridge is 2.3 feet higher than the 100-year design stage. While backwater flooding may occur due to the restrictive downstream crossing, modelling shows that the effect on the new bridge would be negligible.

3.4 MITIGATIVE MEASURES

In compliance with National Park Service Procedural Manual #77-1: Wetland Protection, Appendix 2: Best Management Practices and Conditions for Proposed Actions with the Potential to Have Adverse Impacts on Wetlands, the following practices will be implemented during the proposed bridge construction project over Grand Portage Creek.

3.4.1 Effects on Hydrology and Fluvial Processes

To limit effects on site hydrology and fluvial processes, the project is designed as a bridge crossing with abutments constructed and placed outside the banks of Grand Portage Creek. No work shall occur within the stream bed of the creek. Equipment will be staged on either side of the stream and no equipment will physically cross the creek during the construction activities.

3.4.2. Effects on Fauna

The bridge system will provide for unaltered movement, migration reproduction and health of coaster brook trout populations inhabiting the creek at the times of the year (fall) or other aquatic or terrestrial fauna.

3.4.3 Water Quality Protection and Certification

Water quality protection and certification shall comply with the requirements of the Grand Portage Band of Chippewa Water Resources Ordinance. Spill prevention and control measures will be employed to prevent or control spills of fuels, lubricants or contaminants from entering Grand Portage Creek or adjacent wetlands. Such actions will include on-site availability of spill containment and absorbents and appropriate management and training to implement response/clean-up actions via a spill response plan.

3.4.4 Erosion and Siltation Controls

Erosion and siltation controls will be maintained during construction, and all exposed soil or fill material will be permanently stabilized following Minnesota Department of Transportation (MnDOT) construction standards. Exposed soils with slopes of 1:3 or steeper will have temporary erosion control or permanent cover placed within seven days once the area is not actively being worked. To reduce sediment tracking during site work, the construction entrance will be stabilized with a vehicle tracking pad.

Following the completion of site work and spreading of topsoil, permanent vegetation will be established with either certified native seed mixes or with reused existing topsoil salvaged from the work site. after topsoil is spread. Any vehicle tracking pads installed to prevent sediment tracking from the site shall be removed and the area restored after site work has been completed.

3.4.5 Proper Maintenance

In accordance with MnDOT 2573 and 2575, all erosion and sediment control devices will be routinely inspected and logged at least once every seven days and within 24 hours of any 1/2-inch rain event. Upon inspection, all nonfunctional devices will be repaired, replaced or cleaned as necessary.

3.4.6 Heavy Equipment Use

Heavy equipment will be staged to complete work from either side of Grand Portage Creek. No heavy equipment will cross the stream bed as part of this project. Further, only wetland areas which will be filled and are proposed for impact and replacement will be impacted. Work areas

and erosion control BMPs will be placed to provide clear boundaries to the work zone and effectively protect the adjacent wetlands from sediment delivery or direct impacts from equipment.

3.4.7 Stockpiling Material

All excavated materials will be stockpiled in upland, rather than wetland, areas. If any stockpile is to remain in place for more than three days, sediment and erosion control devices/methods shall be used. Silt fence will be placed around any material stockpiles to prevent runoff to Grand Portage Creek and adjacent wetlands.

3.4.8 Removal of Stockpiles and Other Temporary Disturbances During Construction

Care will be taken to avoid impacts to wetland areas which are not proposed for impact and replacement. Any unintentional disturbances to soil, hydrology or native vegetation communities which occur during construction activities will be restored to pre-existing conditions as soon as practicable.

3.4.9 Topsoil Storage and Re-use

Existing topsoil will be salvaged, stored onsite and reused as practicable for restoration efforts. Storage and reuse will be completed as quickly as possible to prevent loss of seed and root viability, loss of organic matter and degradation of the soil microbial community.

3.4.10 Native Plants

Certified native seed mixes will be used to re-establish vegetation within the work area following completion of the bridge construction and stabilization of side slopes, ditches and shoulder areas. Seed mixes shall comply with NPS policies and guidance for use and be appropriate for the areas in which they are being used.

3.4.11 Boardwalk Elevations

No boardwalks are being constructed as part of this project. The bridge decking is a sufficient distance (elevation) to provide adequate clearance and daylighting to allow for vegetation growth in the underlying stream bed. Vegetation in the Grand Portage Creek stream bed is limited due to the rocky nature of the channel.

3.4.12 Wild and Scenic Rivers

Grand Portage Creek is not a State or Federally designated Wild and Scenic River.

3.4.13 Coastal Zone Management

This project exists within the Coastal Management Zone for Lake Superior. Project-related stormwater/erosion control measures are reflective of work being completed in this ecologically sensitive area.

3.4.14 Endangered Species

No threatened or endangered species were identified during wetland delineation activities. While not listed, the coaster brook trout and its spawning habitat are of special consideration for this project and no disturbance to the stream bed will occur.

3.4.15 Historic Properties

The bridge construction project is being completed to alleviate heavy vehicle traffic over the existing historic stone bridge. The project is designed to be consistent with the long-term goals and plans for Grand Portage National Monument.

4.0 JUSTIFICATION FOR USE OF WETLANDS

The purpose of the Proposed Action is to reduce the current hazard caused by a blind curve on CSAH 17, eliminate safety concerns and traffic and plowing impacts to an existing historic bridge, and enhance pedestrian access. The Proposed Action is required to improve safety and protect park cultural resources.

5.0 MITIGATIVE ACTIONS

Planned mitigative action for the project area includes invasive species prevention measures in and around the identified wetland areas.

The following mitigative measures will be taken to reduce the potential impacts of invasive species during construction work within the project area:

- Revegetation of all disturbed areas will occur in accordance with the revegetation plan in Appendix A of the EA, using native seed or mature transplants.
- A black fruited hawthorn inventory was conducted to document the number and location of these plants in the project area and determine their suitability for transplanting. No individuals young enough to be transplanted were found (B. Seitz, personal communication, December 12, 2022). Live, nursery grown plants will be installed post-construction in suitable habitat. Care will be taken to ensure the population is stable and the plants can continue to regenerate (see Revegetation Plan, Appendix A of the EA).
- All imported material including topsoil, gabions, rivet mattresses, or rip rap will be weed free.

The following revegetation goals were listed in Appendix A of the EA:

- Reestablish all ethnobotanically significant plant communities/species that occurred in the Limit of Disturbance
- Control invasive plant introduction and movement through the salvage of topsoil, exposed mineral soil, and contaminated heavy equipment used in construction.
- Mitigate the impacts to rare plant species.
- Maintain the natural landscape.
- Maintain the park vegetation diversity by using locally sourced seed of native species and outplanting nursery-grown shrubs started from locally sourced seed.
- Contain point-source pollution by properly storing topsoil.
- Minimize soil erosion using native vegetation.

Non-native and invasive Species Control will be executed by the NPS Great Lakes Invasive Plant Management Team, based out of St. Croix Falls, MN. Focus will be placed on pre-construction kill of all undesired species and post-construction kill of reed canary grass.

The compensation for wetland impacts will be completed following two mechanisms consistent with State and Federal requirements. To meet National Park Service requirements for on-site mitigation, approximately 5.4 acres of wetland-dominated land will be restored to native conditions through invasive species removal (**Figure 6**). The invasive species removal plan mitigation strategy results in a nearly 20:1 ratio for the restoration of the nearby wetland area. In order to meet State and Federal (USACE) replacement requirements which include in-place and in-kind stipulations, State Roadbank Wetland credits will be acquired through the Joint Application Permit process at a 1:1 ratio.



Figure 7: Wetland Mitigation Area

6.0 CONCLUSION

The proposed roadway realignment along Mile Creek Road/County State Aid Highway 17 (CSAH 17) and construction of a new bridge across Grand Portage Creek would improve park safety and visitor access. Based on review of alternatives, there does not appear to be a practicable alternative that would result in zero wetland impacts.

The Proposed Action would impact approximately 0.33 acres of wetlands. These wetland impacts will be mitigated through two mechanisms consistent with State of Minnesota and United States (National Park Service and Corps of Engineers) policies. To meet National Park Service requirements for on-site mitigation, approximately 5.4 acres of wetland-dominated land will be restored to native conditions through invasive species removal (Figure 6). The invasive species removal plan mitigation strategy results in a nearly 17:1 ratio for the restoration of the nearby wetland area. In order to meet State and Federal (USACE) replacement requirements which include in-place and in-kind stipulations, State Roadbank Wetland credits will be acquired through the Joint Application Permit process at a 1:1 ratio.

Mitigation and compliance with regulations and policies to prevent additional wetland or water quality impacts will be observed during and after the completion of construction activities. Based on proposed wetland restoration and compensation, no net loss of wetlands will occur, therefore, MSA finds this project to be consistent with the policies and procedures of NPS Director's Order #77-1 (Protection of Wetlands) and Executive Order 11990.

7.0 REFERENCES

National Park Service. 2016. National Park Service Procedural Manual #77-1: Wetland Protection.

Minnesota Department of Natural Resources. 2022. Wetlands. [Wetlands | Minnesota DNR \(state.mn.us\)](https://www.dnr.state.mn.us/wetlands/). Accessed December 16, 2022.

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Wiland, L., S.M. Moore, and L. Hewitt. 2006. The coaster challenge: restoring a native brook trout fishery to Lake Superior. Trout Unlimited, Arlington, Virginia. Available at <http://www.tu.org/atf/cf/%7B0D18ECB7-7347-445B-A38E-65B282BBBD8A%7D/CoasterChallenge1.pdf>

APPENDIX A

MnRAM Site Assessment Report

MnRAM Site Assessment Report

Portage Creek

Cook County, MN

Wetland ID: 1, Township 4, Section 63, Range 6 East.

Cook County, Minnesota Corps Bank Service Area #1

Assessment Purpose: Planning

A site visit was made to this wetland on 6/10/2022 by Jeff Anderson. Site conditions were Normal. This wetland is estimated to cover 0.76 acres.

This report reflects conditions on the ground at the date of the assessment and, unless noted or implicit in the standard questions, does not reflect speculation on the future or past conditions.

This wetland is located in or near the city of Grand Portage, Minnesota.

General Features

Hydrogeomorphology

The maximum water depth at this site is variable due to seasonal changes with spring runoff and high precipitation events which is controlled from Grand Portage Creek..

As a Floodplain wetland, this site is outside waterbody banks. As such, it likely receives water on an irregular basis depending on water flows.

This wetland has been drained or altered 0% from its original size of 0 acres.

Soils

No soils were observed on the NRCS Soil Survey Database.

Soils onsite observed were sandy soils.

Vegetation and Upland Buffer

The extent of vegetation in this wetland is about 75 percent and the naturalized buffer width averages 50 feet. Vegetated buffers around wetlands provide multiple benefits including wildlife habitat, erosion protection, and a reduction in surface water runoff.

This buffer not only provides an excellent buffer for wetland water quality, it also serves as an important resources for wildlife habitat.

As a shoreline wetland, this site has the potential to protect from erosion and provide spawning and nursery habitat for fish and wildlife. Wetlands located in areas with strong currents and wave action have the greatest potential for protecting shoreline. Shorelines composed of sandy or erodible soils will benefit the most from shoreline wetland protection.

Special Features

There were no special features observed at the site at the time of this assessment

Vegetative Communities

The following plant communities were observed:

(See Appendix A for details on the Dominant Species per plant community)

Shrub-carr Type 6, PSS1. This community had a vegetative index of moderate and comprised 100 percent of the entire area.

Functional Ratings

<i>Function</i>	<i>Rating</i>	<i>Comment</i>
Vegetative Diversity	High	High-functioning vegetative communities reflect the presence of diverse, native wetland species and a lack of non-native or invasive species.
Additional stormwater treatment needs	Moderate	Sediment removal would improve the ability of this site to maintain water quality.
Maintenance of Hydrologic Regime	Moderate	There has been some degree of human alteration of the wetland hydrology, either by outlet control or by altering immediate watershed conditions. However, the wetland retains some of the hydrologic regime similar to the original wetland type, either in part of the wetland or overall to some extent. Because of the interference (whether active or inadvertant), some characteristic vegetative communities have likely been affected, as also have the functions of flood attenuation, water quality and groundwater interaction.
Flood/Stormwater/Attenuation	Moderate	The wetland provides some flood storage and/or flood wave attenuation. It may have either an altered or unrestricted outlet, disturbed wetland soils, thin or little emergent vegetation (with channels) or it may be situated high in a watershed with a low proportion of impervious surfaces, moderate runoff volumes, loamy upland soils, and one or more other wetlands present within the subwatershed.

Downstream Water Quality	High	Portage Creek drains directly into Lake Superior with a high water quality.
Maintenance of Wetland Water Quality	Moderate	Wetland water quality is average. Sediment removal from incoming water would benefit the site. Also consider reducing the amount of stormwater directed at the site. Sustaining a diverse wetland may require additional control over upland land use and the buffer.
Shoreline Protection	Moderate	This fringe site provides some protection against erosive action. Reducing the amount of buffer that is manicured would further protect the adjacent water resource, as would increasing the buffer width.
Maintenance of Characteristic Wildlife Habitat Structure	Moderate	The site provides good habitat and is relatively accessible to wildlife.
Maintenance of Characteristic Fish Habitat	Moderate	Permanently flooded but isolated wetlands can support native populations of minnows and some isolated deep marshes have intermittent populations of sunfish and northern pike after flood events. Poor water quality, due to runoff and insufficient buffer and vegetation, can affect the sustainability of fish populations.
Maintenance of Characteristic Amphibian Habitat	Moderate	Predatory fish are always present and winter habitat unsuitable as site often freezes to the bottom. High inputs of untreated stormwater or unfiltered runoff contribute to poor water quality and reproductive conditions.
Aesthetics/Recreation /Education/Cultural	Moderate	Wetlands is visible from roadway and stream is used as a recreation destination such as hiking. .
Wetland restoration potential	Not Applicable	Because restoration would affect the overall stream.
Wetland Sensitivity to Stormwater and Urban Development	Moderate	This wetland is moderately sensitive to stormwater from spring runoff and high precipitation events.

Appendix A: Dominant Species By Plant Community

	Wetland Type	Plant Community	Dominant Species	Percent Cover
PSS1	Type 6	Shrub-carr	Speckled Alder	>25-50%
			Ostridge Fern	>10-<40%
			Meadow Horsetail	>10-<20%
			White Dogwood	>10-<20%
			Purple Meadow Rue	>10-20%

	Date	Wetland name / ID _____1_____	Wetland name / ID _____	Wetland name / ID _____	Wetland name / ID _____														
	Special Features (from list, p.2--enter letter/s)	-	-	-	-														
#1	Community Number (circle each community which represents at least 10% of the wetland)	(Type 6); (PSS;1, 6; B, C)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B														
#2 & #3	~ Describe each community type individually below ~		~ Describe each community type individually below ~																
Plant Community #1	Community Type (Shrub Swamp)	8A Alder Thicket	-	-	-														
	Community Proportion (% of total)	40%																	
	Dominant Vegetation / Cover Class	<i>Alnus incana</i>																	
	Invasive/exotic Vegetation / Cover Class	0																	
	Community Quality (E, H, M, L)	H 3	0	0	0														
Plant Community #2	Community Type (wet meadow, marsh)	8A Alder Thicket	-	-	-														
	Community Proportion (% of total)	20%																	
	Dominant Vegetation / Cover Class	<i>Cornus alba</i>																	
	Invasive/exotic Vegetation / Cover Class	0																	
	Community Quality (E, H, M, L)	H 3	0	0	0														
Plant Community #3	Community Type (wet meadow, marsh)	8A Alder Thicket	-	-	-														
	Community Proportion (% of total)	10%	D6																
	Dominant Vegetation / Cover Class	<i>Matteuccia struthiopteris</i>																	
	Invasive/exotic Vegetation / Cover Class	0																	
	Community Quality (E, H, M, L)	H 3	0	0	0														
Plant Community #4*	Community Type (wet meadow, marsh)	8A Alder Thicket	-	-	-														
	Community Proportion (% of total)	30%																	
	Dominant Vegetation / Cover Class	<i>Equisetum pratense</i> <i>thalictrum dayscarpum</i>																	
	Invasive/exotic Vegetation / Cover Class																		
	Community Quality (E, H, M, L)	H 3	0	0	0														
	Circular 39 Types (primary <TAB> others)																		
	Cowardin Types																		
	Photo ID																		
	Highest rated community veg. div./integ:	3.0	0 -	0 -	0 -														
	Average vegetative diversity/integrity:	3.00	- -	- -	- -														
	Weighted Average veg. diversity/integrity:		### #VALUE!	0.00 -	0.00 -														
#4	Listed, rare, special plant species?	n N	Y N	Y N	Y N														
#5	Rare community or habitat?	n N	Y N	Y N	Y N														
#6	Pre-European-settlement conditions?	n N	Y N	Y N	Y N														
Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]																			
<table border="1"> <thead> <tr> <th>Cover Class</th> <th>Class Range</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0 - 3%</td> </tr> <tr> <td>2</td> <td>3 - 10%</td> </tr> <tr> <td>3</td> <td>10 - 25%</td> </tr> <tr> <td>4</td> <td>25 - 50%</td> </tr> <tr> <td>5</td> <td>50 - 75%</td> </tr> <tr> <td>6</td> <td>75 - 100%</td> </tr> </tbody> </table>						Cover Class	Class Range	1	0 - 3%	2	3 - 10%	3	10 - 25%	4	25 - 50%	5	50 - 75%	6	75 - 100%
Cover Class	Class Range																		
1	0 - 3%																		
2	3 - 10%																		
3	10 - 25%																		
4	25 - 50%																		
5	50 - 75%																		
6	75 - 100%																		

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

Italic questions are answered via GIS analyses or other methods in-office

MnRAM #	Date:	Wet ID _____1_____	Wet ID _____	Wet ID _____	Wet ID _____
Question Description	Rating	Rating	Rating	Rating	Rating
7 Hydrogeomorphology and Topography (circle one)	Riverine, Palustrine	Depressional/Isolated, Depress'l/Flow-through, Depress'l/Tributary, Riverine, Lacustrine, Peatland, Floodplain, Slope, Other	Depressional/Isolated, Depress'l/Flow-through, Depress'l/Tributary, Riverine, Lacustrine, Peatland, Floodplain, Slope, Other	Depressional/Isolated, Depress'l/Flow-through, Depress'l/Tributary, Riverine, Lacustrine, Peatland, Floodplain, Slope, Other	Depressional/Isolated, Depress'l/Flow-through, Depress'l/Tributary, Riverine, Lacustrine, Peatland, Floodplain, Slope, Other
8 Maximum Water Depth (inches) : % inundation	2:75%	:	:	:	:
9 Local Watershed Area--immediate drainage (acres)					
10 Estimated size of existing wetland (acres)	0.76				
11 SOILS: Upland/Wetland (survey classification + site)	N/A				
12 Outlet characteristics for flood retention	A	A B C N/A	A B C N/A	A B C N/A	A B C N/A
13 Outlet characteristics for hydrologic regime	A	A B C N/A	A B C N/A	A B C N/A	A B C N/A
14 Dominant upland land use (within 500 ft)	A	A B C	A B C	A B C	A B C
15 Soil condition (wetland)	A	A B C	A B C	A B C	A B C
16 Vegetation (% cover)	75 %	%	%	%	%
17 Emerg. veg. flood resistance	C	A B C N/A	A B C N/A	A B C N/A	A B C N/A
18 Sediment delivery	C	A B C	A B C	A B C	A B C
19 Upland soils (based on soil group)	B	A B C	A B C	A B C	A B C
20 Stormwater runoff pretreatment & detention	B	A B C	A B C	A B C	A B C
21 Subwatershed wetland density	B	A B C	A B C	A B C	A B C
22 Channels/sheet flow	B	A B C	A B C	A B C	A B C
23 Adjacent naturalized buffer, average width (feet)	10 feet	feet	feet	feet	feet
24 Adjacent area management (to 50 ft.) (% of each, minimum 20%)	Full 80%	Full Manicured Bare . % . % . %	Full Manicured Bare . % . % . %	Full Manicured Bare . % . % . %	Full Manicured Bare . % . % . %
25 Adjacent area diversity and structure (to 50 ft.) (% percent of each)	Native 100%	Native Mixed Sparse . % . % . %	Native Mixed Sparse . % . % . %	Native Mixed Sparse . % . % . %	Native Mixed Sparse . % . % . %
26 Upland area slope (to 50 ft.) (% in each category)	Moderate 5%	Gentle Moderate Steep . % . % . %	Gentle Moderate Steep . % . % . %	Gentle Moderate Steep . % . % . %	Gentle Moderate Steep . % . % . %
27 Downstream sensitivity/WQ protection	B	A B C	A B C	A B C	A B C
28 Nutrient loading	C	A B C	A B C	A B C	A B C
29 Shoreline wetland	N	Y N	Y N	Y N	Y N
30 Shoreline - rooted vegetation (% cover)	%	%	%	%	%
31 Shoreline - wetland in-water width (in feet, average)	ft	ft	ft	ft	ft
32 Shoreline - emergent veg. erosion resistance	C	A B C	A B C	A B C	A B C
33 Shoreline - erosion potential	C	A B C	A B C	A B C	A B C
34 Shoreline - bank protection/upslope veg.	C	A B C	A B C	A B C	A B C
35 Rare Wildlife	N	Y N	Y N	Y N	Y N
36 Scare/Rare/S1/S2 local community	N	Y N	Y N	Y N	Y N
37 Vegetation interspersed cover (see diagram 1)	6	1 2 3 4 5 6 7 8 N/A	1 2 3 4 5 6 7 8 N/A	1 2 3 4 5 6 7 8 N/A	1 2 3 4 5 6 7 8 N/A
38 Veg. community interspersed (see diagram 2)	2	1 2 3 N/A	1 2 3 N/A	1 2 3 N/A	1 2 3 N/A
39 Wetland detritus	B	A B C N/A	A B C N/A	A B C N/A	A B C N/A
40 Wetland interspersed on landscape	B	A B C	A B C	A B C	A B C
41 Wildlife barriers	B	A B C	A B C	A B C	A B C
42 Amph. breeding potential - hydroperiod	Adequate	Adequate / Inadequate	Adequate / Inadequate	Adequate / Inadequate	Adequate / Inadequate
43 Amphibian breeding potential - fish presence	C	A B C	A B C	A B C	A B C
44 Amphibian & reptile overwintering habitat	B	A B C N/A	A B C N/A	A B C N/A	A B C N/A
45 Wildlife species (list)					
46 Fish habitat quality	N/A	E A B C N/A	E A B C N/A	E A B C N/A	E A B C N/A
47 Fish species (list)					
48 Unique/rare educ./cultural/rec. opportunity	N	Y N	Y N	Y N	Y N
49 Wetland visibility	B	A B C	A B C	A B C	A B C
50 Proximity to population	Y	Y N	Y N	Y N	Y N
51 Public ownership	B	A B C	A B C	A B C	A B C
52 Public access	A	A B C	A B C	A B C	A B C
53 Human influence on wetland	B	A B C	A B C	A B C	A B C
54 Human influence on viewshed	B	A B C	A B C	A B C	A B C
55 Spatial buffer	B	A B C	A B C	A B C	A B C
56 Recreational activity potential	B	A B C	A B C	A B C	A B C
57 Commercial crop--hydrologic impact	N/A	A B C N/A	A B C N/A	A B C N/A	A B C N/A
58 GW - Wetland soils	D	R D	R D	R D	R D
59 GW - Subwatershed land use	D	R D	R D	R D	R D
60 GW - Wetland size and soil group	D	R D	R D	R D	R D
61 GW - Wetland hydroperiod	D	R D	R D	R D	R D
62 GW - Inlet/Outlet configuration	D	R D	R D	R D	R D
63 GW - Surrounding upland topographic relief	D	R D	R D	R D	R D
64 Restoration potential w/o flooding	N	Y N	Y N	Y N	Y N
65 Landowners affected by restoration	all public	all public 1 2 3+	all public 1 2 3+	all public 1 2 3+	all public 1 2 3+
66 A Existing wetland size (acres) [same as #10]	0.76	acres	acres	acres	acres
66 B Total wetland restoration size (acres)	0	acres	acres	acres	acres
66 C Potential new wetland area (acres)=B-A	0	acres	acres	acres	acres
67 Average width of naturalized upland buffer (potential)	5	feet	feet	feet	feet
68 Ease of potential restoration	C	A B C	A B C	A B C	A B C
69 Hydrologic alteration type	N/A	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling
70 Potential wetland type (Circ. 39)	6	1, 2, 3, 4, 5, 6, 7, 8	1, 2, 3, 4, 5, 6, 7, 8	1, 2, 3, 4, 5, 6, 7, 8	1, 2, 3, 4, 5, 6, 7, 8
71 Wetland sensitivity to stormwater	B	E A B C	E A B C	E A B C	E A B C
72 Additional stormwater treatment needs	B	A B C	A B C	A B C	A B C

MnRAM 3.2 Digital Worksheet, Side 2

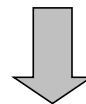
	Question Description	User entry	Rating			
1	Veg. Table 2, Option 4		0.00			
	TOTAL VEG Rating	0.6	Medium			
4	Listed, rare, special plant species?	N	next			
5	Rare community or habitat?	N	next			
6	Pre-European-settlement conditions?	N	next			
7	hydrogeo & topo		#N/A			
8	Water depth (inches)					
	Water depth (% inundation)					
9	Local watershed/immedita drainage (acres)					
10	Existing wetland size	0.76				
11	SOILS: Up/Wetland (survey classification + site)					
12	Outlet characteristics for flood retention	A	1			
13	Outlet characteristics for hydrologic regime	B	0.5			
14	Dominant upland land use (within 500 ft)	B	0.5	0.5		
15	Soil condition (wetland)	A	1			
16	Vegetation (% cover)	75%	M	0.5		
17	Emerg. veg. flood resistance	B	0.5			
18	Sediment delivery	A	1			
19	Upland soils (based on soil group)	A	0.1			
20	Stormwater runoff pretreatment & detention	B	0.5	0.5		
21	Subwatershed wetland density	B	0.5			
22	Channels/sheet flow	A	1			
23	Adjacent naturalized buffer average width (feet)	Medium	H	WQ 1 H 1		
24	Adjacent Area Management: % Full	25%	0.25	3 0.525		
	adjacent area mgmt: % Manicured	50%	0.25			
	adjacent area mgmt: % Bare	25%	0.025			
25	Adjacent Area Diversity & Structure: % Native	75%	0.75	3 0.855		
	adjacent area diversity: % Mixed	20%	0.1			
	adjacent area diversity: % Sparse/Inv./Exotic	5%	0.005			
26	Adjacent Area Slope: % Gentle	20%	0.2	3 0.58		
	adjacent area slope: % Moderate	75%	0.375			
	adjacent area slope: % Steep	5%	0.005			
27	Downstream sensitivity/WQ protection	B	0.5			
28	Nutrient loading	A	1			
29	Shoreline wetland?	Y	Y			
30	Rooted shoreline vegetation (%cover)	25%	0.5			
31	Wetland in-water width (in feet, average)	20	0.5			
32	Emergent vegetation erosion resistance	C	0.1			
33	Shoreline erosion potential	C	0.1	1		
34	Bank protection/upslope veg.	B	0.5			
35	Rare Wildlife	N	N			
36	Scarce/Rare/S1/S2 local community	N	N			
37	Vegetation interspersed cover (see diagram 1)	N/A	N/A	N/A		
38	Community interspersed (see diagram 2)	2	M	0.5	0	
39	Wetland detritus	B	0.5			
40	Wetland interspersed on landscape	B	0.5	0.5		
41	Wildlife barriers	B	0.5			
42	Amphibian breeding potential-hydroperiod	A	1			
43	Amphibian breeding potential--fish presence	A	1			
44	Amphibian & reptile overwintering habitat	A	1			
45	Wildlife species (list)					
46	Fish habitat quality	B	0.5			
47	Fish species (list)	Trout, salmon				
48	Unique/rare educ./cultural/rec.opportunity	N	N			
49	Wetland visibility	A	1			
50	Proximity to population	Y	1			
51	Public ownership	A	1			
52	Public access	B	0.5			
53	Human influence on wetland	C	0.1			
54	Human influence on viewshed	B	0.5			
55	Spatial buffer	B	0.5			
56	Recreational activity potential	B	0.5			
57	Commercial crop--hydrologic impact	N/A	N/A			

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Highest-rated:
3

Enter data starting here. Yellow boxes are used in calculations.

Scroll down to answer more questions and see formula calculations



Additional questions	58	GW - Wetland soils	R	R or D	0.1
	59	GW - Subwatershed land use	D	R or D	1
	60	GW - Wetland size and soil group	R	R or D	0.1
	61	GW - Wetland hydroperiod	D	R or D	1
	62	GW - Inlet/Outlet configuration	R	R or D	0.1
	63	GW - Surrounding upland topographic relief	R	R or D	0.1
	64	Restoration potential w/o flooding	Y	Y or N	2.4
	65	Landowners affected by restoration	A	E a b c	1
	66A	Existing wetland size (acres) [from #10]	0.76	__ acres	
	66B	Total wetland restoration size (acres)	0.76	__ acres	0.1
	66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: 0%
	67	Average width of naturalized upland buffer (poten	50	__ feet	value: 0.1
	68	Likelihood of restoration success	C	a b c	0.1
	69	Hydrologic alteration type	Diversion	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
	70	Potential wetland type (Circ. 39)	7	1, 2, 3, 4, 5, 6, 7, 8	
	71	Wetland sensitivity to stormwater	A	E a b c	
	72	Additional stormwater treatment needs	A	a b c	

Functional Rating Summaries	Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
	Vegetative Diversity/Integrity		0.60	Med	
	Hydrology - Characteristic		0.63	Med	
	Flood Attenuation		0.69	High	
	Water Quality--Downstream		0.67	High	
	Water Quality--Wetland		0.70	High	
	Shoreline Protection		0.34	Med	
	Characteristic Wildlife Habitat Structure	0.55	0.55	Med	
	Maintenance of Characteristic Fish Habitat	0.67	0.67	High	
	Maintenance of Characteristic Amphibian Habitat		0.75	High	
	Aesthetics/Recreation/Education/Cultural	0.53	0.53	Med	
	Commercial use		N/A	N/A	
	Special Features listing:		-		
	Groundwater Interaction		indeterminate GW source		
	Groundwater Functional Index		no special indicators		
	Restoration Potential (draft formula)		0.47	Med	
	Stormwater Sensitivity (not active)				

APPENDIX C: HYDRAULIC FLOOD ANALYSIS**ERICKSON ENGINEERING**

Consulting Engineers • Designers • Construction Inspectors

HYDRAULIC FLOOD ANALYSIS
FOR
COOK COUNTY

Proposed Bridge #16529 on CSAH 17

Sec. 4 T 63 N R 6 E

Data for adequate dimensioning of proposed 3-span treated timber slab bridge:

Stream.....	Grand Portage Creek
Drainage Area.....	7.1 sq. mi.
Maximum Flood on Record.....	unknown
Maximum Observed Highwater Elevation.....	unknown
2 Year Frequency.....	200 cfs
Stage Elevation.....	615.9
Headwater Elevation.....	616.0
Mean Velocity Through Structure.....	4.5 fps
Main Channel Velocity.....	4.1 fps
Design Flood (100 Year Frequency).....	1120 cfs
Design Stage Elevation.....	618.2
Total Stage Increase.....	< 0.1 ft.
Headwater Elevation.....	618.2
Minimum Waterway Opening Below Elevation 618.2.....	262 sq. ft.
Low Member At or Above Elevation.....	620.5
Mean Velocity Through Structure.....	4.3 fps
Main Channel Velocity.....	7.0 fps
Greatest Flood (500 Year Frequency).....	1790 cfs
Stage Elevation.....	619.2
Total Stage Increase.....	< 0.1 ft.
Headwater Elevation.....	619.2
Mean Velocity Through Structure.....	6.2 fps
Main Channel Velocity.....	7.9 fps
Approximate Channel Flowline Elevation.....	612.2
Estimated Contraction Scour Elevation (greatest flood).....	612.0
Estimated Pier Scour Elevation (greatest flood).....	607.9
Skew Angle.....	0°
Scour Code.....	L

The waterway opening is the net waterway area measured normal to the direction of flow. The waterway area is based on a trapezoidal channel cross section with 1:2 sideslopes.

National Park Service
U.S. Department of the Interior



Grand Portage National Monument
Minnesota

**STATEMENT OF FINDINGS
FOR
EXECUTIVE ORDER 11990 (PROTECTION OF WETLANDS)**

**MILE CREEK ROAD RE-ROUTE AND BRIDGE CONSTRUCTION
COOK COUNTY HIGHWAY DEPARTMENT &
GRAND PORTAGE BAND OF LAKE SUPERIOR CHIPPEWA
MILE CREEK ROAD/COUNTY STATE AID HIGHWAY 17 (CSAH 17)
GRAND PORTAGE NATIONAL MONUMENT
GRAND PORTAGE, MINNESOTA**

Recommended:

Superintendent, Grand Portage National Monument

Date

Certification of Technical Adequacy and Service-wide Consistency:

Chief, Water Resources Division

Date

Approved:

Regional Director

Date

Grand Portage Creek Appendix H: Statement of Findings for Wetlands

**Grand Portage National Monument
March 2023**

Prepared by:

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Project No. 08256023

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Grand Portage Creek Cook County Highway Department

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Appendix A MnRAM Site Assessment Report

1.0 INTRODUCTION

Executive Order (EO) 11990, Protection of Wetlands, and EO 11988, Floodplain Management, require the National Park Service (NPS) and other federal agencies to evaluate the likely impacts of actions in wetlands and floodplains, respectively. NPS Director's Order #77-1: Wetland Protection provides NPS policies and procedures for complying with EO 11990. NPS Director's Order #77-2 provides NPS policies and procedures for complying with EO 11988. The NPS adheres to a "no net loss" of wetlands policy, as well as other federal and agency policies. This statement of findings has been prepared in accordance with Executive Order 11990 (Protection of Wetlands) and NPS Director's Order #77-1.

Based on NPS Directors Order #77-1: Wetland Protection (2002) and NPS Procedural Manual #77-1: Wetland Protection (2016), a Statement of Findings (SOF) must be prepared if a preferred alternative would have adverse impacts on wetlands. This SOF has been prepared to comply with EO 11990 and 11988. A wetland delineation was completed in 2021, which identified 0.76 acres of Type 6 (Riverine and Palustrine scrub/shrub and forested) wetland in the vicinity of the project area. This wetland type is characterized by organic or mineral soil and a water table at or near the ground surface. Common sites for shrub swamp type wetlands include along sluggish streams, drainage depressions and occasionally floodplains (Minnesota Department of Natural Resources, 2022). Approximately 0.33 acres of these wetlands would be impacted by the proposed road realignment project.

Grand Portage Band in partnership with Grand Portage National Monument (the Park) and Cook County propose to realign a segment Mile Creek Road/County State Aid Highway 17 (CSAH 17) and construct a new bridge across Grand Portage Creek (Figure 1). An Environmental Assessment (EA) for the proposed Mile Creek Road Re-Route and Bridge Construction was prepared in compliance with the National Environmental Policy Act (NEPA). The EA identified two alternatives, Alternative A: No Action, and Alternative B: County Road 17 Re-Route (Preferred Alternative). Under the No Action Alternative, the road would not be realigned. Under the Preferred Alternative, an existing blind curve would be removed, and a portion of the original asphalt would be left in place as a walking path, and the road would be re-routed across a new bridge. The purpose of this SOF is to present the rationale for the proposed realignment and document anticipated effects on wetlands.

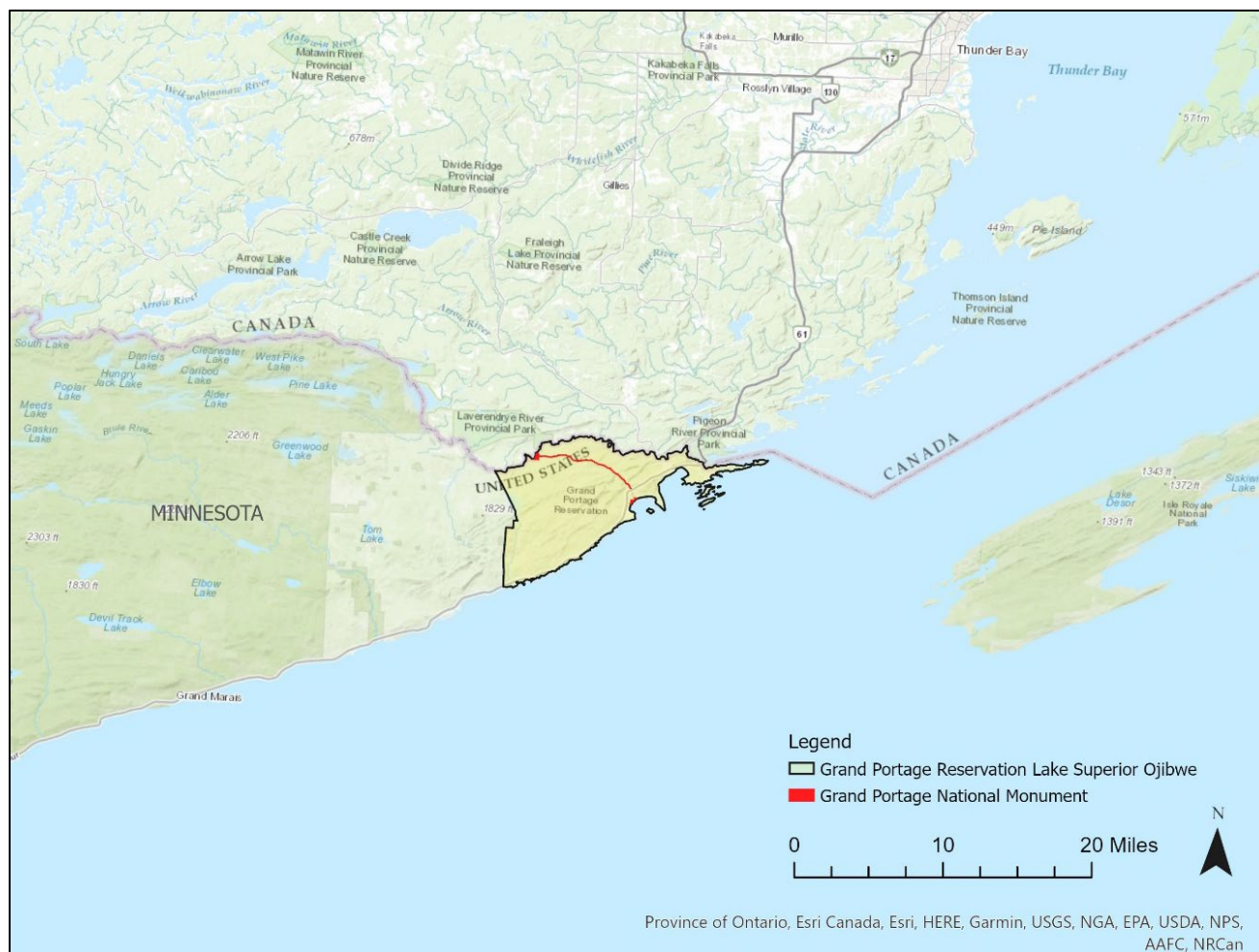


Figure 1. Site Location Map: Grand Portage National Monument and Grand Portage Indian Reservation.

2.0 PROPOSED ACTION

The purpose of this project is to reduce the hazard caused by the blind curve on CSAH 17, eliminate safety, traffic and plowing impacts on the historic bridge and increase pedestrian access. The project is needed to improve safety and protect park resources.

Alternative A: No-Action Alternative

The No-Action Alternative assumes that current management would be continued and no realignment construction would occur. It provides a benchmark for comparative purposes with the Proposed Action Alternative. The No Action Alternative would retain the existing roadway, including the portion that crosses Grand Portage Creek via the historic stone bridge and the existing blind curve. Repairs would continue to be made by the NPS to preserve the stone bridge.

Alternative B: Road Realignment (Proposed Action)

Under the Proposed Action, Mile Creek Road/CSAH 17 would be realigned to remove a blind, 90-degree turn and eliminate vehicular traffic across the historic stone bridge. The proposed realignment would require construction of a 450-foot straight segment that runs from the T-intersection of Mile Creek Road and Store Road, roughly north-northeast, and would connect with Mile Creek Road at the park's decommissioned maintenance shop (**Figure 2**).

The realignment would consist of an approximately 70-foot-wide raised roadbed that would cross Grand Portage Creek at a point approximately 220 feet north, or upstream, of the existing stone bridge. Where the new alignment crosses the creek, a new 20-foot-wide by 56-foot-long wooden bridge would be constructed (**Figure 3**). The bridge would be built with three spans; two 18-foot spans on the north and south sides of the creek, and one 20-foot span in the center. Two piers would be placed in the floodplain above the ordinary high-water mark to a depth of 3 feet below the channel bottom. All construction would occur above the ordinary high water mark.

A corridor will be cleared and brushed prior to construction. This will include clearing brush and trees and removing stumps. Clearing will include approximately 48 individual black fruited hawthorn shrubs and other shrub species (such as willow). Approximately 40 mature jack pine and approximately 0.2 acres of young balsam will be removed in the area where the realignment will connect with Mile Creek Road at the far eastern end. Approximately 10 red pine will be cleared from the upland area where the realignment meets the junction of the Grand Portage Trail and Mile Creek Road.

The existing road between the Mile Creek Road and Store Road intersection and picnic area parking would be closed to all vehicular traffic and would be converted to a 10-foot-wide trail that would provide pedestrian access across the historic bridge. To protect the historic bridge, the path would not be plowed or otherwise maintained in the winter.

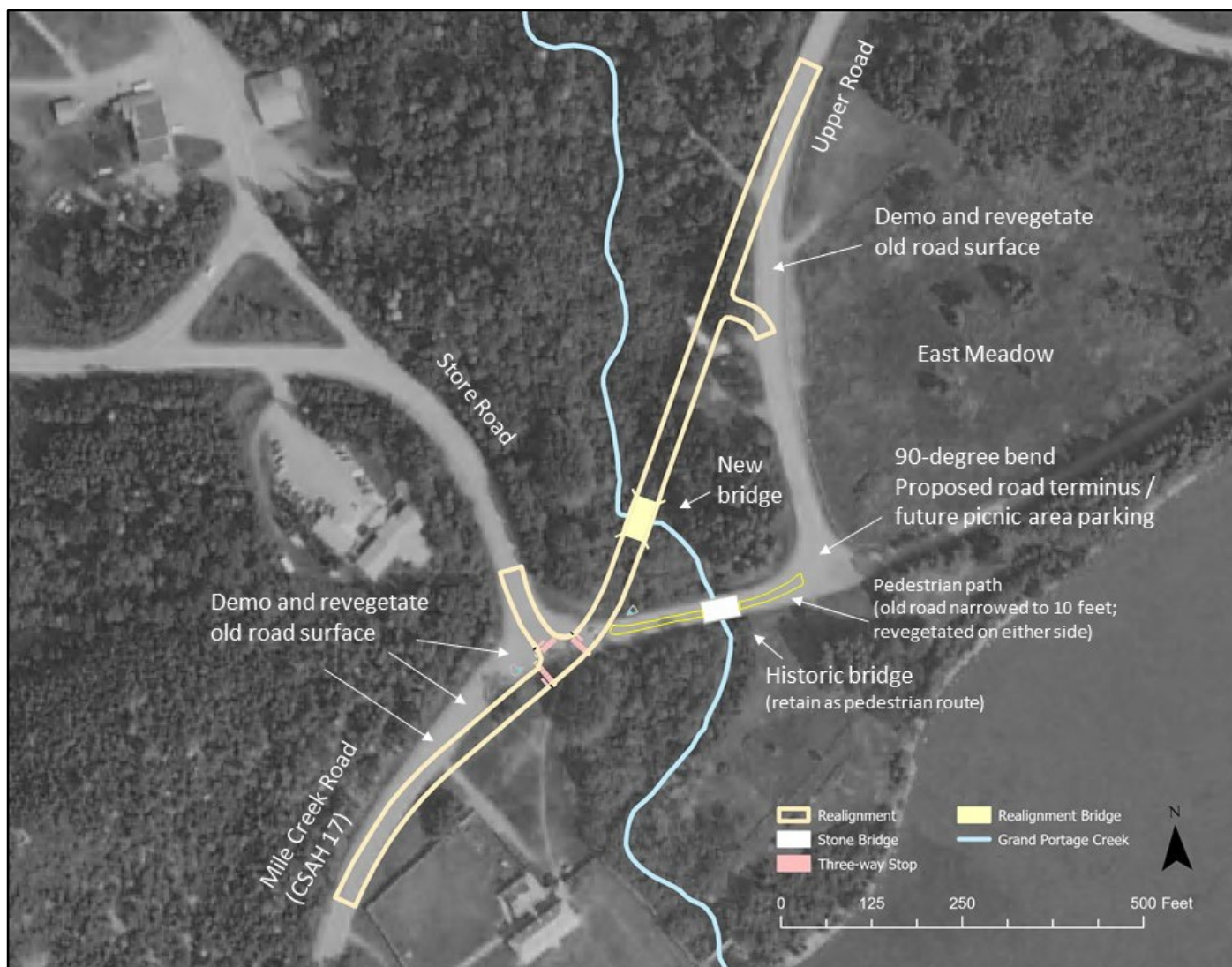


Figure 2. Project Map: Alternative B - Road Realignment.

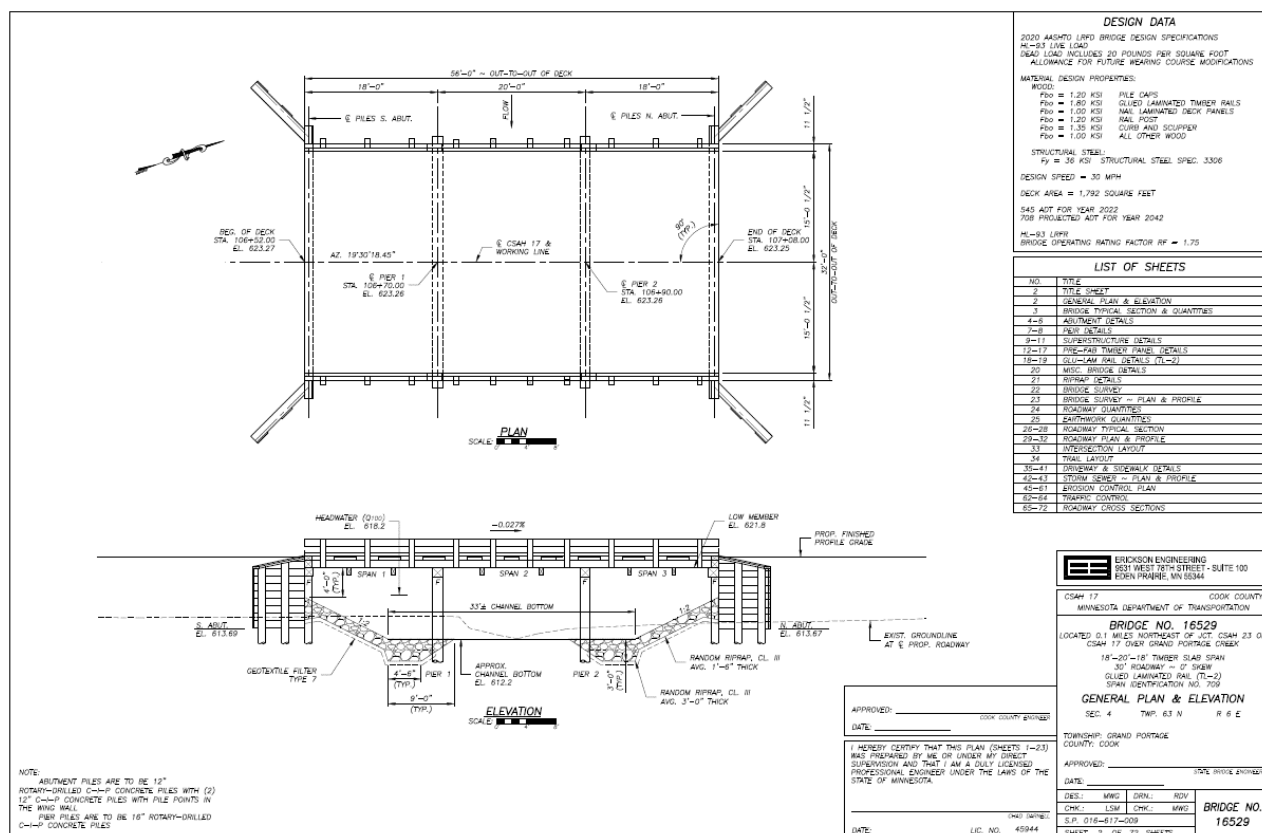


Figure 3. Proposed Bridge Design.

Other Alternatives Considered

The following alternate road realignment bridge designs were considered but dismissed (**Figure 4**):

Cemetery Alternative

This alternative would include a raised road corridor and bridge located approximately 650 feet upstream from the stone bridge. The route would connect Store Road on the west side to Mile Creek Road on the east side, just below the historic Holy Rosary Catholic Church and associated cemetery. A small portion of the cemetery is inside the park boundary. The alternative would take advantage of a topographic narrowing of the stream valley on the west side, but would exit onto Mile Creek Road at the foot of the cemetery hill. In addition to the cemetery's known graves, historic photographs indicate there are likely many unmarked graves in the area. Ethnographic evidence also suggests some internments dating to the 1700-1800s may exist in the slopes below the current cemetery boundary. Historic records and pedestrian surveys also suggest the presence of archeological features in the slopes below Holy Rosary Cemetery that may date to the 18th century fur trade and 19th century Grand Portage Village periods. These features have not been evaluated for NRHP eligibility. This alternative would also add a traffic crossing on the Grand Portage Trail, which would break up the hiking experience for park visitors. Ground disturbance adjacent to the cemetery, the potential for inadvertent discoveries and impacts to human remains or archeological resources, visual impacts, traffic noise, and impacts to visitor experience make this alternative unacceptable.

Powerline Corridor Alternative

This alternative would require a raised roadbed and bridge constructed within an existing powerline corridor, approximately 1,450 feet upstream and north of the historic stone bridge on Mile Creek Road. This option would intersect Store Road across the street from the Grand Portage community pow-wow grounds and cut across the edge of an allotment. This alternative would be constructed close to the home of a Band member and create a traffic hazard during the Grand Portage community's annual pow-wow celebration. Increased traffic in this area would also increase traffic noise and exhaust near the home and during the celebration. This alternative would also alter or relocate the community ball field, which is an area suspected to contain archeological deposits and possible burial sites. This alternative could have significant adverse impacts on unrecorded graves and archeological remains from the 18th and 19th centuries.

Alternate Bridge Designs

Alternative bridge designs were considered, including single-span and two-span options. These designs were dismissed due to engineering limitations on the length of each span and the overall length of the proposed stream crossing.



Figure 4. Preferred Alternative and Alternative Routes Considered but Dismissed.

3.0 SITE DESCRIPTION

MSA Professional Services, Inc. (MSA) staff conducted field delineation of wetlands and surface waters within the project area using available, offsite sources (including USGS topographic maps, National Wetland Inventory maps and LIDAR data) and field observations in July 2021. A Routine Onsite Determination was completed for this project. At each observations point (wetland and upland), a Wetland Determination Data Form – Northcentral and Northeast Region was completed. The following information was collected at each of the four observation points:

1. Determination of presence or absence of normal circumstances;
2. Observations of primary and secondary indicators of wetland hydrology;
3. An assessment of dominant hydrophytic and upland plant communities using current approved vegetation assessment methods;
4. The plant species indicator status, following categories outlined in Table 1 of the USACE 1987 Manual; and
5. Soil characteristics, such as color and texture and the presence or absence of redoximorphic features.

The wetland delineation performed by MSA identified a palustrine scrub shrub and forested wetland area on either side of the Grand Portage Creek riverine wetland just to the north of Mile Creek Road (Wetland Area 1). Wetland Area 1 has primary characteristics of a palustrine scrub/shrub wetland which is associated with the Grand Portage Creek riverine and palustrine wetland flood plain (**Figure 5**).



Figure 5: Wetland Delineation Map.

Plant species identified at one or both of the two wetland data points included Speckled Alder (*Alnus incana*, FACW), Mountain Maple (*Acer spicatum*, FACU), Tatarian Dogwood (*Cornus alba*, FACW), Ostrich Fern (*Matteuccia struthiopteris*, FAC), Meadow Horsetail (*Equisetum pratense*, FACW) and Purple Meadow-Rue (*Thalictrum dayscarpum*, FACW).

Wetland hydrology indicators observed at data point DP-1 included: High Water table (A2), Saturation (A3), Sparsely Vegetated Concave Surface (B8) Geomorphic Position (D2) and FAC Neutral Test (D5). Wetland hydrology indicators observed at data point DP-3 included: Saturation (A3), Water marks (B1) Water-stained leaves (B9) and FAC Neutral Test (D5).

The soil in the area of data point DP-1 was classified as a muck with a matrix color of 7.5YR3/2 from 0-10 inches bgs. Hydric soil indicator status 2 cm Muck (A10) was observed at DP-1. The soil in the area of data point DP-2 was classified as a muck with a matrix color of 7.5YR3/2 from 0-16 inches bgs.

3.1 EVALUATION OF WETLAND FUNCTIONS AND VALUES

As part of the technical review, a Minnesota Routine Assessment Method (MnRAM) evaluation of wetland was requested.

The MnRAM for Evaluating Wetland Functions was originally devised after the passage of the Wetland Conservation Act in 1991 as a practical assessment tool that would help local authorities make sound wetland management decisions as the assumed responsibility for regulating wetland impacts. The objective of a wetland management classification system and management standards is to achieve no net loss of wetland functions and values within the management area while providing flexibility for economic development that may require wetland impacts. Impacts to wetlands include not only direct impacts such as filling, draining, and excavating, but also indirect impacts from stormwater inputs, changes to local surface and ground water hydrology, and pollutant loading. The evaluation is conducted by applying field observations into a ranking spreadsheet to evaluate each of the twelve wetland function and value characteristics (ranging from: Low, Medium, High and Exceptional) to produce an overall value for the wetland. A MnRAM Assessment spreadsheet was completed for the evaluation of this wetland and is provided as **Appendix A**. Wetland Functional Values for the area proposed for impact fall within the Medium to High characterizations with no Low or Exceptional ratings. The following is a summary of the results of the MnRAM evaluation for the wetland on the property:

Vegetative Diversity/Integrity

The palustrine wetland vegetation characteristics are limited by a rocky substrate common to streams and watersheds of the North Shore area of Lake Superior. While vegetative diversity is limited by these area characteristics, vegetative quality is high in the area with limited invasive species within this wetland area. Nearby road features have introduced a manipulated setting toward the southern end of the wetland area, which does impact the overall functional rating for the wetland. The spreadsheet rating for vegetative diversity/integrity is considered Medium. The road realignment does not appear to pose a significant impact to the vegetative diversity/integrity of the area. A portion of the project area is already defined by moderate manipulation and bridge design will allow for maintaining the riverine regime.

Hydrology

The wetland is a palustrine system associated with the Grand Portage Creek watershed/flood plain. The wetland exists within a somewhat modified area with nearby impervious surfaces, but generally low-density development. The wetland is considered a discharge wetland based upon its topographic setting, surrounding soils, watershed land use and size. The spreadsheet rating for the hydrology is Medium. The limited footprint of wetland impacts created in the area of wetland immediately adjacent to Grand Portage Creek and already disturbed area near the existing road features lead to a conclusion that the proposed project will have minimal effect on area hydrology (project is a bridge span across the channelized feature).

Flood Attenuation

The wetland area is a flow through, riverine system with limited nearby features/characteristics affecting surface flow. Steep area/regional topography slopes to Lake Superior to the south, with water from adjacent uplands flowing towards the channelized flow within Grand Portage Creek. Because of its importance to providing a natural flow pattern for water within the watershed to enter Lake Superior, the flood attenuation rating for these riverine wetland features is characterized as High. A lower storage capacity, in its natural state, limits the characterization to High in comparison to Exceptional. The project design, including a bridge feature extending over the maintained stream bed have limited impacts to the flood attenuation capacity of the stream and associated wetlands.

Downstream Water Quality

The wetland is a riverine system associated with Grand Portage Creek. Grand Portage water quality standards identify Grand Portage Creek as a trout stream.

The spreadsheet rating for downstream water quality is High. The project is designed to maintain the hydrologic regime of Grand Portage Creek by bridging the features and appropriate abutment cladding is proposed to prevent project area erosion and downstream sediment loading. Further, the road realignment provides for limited additional impervious surface contributions not already existing due to the current local road system.

Wetland Water Quality

The wetland is 100 percent vegetated with very low evidence of accelerated sediment delivery in the form of sediment fans. Within 50 feet of the wetland there is limited upland buffer; manicured, primarily vegetated adjacent areas; with areas of sparse adjacent vegetation and impervious surfaces; and moderate slopes. There is moderate evidence of disturbance to wetland soils with some degradation near area road features. Upland soils in the area consist mainly of bouldery glacial till. The spreadsheet rating for wetland water quality is High.

Shoreline Wetlands

The wetland is a riverine system associated with Grand Portage Creek. The vegetative and substrate characteristics (rocky) result in relatively small contributions of shoreline protection from the types of vegetation and flow regime of the stream. The spreadsheet rating for shoreline protection is Medium and the minimal footprint of shoreline disturbance and bridging of the actual stream channel both limit impacts to the shoreline protection aspect of the wetland functions.

Characteristic Wildlife Habitat Structure

The wetland has no recognized rare wildlife or plants and the immediate project area is defined by common wildlife characteristics. Wildlife common to the Park include: white-tailed deer; grey wolf; black bear; brown bat; American beaver; southern red-backed vole; North American deer mouse; least chipmunk; red squirrel; mole shrew; Arctic shrew; and common shrew. There are also moderate barriers to wildlife in the area consisting of moderately traveled roads and low to moderate area development. The function is rated as Medium through MnRAM evaluation for the area, with low to moderate overall development.

Maintenance of Characteristic Fish Habitat

The wetland is a riverine system associated with Grand Portage Creek and trout stream. The wetlands are not associated with direct tributary or spring feeding conditions for the stream in the area of the proposed project. This functional value is rated High through the spreadsheet evaluation.

Grand Portage Creek and its associated wetlands provide significant habitat to a variety of macroinvertebrates and herpetofauna and is one of several local stream systems integral to a resurgence in coaster brook trout populations in the Lake Superior watershed.

Coaster brook trout are native to Lake Superior and a significant part of the local heritage. The reintroduction and management of coaster brook trout in Grand Portage Creek is part of the overall rehabilitation plan for coaster brook trout in Lake Superior (Newman et al, 2003). Currently, Grand Portage Creek harbors a healthy coaster brook trout population that was successfully reintroduced by a joint effort between the Grand Portage Band and the U.S. Fish and Wildlife Service (USFWS) (Witand et al, 2006).

Macroinvertebrate data for Grand Portage Creek, as provided by the Grand Portage Natural Resources Department, indicate a stable and improving condition. Macroinvertebrate habitat is highly affected by both low and high flow conditions. As proposed work to construct the new bridge crossing will not impact any areas below the ordinary high-water mark (i.e. all work will stay outside the stream bed features) and the amount of new impervious surface generating additional stormwater contributions is considered low, the effect on macroinvertebrate populations in the project area will not be significant. Best management practices to be employed during and after construction activities are further described in a following section of this Report.

Maintenance of Amphibian Habitat

The rocky substrate and narrow band of floodplain wetland lead to limited amphibian related habitat in the wetlands adjacent to the actual stream bed. The open water (stream portion) of the wetland area would rate as High for maintenance of amphibian habitat, but will remain undisturbed as part of the road realignment and bridge construction over Grand Portage Creek. The actual shoreland wetland features are considered Low for amphibian habitat maintenance.

Project plans and associated Best Management Practices (BMPs) call for construction activities to completely avoid working within or moving equipment through the Grand Portage Creek stream bed. Equipment can be staged to accomplish this BMP and will prevent direct impacts to the stream and its inhabitants.

Aesthetics/Recreational/Educational/Cultural

The wetland itself does not provide a unique or rare educational, cultural or recreational opportunity. It will be visible from vantage points, but is not located near a population center and

is not located on private property. The spreadsheet rating for aesthetics/recreation/educational/cultural function is Medium.

Commercial Use

The wetland has low potential for recreational use and has not been modified to sustain a commercial product (peat, wild rice harvest or similar commercial use). The spreadsheet rating for commercial use is Low.

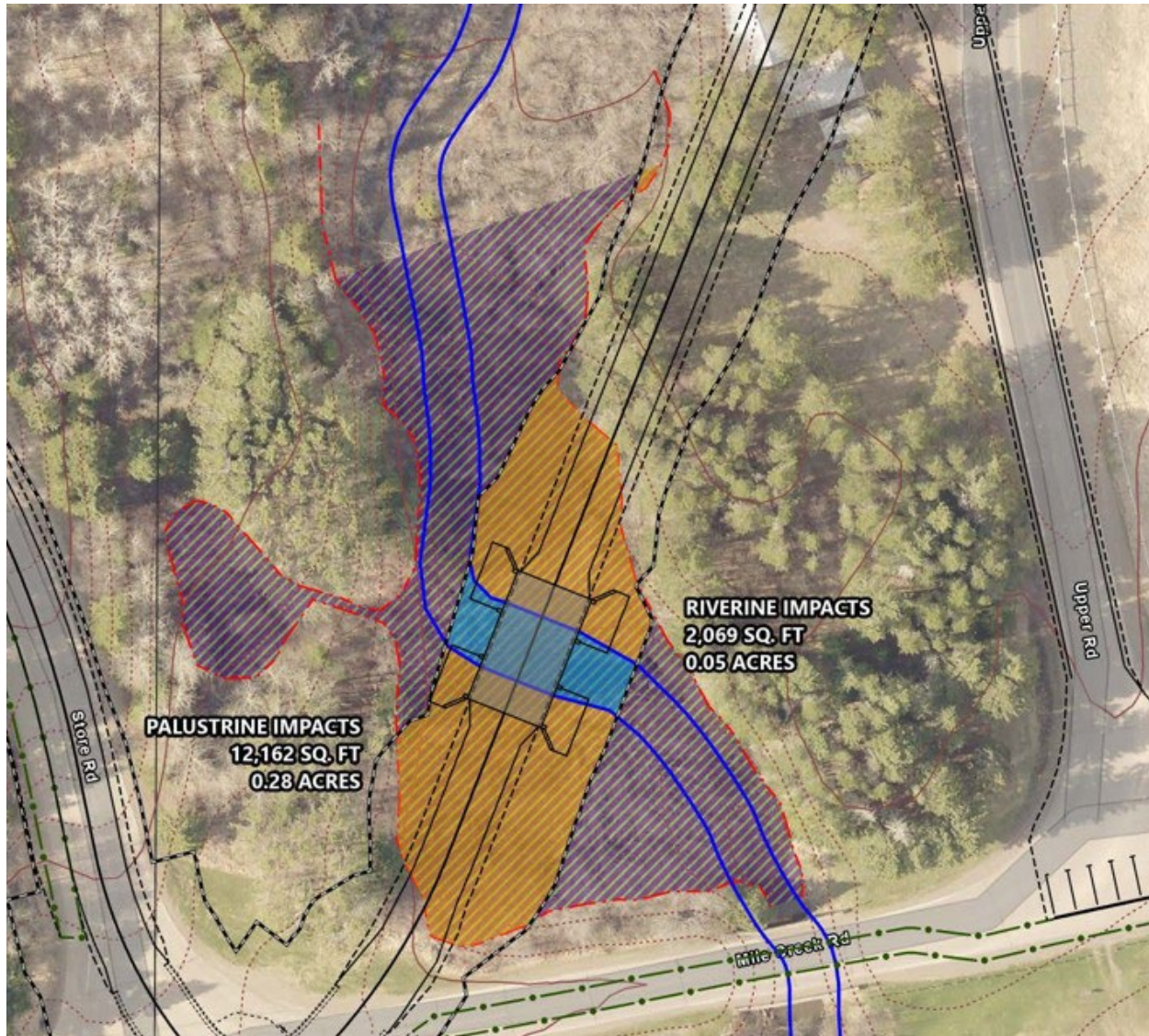


Figure 6: Areas of Wetland Impacts

3.2 IMPACTS TO PALUSTRINE AND RIVERINE WETLANDS

The Proposed Action would result in unavoidable impacts to 0.33 acres of wetlands identified within the project area during the July 2021 wetland delineation (see Figure 6 above). Expected impacts would include the construction of the new roadway realignment and bridge crossing within

the wetland area. The Proposed Action will result in a net increase of 0.30 acres of impervious surface, which is expected to cause a negligible increase in runoff.

3.3 IMPACTS TO THE STREAM ECOLOGY

The wetland area identified as part of this project is a riverine system existing within the flood plain for Grand Portage Creek. Flow is generally low to moderate with occasional flash conditions created by strong relief to the north and a broad watershed. The stream itself is rocky and provides limited environment for significant submerged aquatic vegetation.

The proposed project includes crossing the creek channel with a bridge span which limits impacts to the stream and its features (as compared to impacts which may be caused through the use of culverts or other closed features designed to allow water movement beneath surface features). The impacts to submerged aquatic vegetation from this proposed project are considered insignificant.

3.3 FLOODPLAINS WITHIN THE PROJECT AREA

The project area is not currently mapped by the Federal Emergency Management Agency (FEMA), however, the project area appears to be located within the Grand Portage Creek flood plain based on observations made during wetland delineation activities. Based on the nature of the project (roadway relocation and bridge construction), complete avoidance of the flood plain is not possible with a build alternative. The Proposed Action will result in a net increase of 0.30 acres of impervious surface, which is expected to cause a negligible increase in runoff.

During review of the bridge design and a selected 3-span timber bridge, the backwater effect caused by the downstream, existing stone bridge was evaluated to determine its potential to affect the new bridge and possible consequences for the stream system during unusual storm events. Hydraulic modeling show stage increases of <0.1 feet for both the 100-year and 500-year events and the low member elevation for the bridge is 2.3 feet higher than the 100-year design stage. While backwater flooding may occur due to the restrictive downstream crossing, modelling shows that the effect on the new bridge would be negligible.

3.4 MITIGATIVE MEASURES

In compliance with National Park Service Procedural Manual #77-1: Wetland Protection, Appendix 2: Best Management Practices and Conditions for Proposed Actions with the Potential to Have Adverse Impacts on Wetlands, the following practices will be implemented during the proposed bridge construction project over Grand Portage Creek.

3.4.1 Effects on Hydrology and Fluvial Processes

To limit effects on site hydrology and fluvial processes, the project is designed as a bridge crossing with abutments constructed and placed outside the banks of Grand Portage Creek. No work shall occur within the stream bed of the creek. Equipment will be staged on either side of the stream and no equipment will physically cross the creek during the construction activities.

3.4.2. Effects on Fauna

The bridge system will provide for unaltered movement, migration reproduction and health of coaster brook trout populations inhabiting the creek at the times of the year (fall) or other aquatic or terrestrial fauna.

3.4.3 Water Quality Protection and Certification

Water quality protection and certification shall comply with the requirements of the Grand Portage Band of Chippewa Water Resources Ordinance. Spill prevention and control measures will be employed to prevent or control spills of fuels, lubricants or contaminants from entering Grand Portage Creek or adjacent wetlands. Such actions will include on-site availability of spill containment and absorbents and appropriate management and training to implement response/clean-up actions via a spill response plan.

3.4.4 Erosion and Siltation Controls

Erosion and siltation controls will be maintained during construction, and all exposed soil or fill material will be permanently stabilized following Minnesota Department of Transportation (MnDOT) construction standards. Exposed soils with slopes of 1:3 or steeper will have temporary erosion control or permanent cover placed within seven days once the area is not actively being worked. To reduce sediment tracking during site work, the construction entrance will be stabilized with a vehicle tracking pad.

Following the completion of site work and spreading of topsoil, permanent vegetation will be established with either certified native seed mixes or with reused existing topsoil salvaged from the work site. after topsoil is spread. Any vehicle tracking pads installed to prevent sediment tracking from the site shall be removed and the area restored after site work has been completed.

3.4.5 Proper Maintenance

In accordance with MnDOT 2573 and 2575, all erosion and sediment control devices will be routinely inspected and logged at least once every seven days and within 24 hours of any 1/2-inch rain event. Upon inspection, all nonfunctional devices will be repaired, replaced or cleaned as necessary.

3.4.6 Heavy Equipment Use

Heavy equipment will be staged to complete work from either side of Grand Portage Creek. No heavy equipment will cross the stream bed as part of this project. Further, only wetland areas which will be filled and are proposed for impact and replacement will be impacted. Work areas and erosion control BMPs will be placed to provide clear boundaries to the work zone and effectively protect the adjacent wetlands from sediment delivery or direct impacts from equipment.

3.4.7 Stockpiling Material

All excavated materials will be stockpiled in upland, rather than wetland, areas. If any stockpile is to remain in place for more than three days, sediment and erosion control devices/methods shall be used. Silt fence will be placed around any material stockpiles to prevent runoff to Grand Portage Creek and adjacent wetlands.

3.4.8 Removal of Stockpiles and Other Temporary Disturbances During Construction

Care will be taken to avoid impacts to wetland areas which are not proposed for impact and replacement. Any unintentional disturbances to soil, hydrology or native vegetation communities which occur during construction activities will be restored to pre-existing conditions as soon as practicable.

3.4.9 Topsoil Storage and Re-use

Existing topsoil will be salvaged, stored onsite and reused as practicable for restoration efforts. Storage and reuse will be completed as quickly as possible to prevent loss of seed and root viability, loss of organic matter and degradation of the soil microbial community.

3.4.10 Native Plants

Certified native seed mixes will be used to re-establish vegetation within the work area following completion of the bridge construction and stabilization of side slopes, ditches and shoulder areas. Seed mixes shall comply with NPS policies and guidance for use and be appropriate for the areas in which they are being used.

3.4.11 Boardwalk Elevations

No boardwalks are being constructed as part of this project. The bridge decking is a sufficient distance (elevation) to provide adequate clearance and daylighting to allow for vegetation growth in the underlying stream bed. Vegetation in the Grand Portage Creek stream bed is limited due to the rocky nature of the channel.

3.4.12 Wild and Scenic Rivers

Grand Portage Creek is not a State or Federally designated Wild and Scenic River.

3.4.13 Coastal Zone Management

This project exists within the Coastal Management Zone for Lake Superior. Project-related stormwater/erosion control measures are reflective of work being completed in this ecologically sensitive area.

3.4.14 Endangered Species

No threatened or endangered species were identified during wetland delineation activities. While not listed, the coaster brook trout and its spawning habitat are of special consideration for this project and no disturbance to the stream bed will occur.

3.4.15 Historic Properties

The bridge construction project is being completed to alleviate heavy vehicle traffic over the existing historic stone bridge. The project is designed to be consistent with the long-term goals and plans for Grand Portage National Monument.

4.0 JUSTIFICATION FOR USE OF WETLANDS

The purpose of the Proposed Action is to reduce the current hazard caused by a blind curve on CSAH 17, eliminate safety concerns and traffic and plowing impacts to an existing historic bridge, and enhance pedestrian access. The Proposed Action is required to improve safety and protect park cultural resources.

5.0 MITIGATIVE ACTIONS

Planned mitigative action for the project area includes invasive species prevention measures in and around the identified wetland areas.

The following mitigative measures will be taken to reduce the potential impacts of invasive species during construction work within the project area:

- Revegetation of all disturbed areas will occur in accordance with the revegetation plan in Appendix A of the EA, using native seed or mature transplants.
- A black fruited hawthorn inventory was conducted to document the number and location of these plants in the project area and determine their suitability for transplanting. No individuals young enough to be transplanted were found (B. Seitz, personal communication, December 12, 2022). Live, nursery grown plants will be installed post-construction in suitable habitat. Care will be taken to ensure the population is stable and the plants can continue to regenerate (see Revegetation Plan, Appendix A of the EA).
- All imported material including topsoil, gabions, rivet mattresses, or rip rap will be weed free.

The following revegetation goals were listed in Appendix A of the EA:

- Reestablish all ethnobotanically significant plant communities/species that occurred in the Limit of Disturbance
- Control invasive plant introduction and movement through the salvage of topsoil, exposed mineral soil, and contaminated heavy equipment used in construction.
- Mitigate the impacts to rare plant species.
- Maintain the natural landscape.
- Maintain the park vegetation diversity by using locally sourced seed of native species and outplanting nursery-grown shrubs started from locally sourced seed.
- Contain point-source pollution by properly storing topsoil.
- Minimize soil erosion using native vegetation.

Non-native and invasive Species Control will be executed by the NPS Great Lakes Invasive Plant Management Team, based out of St. Croix Falls, MN. Focus will be placed on pre-construction kill of all undesired species and post-construction kill of reed canary grass.

The compensation for wetland impacts will be completed following two mechanisms consistent with State and Federal requirements. To meet National Park Service requirements for on-site mitigation, approximately 5.4 acres of wetland-dominated land will be restored to native conditions through invasive species removal (**Figure 6**). The invasive species removal plan mitigation strategy results in a nearly 20:1 ratio for the restoration of the nearby wetland area. In order to meet State and Federal (USACE) replacement requirements which include in-place and in-kind stipulations, State Roadbank Wetland credits will be acquired through the Joint Application Permit process at a 1:1 ratio.



Figure 7: Wetland Mitigation Area

6.0 CONCLUSION

The proposed roadway realignment along Mile Creek Road/County State Aid Highway 17 (CSAH 17) and construction of a new bridge across Grand Portage Creek would improve park safety and visitor access. Based on review of alternatives, there does not appear to be a practicable alternative that would result in zero wetland impacts.

The Proposed Action would impact approximately 0.33 acres of wetlands. These wetland impacts mitigation will be consistent with Grand Portage Band Water Quality Standards, the NPS and USACE policies. To meet National Park Service requirements for on-site mitigation, approximately 5.4 acres of wetland-dominated land will be restored to native conditions through invasive species removal (Figure 6). The invasive species removal plan mitigation strategy results in a nearly 17:1 ratio for the restoration of the nearby wetland area. In order to meet State and Federal (USACE) replacement requirements which include in-place and in-kind stipulations, State Roadbank Wetland credits will be acquired through the Joint Application Permit process at a 1:1 ratio.

Mitigation and compliance with regulations and policies to prevent additional wetland or water quality impacts will be observed during and after the completion of construction activities. Based on proposed wetland restoration and compensation, no net loss of wetlands will occur, therefore, MSA finds this project to be consistent with the policies and procedures of NPS Director's Order #77-1 (Protection of Wetlands) and Executive Order 11990.

7.0 REFERENCES

National Park Service. 2016. National Park Service Procedural Manual #77-1: Wetland Protection.

Minnesota Department of Natural Resources. 2022. Wetlands. [Wetlands | Minnesota DNR \(state.mn.us\)](https://www.dnr.state.mn.us/wetlands/). Accessed December 16, 2022.

Newman, L.E. 2000. The Grand Portage project: a successful model for the reintroduction of Lake Superior coaster brook trout populations. Pages 149-154 in D. Schill, S. Moore, P. Byorth, and B. Hamre, editors. Wild Trout VII: Management in the New Millennium: Are We Ready? Wild Trout Symposium, Yellowstone National Park, October 2000. Available at <http://www.wildtroutsymposium.com/proceedings-7.pdf>.

Wiland, L., S.M. Moore, and L. Hewitt. 2006. The coaster challenge: restoring a native brook trout fishery to Lake Superior. Trout Unlimited, Arlington, Virginia. Available at <http://www.tu.org/atf/cf/%7B0D18ECB7-7347-445B-A38E-65B282BBBD8A%7D/CoasterChallenge1.pdf>

APPENDIX A

MnRAM Site Assessment Report

MnRAM Site Assessment Report

Portage Creek

Cook County, MN

Wetland ID: 1, Township 4, Section 63, Range 6 East.

Cook County, Minnesota Corps Bank Service Area #1

Assessment Purpose: Planning

A site visit was made to this wetland on 6/10/2022 by Jeff Anderson. Site conditions were Normal. This wetland is estimated to cover 0.76 acres.

This report reflects conditions on the ground at the date of the assessment and, unless noted or implicit in the standard questions, does not reflect speculation on the future or past conditions.

This wetland is located in or near the city of Grand Portage, Minnesota.

General Features

Hydrogeomorphology

The maximum water depth at this site is variable due to seasonal changes with spring runoff and high precipitation events which is controlled from Grand Portage Creek..

As a Floodplain wetland, this site is outside waterbody banks. As such, it likely receives water on an irregular basis depending on water flows.

This wetland has been drained or altered 0% from its original size of 0 acres.

Soils

No soils were observed on the NRCS Soil Survey Database.

Soils onsite observed were sandy soils.

Vegetation and Upland Buffer

The extent of vegetation in this wetland is about 75 percent and the naturalized buffer width averages 50 feet. Vegetated buffers around wetlands provide multiple benefits including wildlife habitat, erosion protection, and a reduction in surface water runoff.

This buffer not only provides an excellent buffer for wetland water quality, it also serves as an important resources for wildlife habitat.

As a shoreline wetland, this site has the potential to protect from erosion and provide spawning and nursery habitat for fish and wildlife. Wetlands located in areas with strong currents and wave action have the greatest potential for protecting shoreline. Shorelines composed of sandy or erodible soils will benefit the most from shoreline wetland protection.

Special Features

There were no special features observed at the site at the time of this assessment

Vegetative Communities

The following plant communities were observed:

(See Appendix A for details on the Dominant Species per plant community)

Shrub-carr Type 6, PSS1. This community had a vegetative index of moderate and comprised 100 percent of the entire area.

Functional Ratings

<i>Function</i>	<i>Rating</i>	<i>Comment</i>
Vegetative Diversity	High	High-functioning vegetative communities reflect the presence of diverse, native wetland species and a lack of non-native or invasive species.
Additional stormwater treatment needs	Moderate	Sediment removal would improve the ability of this site to maintain water quality.
Maintenance of Hydrologic Regime	Moderate	There has been some degree of human alteration of the wetland hydrology, either by outlet control or by altering immediate watershed conditions. However, the wetland retains some of the hydrologic regime similar to the original wetland type, either in part of the wetland or overall to some extent. Because of the interference (whether active or inadvertant), some characteristic vegetative communities have likely been affected, as also have the functions of flood attenuation, water quality and groundwater interaction.
Flood/Stormwater/Attenuation	Moderate	The wetland provides some flood storage and/or flood wave attenuation. It may have either an altered or unrestricted outlet, disturbed wetland soils, thin or little emergent vegetation (with channels) or it may be situated high in a watershed with a low proportion of impervious surfaces, moderate runoff volumes, loamy upland soils, and one or more other wetlands present within the subwatershed.

Downstream Water Quality	High	Portage Creek drains directly into Lake Superior with a high water quality.
Maintenance of Wetland Water Quality	Moderate	Wetland water quality is average. Sediment removal from incoming water would benefit the site. Also consider reducing the amount of stormwater directed at the site. Sustaining a diverse wetland may require additional control over upland land use and the buffer.
Shoreline Protection	Moderate	This fringe site provides some protection against erosive action. Reducing the amount of buffer that is manicured would further protect the adjacent water resource, as would increasing the buffer width.
Maintenance of Characteristic Wildlife Habitat Structure	Moderate	The site provides good habitat and is relatively accessible to wildlife.
Maintenance of Characteristic Fish Habitat	Moderate	Permanently flooded but isolated wetlands can support native populations of minnows and some isolated deep marshes have intermittent populations of sunfish and northern pike after flood events. Poor water quality, due to runoff and insufficient buffer and vegetation, can affect the sustainability of fish populations.
Maintenance of Characteristic Amphibian Habitat	Moderate	Predatory fish are always present and winter habitat unsuitable as site often freezes to the bottom. High inputs of untreated stormwater or unfiltered runoff contribute to poor water quality and reproductive conditions.
Aesthetics/Recreation /Education/Cultural	Moderate	Wetlands is visible from roadway and stream is used as a recreation destination such as hiking. .
Wetland restoration potential	Not Applicable	Because restoration would affect the overall stream.
Wetland Sensitivity to Stormwater and Urban Development	Moderate	This wetland is moderately sensitive to stormwater from spring runoff and high precipitation events.

Appendix A: Dominant Species By Plant Community

	Wetland Type	Plant Community	Dominant Species	Percent Cover
PSS1	Type 6	Shrub-carr	Speckled Alder	>25-50%
			Ostridge Fern	>10-<40%
			Meadow Horsetail	>10-<20%
			White Dogwood	>10-<20%
			Purple Meadow Rue	>10-20%

	Date	Wetland name / ID 1	Wetland name / ID	Wetland name / ID	Wetland name / ID														
	Special Features (from list, p.2--enter letter/s)	-	-	-	-														
#1	Community Number (circle each community which represents at least 10% of the wetland)	(Type 6); (PSS;1, 6; B, C)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B														
#2 & #3	~ Describe each community type individually below ~		~ Describe each community type individually below ~																
Plant Community #1	Community Type (Shrub Swamp)	8A Alder Thicket	-	-	-														
	Community Proportion (% of total)	40%																	
	Dominant Vegetation / Cover Class	<i>Alnus incana</i>																	
	Invasive/exotic Vegetation / Cover Class	0																	
	Community Quality (E, H, M, L)	H 3	0	0	0														
Plant Community #2	Community Type (wet meadow, marsh)	8A Alder Thicket	-	-	-														
	Community Proportion (% of total)	20%																	
	Dominant Vegetation / Cover Class	<i>Cornus alba</i>																	
	Invasive/exotic Vegetation / Cover Class	0																	
	Community Quality (E, H, M, L)	H 3	0	0	0														
Plant Community #3	Community Type (wet meadow, marsh)	8A Alder Thicket	-	-	-														
	Community Proportion (% of total)	10%	D6																
	Dominant Vegetation / Cover Class	<i>Matteuccia struthiopteris</i>																	
	Invasive/exotic Vegetation / Cover Class	0																	
	Community Quality (E, H, M, L)	H 3	0	0	0														
Plant Community #4*	Community Type (wet meadow, marsh)	8A Alder Thicket	-	-	-														
	Community Proportion (% of total)	30%																	
	Dominant Vegetation / Cover Class	<i>Equisetum pratense</i> <i>thalictrum dayscarpum</i>																	
	Invasive/exotic Vegetation / Cover Class																		
	Community Quality (E, H, M, L)	H 3	0	0	0														
	Circular 39 Types (primary <TAB> others)																		
	Cowardin Types																		
	Photo ID																		
	Highest rated community veg. div./integ:	3.0	0 -	0 -	0 -														
	Average vegetative diversity/integrity:	3.00	- -	- -	- -														
	Weighted Average veg. diversity/integrity:		### #VALUE!	0.00 -	0.00 -														
#4	Listed, rare, special plant species?	n N	Y N	Y N	Y N														
#5	Rare community or habitat?	n N	Y N	Y N	Y N														
#6	Pre-European-settlement conditions?	n N	Y N	Y N	Y N														
Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]																			
<table border="1"> <thead> <tr> <th>Cover Class</th> <th>Class Range</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0 - 3%</td> </tr> <tr> <td>2</td> <td>3 - 10%</td> </tr> <tr> <td>3</td> <td>10 - 25%</td> </tr> <tr> <td>4</td> <td>25 - 50%</td> </tr> <tr> <td>5</td> <td>50 - 75%</td> </tr> <tr> <td>6</td> <td>75 - 100%</td> </tr> </tbody> </table>						Cover Class	Class Range	1	0 - 3%	2	3 - 10%	3	10 - 25%	4	25 - 50%	5	50 - 75%	6	75 - 100%
Cover Class	Class Range																		
1	0 - 3%																		
2	3 - 10%																		
3	10 - 25%																		
4	25 - 50%																		
5	50 - 75%																		
6	75 - 100%																		

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

Italic questions are answered via GIS analyses or other methods in-office

MnRAM #	Date:	Wet ID _____1_____	Wet ID _____	Wet ID _____	Wet ID _____
Question Description	Rating	Rating	Rating	Rating	Rating
7 Hydrogeomorphology and Topography (circle one)	Riverine, Palustrine	Depressional/Isolated, Depress'l/Flow-through, Depress'l/Tributary, Riverine, Lacustrine, Peatland, Floodplain, Slope, Other	Depressional/Isolated, Depress'l/Flow-through, Depress'l/Tributary, Riverine, Lacustrine, Peatland, Floodplain, Slope, Other	Depressional/Isolated, Depress'l/Flow-through, Depress'l/Tributary, Riverine, Lacustrine, Peatland, Floodplain, Slope, Other	Depressional/Isolated, Depress'l/Flow-through, Depress'l/Tributary, Riverine, Lacustrine, Peatland, Floodplain, Slope, Other
8 Maximum Water Depth (inches) : % inundation	2:75%	:	:	:	:
9 Local Watershed Area--immediate drainage (acres)					
10 Estimated size of existing wetland (acres)	0.76				
11 SOILS: Upland/Wetland (survey classification + site)	N/A				
12 Outlet characteristics for flood retention	A	A B C N/A	A B C N/A	A B C N/A	A B C N/A
13 Outlet characteristics for hydrologic regime	A	A B C N/A	A B C N/A	A B C N/A	A B C N/A
14 Dominant upland land use (within 500 ft)	A	A B C	A B C	A B C	A B C
15 Soil condition (wetland)	A	A B C	A B C	A B C	A B C
16 Vegetation (% cover)	75 %	%	%	%	%
17 Emerg. veg. flood resistance	C	A B C N/A	A B C N/A	A B C N/A	A B C N/A
18 Sediment delivery	C	A B C	A B C	A B C	A B C
19 Upland soils (based on soil group)	B	A B C	A B C	A B C	A B C
20 Stormwater runoff pretreatment & detention	B	A B C	A B C	A B C	A B C
21 Subwatershed wetland density	B	A B C	A B C	A B C	A B C
22 Channels/sheet flow	B	A B C	A B C	A B C	A B C
23 Adjacent naturalized buffer, average width (feet)	10 feet	feet	feet	feet	feet
24 Adjacent area management (to 50 ft.) (% of each, minimum 20%)	Full 80%	Full Manicured Bare . % . % . %	Full Manicured Bare . % . % . %	Full Manicured Bare . % . % . %	Full Manicured Bare . % . % . %
25 Adjacent area diversity and structure (to 50 ft.) (% percent of each)	Native 100%	Native Mixed Sparse . % . % . %	Native Mixed Sparse . % . % . %	Native Mixed Sparse . % . % . %	Native Mixed Sparse . % . % . %
26 Upland area slope (to 50 ft.) (% in each category)	Moderate 5%	Gentle Moderate Steep . % . % . %	Gentle Moderate Steep . % . % . %	Gentle Moderate Steep . % . % . %	Gentle Moderate Steep . % . % . %
27 Downstream sensitivity/WQ protection	B	A B C	A B C	A B C	A B C
28 Nutrient loading	C	A B C	A B C	A B C	A B C
29 Shoreline wetland	N	Y N	Y N	Y N	Y N
30 Shoreline - rooted vegetation (% cover)	%	%	%	%	%
31 Shoreline - wetland in-water width (in feet, average)	ft	ft	ft	ft	ft
32 Shoreline - emergent veg. erosion resistance	C	A B C	A B C	A B C	A B C
33 Shoreline - erosion potential	C	A B C	A B C	A B C	A B C
34 Shoreline - bank protection/upslope veg.	C	A B C	A B C	A B C	A B C
35 Rare Wildlife	N	Y N	Y N	Y N	Y N
36 Scare/Rare/S1/S2 local community	N	Y N	Y N	Y N	Y N
37 Vegetation interspersed cover (see diagram 1)	6	1 2 3 4 5 6 7 8 N/A	1 2 3 4 5 6 7 8 N/A	1 2 3 4 5 6 7 8 N/A	1 2 3 4 5 6 7 8 N/A
38 Veg. community interspersed (see diagram 2)	2	1 2 3 N/A	1 2 3 N/A	1 2 3 N/A	1 2 3 N/A
39 Wetland detritus	B	A B C N/A	A B C N/A	A B C N/A	A B C N/A
40 Wetland interspersed on landscape	B	A B C	A B C	A B C	A B C
41 Wildlife barriers	B	A B C	A B C	A B C	A B C
42 Amph. breeding potential - hydroperiod	Adequate	Adequate / Inadequate	Adequate / Inadequate	Adequate / Inadequate	Adequate / Inadequate
43 Amphibian breeding potential - fish presence	C	A B C	A B C	A B C	A B C
44 Amphibian & reptile overwintering habitat	B	A B C N/A	A B C N/A	A B C N/A	A B C N/A
45 Wildlife species (list)					
46 Fish habitat quality	N/A	E A B C N/A	E A B C N/A	E A B C N/A	E A B C N/A
47 Fish species (list)					
48 Unique/rare educ./cultural/rec. opportunity	N	Y N	Y N	Y N	Y N
49 Wetland visibility	B	A B C	A B C	A B C	A B C
50 Proximity to population	Y	Y N	Y N	Y N	Y N
51 Public ownership	B	A B C	A B C	A B C	A B C
52 Public access	A	A B C	A B C	A B C	A B C
53 Human influence on wetland	B	A B C	A B C	A B C	A B C
54 Human influence on viewshed	B	A B C	A B C	A B C	A B C
55 Spatial buffer	B	A B C	A B C	A B C	A B C
56 Recreational activity potential	B	A B C	A B C	A B C	A B C
57 Commercial crop--hydrologic impact	N/A	A B C N/A	A B C N/A	A B C N/A	A B C N/A
58 GW - Wetland soils	D	R D	R D	R D	R D
59 GW - Subwatershed land use	D	R D	R D	R D	R D
60 GW - Wetland size and soil group	D	R D	R D	R D	R D
61 GW - Wetland hydroperiod	D	R D	R D	R D	R D
62 GW - Inlet/Outlet configuration	D	R D	R D	R D	R D
63 GW - Surrounding upland topographic relief	D	R D	R D	R D	R D
64 Restoration potential w/o flooding	N	Y N	Y N	Y N	Y N
65 Landowners affected by restoration	all public	all public 1 2 3+	all public 1 2 3+	all public 1 2 3+	all public 1 2 3+
66 A Existing wetland size (acres) [same as #10]	0.76	acres	acres	acres	acres
66 B Total wetland restoration size (acres)	0	acres	acres	acres	acres
66 C Potential new wetland area (acres)=B-A	0	acres	acres	acres	acres
67 Average width of naturalized upland buffer (potential)	5	feet	feet	feet	feet
68 Ease of potential restoration	C	A B C	A B C	A B C	A B C
69 Hydrologic alteration type	N/A	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling
70 Potential wetland type (Circ. 39)	6	1, 2, 3, 4, 5, 6, 7, 8	1, 2, 3, 4, 5, 6, 7, 8	1, 2, 3, 4, 5, 6, 7, 8	1, 2, 3, 4, 5, 6, 7, 8
71 Wetland sensitivity to stormwater	B	E A B C	E A B C	E A B C	E A B C
72 Additional stormwater treatment needs	B	A B C	A B C	A B C	A B C

MnRAM 3.2 Digital Worksheet, Side 2

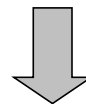
	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		0.00				
	TOTAL VEG Rating	0.6	Medium				
4	Listed, rare, special plant species?	N	next				
5	Rare community or habitat?	N	next				
6	Pre-European-settlement conditions?	N	next				
7	hydrogeo & topo		#N/A				
8	Water depth (inches)						
	Water depth (% inundation)						
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size	0.76					
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	A	1				
13	Outlet characteristics for hydrologic regime	B	0.5				
14	Dominant upland land use (within 500 ft)	B	0.5	0.5			
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	75%	M	0.5			
17	Emerg. veg. flood resistance	B	0.5				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	A	0.1				
20	Stormwater runoff pretreatment & detention	B	0.5	0.5			
21	Subwatershed wetland density	B	0.5				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	Medium	H	WQ	1	H	1
24	Adjacent Area Management: % Full	25%	0.25	3	0.525		
	adjacent area mgmt: % Manicured	50%	0.25				
	adjacent area mgmt: % Bare	25%	0.025				
25	Adjacent Area Diversity & Structure: % Native	75%	0.75	3	0.855		
	adjacent area diversity: % Mixed	20%	0.1				
	adjacent area diversity: % Sparse/Inv./Exotic	5%	0.005				
26	Adjacent Area Slope: % Gentle	20%	0.2	3	0.58		
	adjacent area slope: % Moderate	75%	0.375				
	adjacent area slope: % Steep	5%	0.005				
27	Downstream sensitivity/WQ protection	B	0.5				
28	Nutrient loading	A	1				
29	Shoreline wetland?	Y	Y				
30	Rooted shoreline vegetation (%cover)	25%	0.5				
31	Wetland in-water width (in feet, average)	20	0.5				
32	Emergent vegetation erosion resistance	C	0.1				
33	Shoreline erosion potential	C	0.1	1			
34	Bank protection/upslope veg.	B	0.5				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersed cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersed (see diagram 2)	2	M	0.5			0
39	Wetland detritus	B	0.5				
40	Wetland interspersed on landscape	B	0.5	0.5			
41	Wildlife barriers	B	0.5				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	A	1				
45	Wildlife species (list)						
46	Fish habitat quality	B	0.5				
47	Fish species (list)	Trout, salmon					
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	A	1				
50	Proximity to population	Y	1				
51	Public ownership	A	1				
52	Public access	B	0.5				
53	Human influence on wetland	C	0.1				
54	Human influence on viewshed	B	0.5				
55	Spatial buffer	B	0.5				
56	Recreational activity potential	B	0.5				
57	Commercial crop--hydrologic impact	N/A	N/A				

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Highest-rated:
3

Enter data starting here. Yellow boxes are used in calculations.

Scroll down to answer more questions and see formula calculations



Additional questions	58	GW - Wetland soils	R	R or D	0.1
	59	GW - Subwatershed land use	D	R or D	1
	60	GW - Wetland size and soil group	R	R or D	0.1
	61	GW - Wetland hydroperiod	D	R or D	1
	62	GW - Inlet/Outlet configuration	R	R or D	0.1
	63	GW - Surrounding upland topographic relief	R	R or D	0.1
	64	Restoration potential w/o flooding	Y	Y or N	2.4
	65	Landowners affected by restoration	A	E a b c	1
	66A	Existing wetland size (acres) [from #10]	0.76	__ acres	
	66B	Total wetland restoration size (acres)	0.76	__ acres	0.1
	66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: 0%
	67	Average width of naturalized upland buffer (poten	50	__ feet	value: 0.1
	68	Likelihood of restoration success	C	a b c	0.1
	69	Hydrologic alteration type	Diversion	Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
	70	Potential wetland type (Circ. 39)	7	1, 2, 3, 4, 5, 6, 7, 8	
	71	Wetland sensitivity to stormwater	A	E a b c	
	72	Additional stormwater treatment needs	A	a b c	

Functional Rating Summaries	Function Name	Raw score	Final Rating	Rating Category
	Vegetative Diversity/Integrity		0.60	Med
	Hydrology - Characteristic		0.63	Med
	Flood Attenuation		0.69	High
	Water Quality--Downstream		0.67	High
	Water Quality--Wetland		0.70	High
	Shoreline Protection		0.34	Med
	Characteristic Wildlife Habitat Structure	0.55	0.55	Med
	Maintenance of Characteristic Fish Habitat	0.67	0.67	High
	Maintenance of Characteristic Amphibian Habitat		0.75	High
	Aesthetics/Recreation/Education/Cultural	0.53	0.53	Med
	Commercial use		N/A	N/A
	Special Features listing:		-	
	Groundwater Interaction		indeterminate GW source	
	Groundwater Functional Index		no special indicators	
	Restoration Potential (draft formula)		0.47	Med
	Stormwater Sensitivity (not active)			

Formula shown to the right.

0