*September 2021 version; Contains greenhouse gas quantification and assessment as well as adaptation and resiliency information*

# DRAFT, Revised
# Environmental Assessment Worksheet

This most recent Environmental Assessment Worksheet (EAW) form and guidance documents are available at the Environmental Quality Board's website at**:** https://www.eqb.state.mn.us**/** The EAW formprovides information about a proposed project's potential environmental effects, and also used as the basis for scoping an Environmental Impact Statement. Guidance documents provide additional detail and links to resources for completing the EAW form.

**Cumulative potential effects** can either be addressed under each applicable EAW Item or can be addressed collectively under EAW Item 21.

**Note to reviewers:** Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for anEIS.

1. **Project title: Perch Lake Habitat Restoration**

2. **Proposer:** MN Department of Natural Resources

   Contact person: Melissa Sjolund
   Title: Lake Superior & St. Louis River Prog. Supervisor
   Address: 525 Lake Ave South #415
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   Phone: 218-302-3245
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3. **RGU** MN Department of Natural Resources

   Contact person: Sara Mielke
   Title: EAW Project Manager
   Address: 500 Lafayette Road
   City, State, ZIP: St. Paul, MN 55155
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4. **Reason for EAW Preparation: (check one)**

   | Required: | Discretionary: |
   |---|---|
   | ☐ EIS Scoping | ☐ Citizen petition |
   | X Mandatory EAW | ☐ RGU discretion |
   | | ☐ Proposer initiated |

   If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):

   *M.R.*, part 4410.4300 subpart 27, item A: Wetlands and Public Waters

5. **Project Location:**

   - County**:** St. Louis County, Minnesota
   - City/Township: Duluth, Minnesota
   - PLS Location (¼, ¼, Section, Township, Range): N ½ of Section 9, T48N, R15W
   - Watershed (81 major watershed scale): St. Louis River AUID: 04010201-501
   - GPS Coordinates: 46°39'37.0"N 92°15'10.5"W
   - Tax Parcel Number: The following parcels are included in the review area:

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| Parcel Identification Number | Owner Name |
|---|---|
| 010-1760-00070 | ST OF MN C278 L35 |
| 010-1760-00090 | STATE OF MINNESOTA |
| 010-1760-00080 | STATE OF MINNESOTA |
| 010-1760-00010 | ST OF MN C278 L35 |
| 010-2730-01110 | CITY OF DULUTH |
| 010-2730-01120 | STATE OF MINNESOTA |

There are no tax parcel numbers associated with the lake.

**At a minimum attach each of the following to the EAW:**

- County map showing the general location of the project;

  See **Figure 1.** Site Location Map

- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable); and

  See **Figure 2.** USGS 24K Topographic Map – Esko & West Duluth 2019

- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.
  Additional Figures

  **Figure 3.** Restoration Units Map
  **Figure 4.** Generalized Land Cover Types
  **Figure 5**. Soil Survey & Prime Farmland
  **Figure 6.** National Wetlands Inventory Map
  **Figure 7**. Public Waters Inventory Map
  **Figure 8**. County Well Index & Wellhead Protection Area
  **Figure 9**. Zoning & Setback Map
  **Figure 10**. Proposed Haul Route Map

  Attachments

  **Attachment A.** Perch Lake Habitat Restoration - Plan Sheets
  **Attachment B**. Archaeological Survey Area Map
  **Attachment C**. Natural Heritage Review
  **Attachment D**. Wetland Delineation Report

- List of data sources, models, and other resources (from the Item-by-Item Guidance: *Climate Adaptation and Resilience* or other) used for information about current Minnesota climate trends and how climate change is anticipated to affect the general location of the project during the life of the project (as detailed below in item 7. Climate Adaptation and Resilience).

  EPA Emission Factors for Greenhouse Gas Inventories
  EPA, 40 CFR Part 98 – Mandatory Greenhouse Gas Reporting
  Minnesota Climate Adaption Partnership

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**6. Project Description:**

a. Provide the brief project summary to be published in the *EQB Monitor*, (approximately 50 words).

The Perch Lake Habitat Restoration Project would accomplish habitat objectives and address loss of fish and wildlife habitat within the St. Louis River Area of Concern. The Project would address existing habitat impairments by improving hydrologic connectivity and water quality to enhance habitat conditions for fish and wildlife.

b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities

The Perch Lake Habitat Restoration Project (Project) would restore aquatic and wetland habitat in the St. Louis River estuary (SLRE), a waterbody designated by the Minnesota Department of Natural Resources (MNDNR) as a resource of Outstanding Biological Significance and located within the St. Louis River Area of Concern (SLRAOC). The SLRAOC is one of 43 Great Lakes Areas of Concern in 1987 by the International Joint Commission under the "Great Lakes Water Quality Annex I and Great Lakes Restoration Initiative Action Plan II Priority – Cleaning up a Great Lakes Areas of Concern" agreement between the United States and Canada. Historical actions such as improper municipal and industrial waste disposal and unchecked land use practices, including dredging and filling of aquatic habitat and damaging logging practices, contributed to the complex set of issues facing the SLRAOC at the time it was listed.

The Perch Lake Project has been identified as an action required to mitigate legacy environmental degradation, restore beneficial uses, and delist the SLRAOC (as described more comprehensively in Section 6D, 6E, and 6F).

Construction is anticipated to begin in 2022 and is targeted to be complete by close of 2024. Construction would be completed during the ice-free season. Each activity (sediment excavation and culvert installation – described below) would take one (1) construction season. The Project would include:

- installation of a 16 x 12-foot pre-cast concrete box culvert under Minnesota Trunk Highway 23 (TH 23),
- installation of a box culvert under the adjacent trail (pedestrian/bicycle) causeway,
- excavation of up to 95,000 cubic yards (CY) of accumulated organic deposits, and
- reuse/disposal of excavated riverbed material.

The existing 4 x 2-foot culvert under TH 23 would be retained.

The Perch Lake Restoration Project would be accomplished through the following Project components, herein called Restoration Units (RU), which are shown on **Figure 3**:

**RU1. Deep Water.** Improvements to create fish overwintering habitat and increase circulation to maintain higher dissolved oxygen levels. Actions include:

- Excavate accumulated sediment and organic deposits to establish an 8 to 10 foot deep "hole" to improve over-wintering conditions. This action includes beneficial reuse of excavated material.
- Narrow the transition zone between deep water and coastal wetland to minimize conditions that develop anoxia.

**RU2. Coastal Wetland**. Habitat improvements to restore/enhance coastal wetland habitat and improve dissolved oxygen through atmospheric mixing. Actions include:

- Excavate to remove accumulated organic deposits and restore wetland with 2-to-4-foot water depth.
- Remove and manage invasive narrow-leaf and hybrid cattail mats and other emergent aquatic plants.

**RU3. Spawning Habitat**. Habitat improvements to improve fish spawning and rearing conditions within Perch Lake as well as within the Perch Lake Slough (area between TH 23 and the trail causeway). Actions include:

- Place sand and gravel substrate at appropriate depth zones.
- Remove dense cattail vegetation and muck substrate to improve dissolved oxygen.

**RU4. Hemi-Marsh**. Restoration of open water/emergent vegetation interspersion to improve marsh bird nesting and rearing conditions. Actions include:

- Remove existing cattail mat in select locations
- Excavate potholes and connecting channels
- Seed native plants and control invasive plants in buffer zone around potholes/channels

**RU5. Aquatic Organism Passage.** Reduce aquatic organism passage barriers and improve circulation to maintain higher dissolved oxygen levels.

- Culvert installations on TH 23 and trail causeway to improve water exchange and aquatic organism passage at all river/lake levels.

## Detailed Project Description

Perch Lake is an approximately 28-acre shallow backwater/sheltered bay of the St. Louis River located near the Fond du Lac neighborhood of Duluth, Minnesota. The average depth of the open water area is approximately 4.3 feet, the maximum depth is approximately 6.2 feet, and the minimum depth is 2.1 feet. The study area includes surrounding wetlands and adjacent highway/trail causeway, for a total of 39.7 acres (**Figure 2** and **Figure 3**).

Perch Lake is not ecologically a lake feature, rather it is a backwater slough that was historically connected to the St. Louis River year-round. Perch Lake and the St. Louis River were artificially separated following the construction of a railroad grade (now the trail causeway) in the 1840s and again by the road grade, which is now TH 23. A single, 48 x 24-inch culvert is the only connectivity between the two water bodies at present day. Over time, organic and sediment deposits have accumulated in Perch Lake, reducing the depth of water, and promoting encroachment of vegetation mats dominated by narrow-leaf cattail and eliminating over-winter fish habitats. The restricted hydraulic connections prohibit aquatic organism passage at mean- to low-water levels and reduce mixing resulting in low dissolved oxygen concentrations. MNDNR has determined reduced dissolved oxygen concentrations within the lake are caused by restricted hydrologic exchange with the main channel, reduced atmospheric mixing, and increased biological oxygen demand resulting from the

organic accumulation.

## Project Components

**RU1. Deep Water** restoration unit has the purpose of 1) revitalizing the connection between Perch Lake and the St. Louis River and 2) restoring optimum bathymetry. Optimum bathymetry refers to creating depths that support desired habitat conditions that have been impacted elsewhere in the SLRE, not necessarily recreating a historic condition. The following actions are intended to meet the RU1 purpose:

### A. Open Water Excavation

Restricted hydraulic connectivity between Perch Lake and the St. Louis River has resulted in the accumulation of organic sediment within the lake and a reduction in dissolved oxygen levels.

Perch Lake has uncharacteristically low dissolved oxygen concentrations when compared to other sheltered bays in the St. Louis River Estuary (for example, North Bay and Radio Tower Bay located downstream from Perch Lake). Furthermore, Perch Lake sediments have both higher organic content and lower bed dissolved oxygen than North Bay and Radio Tower Bay.

Low dissolved oxygen concentrations may result from restricted exchange between river and lake water, unusually high oxygen demand by decomposition of organic sediments, and high levels of nutrients available in the water column (either from algae growth, or runoff from watershed). Dissolved oxygen concentrations less than 2.0 mg/L are considered stressful to most fish species; concentrations less than 1 mg/L are considered lethal with prolonged exposure (Davis 1975; Doudoroff and Shumway 1970). The U.S. Environmental Protection Agency (EPA) recommends a minimum concentration of dissolved oxygen to maintain good fish populations is 5.0 mg/liter (USEPA 1976). Decreased survival of embryos and larvae for common species in Perch Lake have been documented below this threshold, including Northern Pike, Bluegill, Smallmouth Bass (Peterka and Kent 1976), and Largemouth Bass (Dudley and Eipper 1975).

Excavation of up to 95,000 CY of uncontaminated accumulated sediment and organic deposits is planned to restore optimum bathymetry by deepening and enlarging the open water community and creating over-wintering habitat for fish. The restoration would result in approximately 4.5 acres of deep-water habitat, ranging from 8 to 10 feet deep. The installed culverts would match the maximum depth of the open water/overwinter area. Dissolved oxygen would be enhanced by the improved river circulation and mineral (clay/sand) substrate, which has less biological oxygen demand (BOD) than the existing organic substrate.

This Project component includes reuse/disposal of the excavated material. The material has been tested and meets criteria to be reused on land for residential/recreational use or for in-water placement. Management of excavated material would include partial dewatering and storage in a location protected by a berm, with no direct connection to a water resource. A potential disposal site for material is the former industrial site that previously housed the Atlas Cement Plant and U. S. Steel's Duluth Works, approximately 3.3 miles away. The anticipated haul route between the Project location and excavated material storage location is TH 23 to Commonwealth Avenue (see **Figure 10**).

### B. Transition Zone

This component would narrow the transition zone between the open water and coastal wetland to between 4-8 feet in depth. Objectives for this Project component are:

a. To reduce the area susceptible to high biological oxygen demand (BOD) due to high algal growth and low photosynthesis.
b. To minimize the footprint of the transition zone that reduce opportunities for establishment of non-native plants such as narrow-leaf cattail (Typha angustifolia) and hybrid cattail (Typha x glauca), and Common reed (*Phragmites australis)*. *Phragmites* can survive in a wide range of environmental conditions but prefers the wetland-upland interface. *Phragmites* is difficult to control, and once established can persist in water up to 6-feet deep.

**RU2. Coastal Wetland** restoration unit restores coastal wetland habitat through excavation and vegetation management. The Project would excavate to create an area 2-4 feet in depth surrounding the open water portion of the lake. Excavation would target areas with the thickest accumulation of organic deposits. This would improve dissolved oxygen through atmospheric mixing and reduce opportunities for invasive plant establishment. Improved dissolved oxygen in the coastal wetland is desired to improve water quality. Improved circulation with the river may also reduce algal concentrations in this unit and contribute to improved water quality. This would also allow increased Lake Superior seiche (i.e., temporary oscillation in lake level) influence in the wetland, helping to restore hydrologic features typical of the critically imperiled estuarine marsh habitat.

Dissolved oxygen would be maintained by targeting less than 50% floating and/or emergent vegetation in the coastal wetland to facilitate atmospheric mixing. To maintain this ratio, additional vegetation removal may be conducted. Permit requirements would dictate the disposal of any removed plant material.

**RU3. Spawning Habitat** restoration unit would improve fish spawning and rearing conditions in two locations, a shoreline area of appropriate depth within Perch Lake and the Perch Lake Slough between the south side of TH 23 and the trail causeway.

A. Placement of sand and gravel

Placement of sand and gravel would provide a suitable spawning substrate following removal of current organic deposits and dense invasive cattail stands. This action would enhance this important habitat type within Perch Lake and contribute to maintaining healthy fish populations in the SLRAOC by restoring ecological function that has been permanently lost elsewhere in the SLRAOC.

B. Removal of dense cattail vegetation and organic substrate

The removal of dense cattail vegetation and organic, mucky substrate, in combination with culvert installation, would allow for the exchange of waters between Perch Lake and the St. Louis River. The improved circulation of water would increase dissolved oxygen. The improvements to circulation are anticipated to result in a positive impact on spawning fish (for example Northern Pike, Largemouth Bass, Bullhead, and others), which require adequate dissolved oxygen for development during their egg and larval periods. Although there are differences in resiliency to oxygen deficiency among fish species, in general low dissolved oxygen can result in reduced fecundity of spawning adults, delayed and/or abnormal development of eggs and larvae, and mortality.

**RU 4. Hemi-marsh**. Hemi-marsh restoration is intended to create a complex mosaic habitat ideal for marsh bird nesting and rearing conditions. This restoration unit would restore imperiled habitat by increasing shoreline complexity, with benefits primarily for marsh birds.

The existing cattail mats would be excavated in select locations to create a connecting series of potholes to provide shoreline complexity and greater interspersion. Potholes with irregular shapes would be excavated to about 0.1-0.25 acres in size with a minimum depth of three (3) feet. Narrower

connecting channels would be excavated between the potholes (see Sheets CN101-CN103 and CN501 in **Attachment A**). Excavated cattails and soils would be placed in "habitat mounds" at least 15-feet distant from the potholes.

A 10-foot buffer zone would be established around each hemi-marsh excavation area and habitat mound, in which the contractor would seed native plants. This buffer zone would also have ongoing maintenance for management/control of invasive plants.

**RU5. Aquatic Organism Passage.** This Project component involves culvert installation for increased hydraulic capacity and fish and aquatic organism passage at all lake levels. Particularly in low water conditions, the current 4 x 2-foot culvert can be a barrier to aquatic organism passage. A single 16 x 12-foot pre-cast concrete box culvert would be installed through the TH 23 causeway on the easterly side of Perch Lake. The culvert would be approximately 144 feet in length. The existing culvert would remain in place on the westerly side. A culvert of matching capacity to the 16 x 12-foot culvert would be installed through the parallel trail causeway. This action would revitalize the connection between Perch Lake and the St. Louis River by increasing flow volume and reducing residence time in Perch Lake. The culverts would provide aquatic connectivity between Perch Lake and the St. Louis River and improve access to overwintering habitat for fish.

c. Project magnitude:

| Description | Number |
|---|---|
| Total Project Acreage | Total footprint: 39.7 acres<br>Area above OHWL (602.1 IGLD 85): 17.2 acres |
| Linear project length | N/A |
| Number and type of residential units | N/A |
| Residential building area (in square feet) | N/A |
| Commercial building area (in square feet) | N/A |
| Industrial building area (in square feet) | N/A |
| Institutional building area (in square feet) | N/A |
| Other uses – specify (in square feet) | Deep Water: 4.5 ac<br>Coastal Wetland &Transition Zone: 15.8 ac<br>Spawning Habitat: 1.3 ac<br>Hemi-Marsh: 5.6 ac<br>Temporary Construction Staging/Access[1]: 1.0 ac<br>Other (roadway/disturbed and wetlands outside work area): 11.5 ac |
| Structure height(s) | N/A |

[1] Construction Staging/Access use is temporary; post-construction this would be restored to Coastal Wetland use.

d. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

Purpose:

The Project has five (5) primary purposes, outlined in the table below along with associated objectives. These purposes support the removal of Beneficial Use Impairment (BUI) 9, Loss of Fish and Wildlife Habitat from the St. Louis River Area of Concern (AOC), which are addressed in Remedial Action Plans (RAP) prepared by the AOC Coordinator Team (the Fond du Lac Band of Lake Superior

Chippewa, the MNDNR, the Minnesota Pollution Control Agency, and the Wisconsin Department of Natural Resources). Versions of the RAP are available on the MPCA's website.[1] The Stage I Remedial Action Plan (MPCA and WDNR 1992) determined that nine of 14 possible BUIs existed in the SLRAOC. The AOC Coordinator Team is responsible for documenting the status and progress of BUI removal through the completion of management actions. The Project addresses physical habitat loss as identified in the Remedial Action Plan (Fond du Lac, MNDNR, MPCA, WDNR 2020).

| **Purpose** | **Objectives** |
|---|---|
| Revitalize the connection between Perch Lake and the St. Louis River | Provide year-round fish passage |
| | Increase volume of water entering and leaving Perch Lake during high and low flow |
| | Decrease residence time of Perch Lake water during high and low flow |
| Restore optimum bathymetry | Remove accumulated organic matter and sediment |
| | Increase depth diversity |
| | Establish deep off-channel overwintering habitat |
| | Connect to existing St. Louis River bathymetry |
| | Promote resiliency |
| Restore/enhance critically imperiled coastal wetland habitat | Increase seiche influence |
| | Connect isolated wetland to main river channel |
| | Promote diverse native vegetation, including wild rice |
| | Increase shoreline complexity, benefiting marsh birds |
| Improve Perch Lake water quality | Maintain dissolved oxygen (DO) levels that support year-round fish use |
| Positively impact human health | Increase recreation opportunity by providing a pathway for boaters |
| | Maintain terrestrial fishing access |
| | Improve aesthetics |
| | Restore sites to a condition that supports and complements City of Duluth current and future recreational uses |

Need:

The need for the Project is to address system-wide impairments within the SLRAOC. Throughout the estuary, shallow sheltered bay habitat has been physically lost to development and degraded by past industrial uses. The 2020 Remedial Action Plan (Fond du Lac, MNDNR, MPCA, WDNR 2020) identifies a historic loss of 3,400 acres of wetland and aquatic habitat in the estuary. Specific to Perch Lake, the site is lower diversity and contains more pollution tolerant species compared to nearby bays with more hydrologic connection (Cardno 2018). Perch Lake has uncharacteristically low dissolved oxygen concentrations when compared to other sheltered bays in the St. Louis River Estuary, impairing fish

[1] St. Louis River Area of Concern resources | Minnesota Pollution Control Agency (state.mn.us)

habitat.

Beneficiaries:
Project beneficiaries are fish species and marsh birds whose habitats would be improved through the Project actions. The Project would benefit human health and enjoyment through improved fishing access, birding, and aesthetics. Therefore, the people of Minnesota and Wisconsin, and specifically the citizens of Duluth, Minnesota would also be the beneficiaries of the habitat improvements achieved at Perch Lake and throughout the SLRAOC.

e. Are future stages of this development including development on any other property planned or likely to happen? X Yes ☐ No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.
The Remedial Action Plan identifies the proposed Perch Lake Project as Action No. 9.09, and it is part of the SLRAOC restoration work targeting BUI 9. **Table 3** below lists required remediation and restoration work associated with the SLRAOC process. These activities collectively comprise the 1,700-acre habitat restoration target associated with BUI 9: Loss of Fish and Wildlife Habitat.

**Table 3.** Ongoing and future phases of SLRAOC remediation and restoration work (current as of December 2020).

| RAP Action No. | State | Project Name | Project Description | Status |
|---|---|---|---|---|
| 9.01 | MN | Spirit Lake | Remediate contaminated sediments and restore emergent wetlands. | In progress |
| 9.08 | MN | Mud Lake | Remediate contaminated sediments, establish more vital hydrologic connection, and restore wetland habitat including wild rice; establish deep water. | In progress |
| 9.12 | WI | Crawford Creek Habitat Restoration | Remediate contaminated sediments and restore habitat within stream, wetland, and floodplain. | In progress |
| 9.14 | WI | Pickle Pond | Habitat enhancement and sediment remediation as warranted by remediation to restoration evaluation. | In progress |

f. Is this project a subsequent stage of an earlier project? X Yes ☐ No
If yes, briefly describe the past development, timeline and any past environmental review.
Actions required to remove nine BUIs and delist the SLRAOC are described and updated annually in the SLRAOC RAP (Fond du Lac, MPCA, MNDNR, and WDNR 2020). To date, 19 SLRAOC remediation and restoration projects have been completed, or are under construction (see **Table 4**). These activities will contribute significantly to the 1,700-acre habitat restoration target associated with BUI 9: Loss of Fish and Wildlife Habitat.

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**Table 4.** Completed and under construction phases of SLRAOC remediation and restoration work (current as of December 2020).

| RAP Action No. | State | Project Name | Project Description | Status |
|---|---|---|---|---|
| 9.02 | MN | 40th Avenue West R2R Project | Remediate contaminated sediments and restore habitat. | Under Construction |
| 9.03 | MN | Radio Tower Bay | Remove non-native material and restore optimum bathymetry. | Complete |
| 9.04 | MN | Grassy Point Restoration | Remove non-native material and restore optimum bathymetry. | Complete |
| 9.05 | MN | 21st Avenue West R2R Project | Remediate contaminated sediments and restore habitat. | Complete |
| 9.06 | MN | Kingsbury Bay Restoration | Restore wetland complex at the mouth of Kingsbury Creek to pre-1961 condition. | Complete |
| 9.07 | MN | Knowlton Creek Watershed Project | Reduce runoff and sediment transport within watershed and restore cold-water stream habitat. | Complete |
| 9.10 | MN | Chambers Grove Park | Soften and restore shoreline in City of Duluth park. Create sturgeon spawning habitat in river channel. | Complete |
| 9.11 | WI | Allouez Bay | Vegetation restoration including removal of AIS and re-establishment of wild rice. Upstream sediment control outreach. | Under Construction |
| 9.15 | WI | Wisconsin Point Dune Restoration | Development of appropriate public access infrastructure to protect dunes and conduct dune restoration and invasive species control. | Complete |
| 9.16 | WI | Hog Island | Nesting area enhancement, habitat restoration. | Complete |
| 9.17 | WI | Fish Passage Culverts | Replace or retrofit a minimum of two perched culverts to allow for fish passage and other aquatic organism passage. | Under Construction |
| 9.21 | MN/WI | Wild Rice Plan and Associated Restoration Sites | Develop a plan that identifies the high priority restoration sites and provides a process for restoring those sites. Restoration of 275 acres of wild rice. | Under Construction |

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**7. Climate Adaptation and Resilience:**

a. Describe the climate trends in the general location of the project (see guidance: *Climate Adaptation and Resilience*) and how climate change is anticipated to affect that location during the life of the project.

General projections in Northeastern Minnesota predict that the climate will be warmer and wetter at the end of the century as compared with the historical period of 1981-2010[2]. The Project actions including providing improved hydrologic connection should improve resilience of Perch Lake to changing precipitation events.

b. For each Resource Category in the table below: Describe how the project's proposed activities and how the project's design will interact with those climate trends. Describe proposed adaptations to address the project effects identified.

| **Resource Category** | **Applicable Climate Trends (as identified above in 7.a.)** | **Project Information** | **Adaptations** |
|---|---|---|---|
| Project Design | Climate trends for the general location predict a wetter climate with more frequent and higher intensity storm events. | Increasing culvert connections by adding a 12 x 16-ft box culvert to the existing 2x4-ft culvert. | No aspects of Project design are anticipated to negatively impact climate considerations. |
| Land Use | Climate trends for the general location predict a wetter climate with more frequent and higher intensity storm events. | New culvert would improve the hydrologic connection to the St. Louis River. | Improved connection is intended to improve resilience of Perch Lake to changing precipitation and event intensity. |
| Water Resources | Climate trends for the general location predict a wetter climate with more frequent and higher intensity storm events. | Change in wetland type. | The MNDNR considers this Project to be an overall enhancement of the wetland and aquatic resource in alignment with the Remedial Action Plan. |
| Contamination/ Hazardous Materials/Wastes | Climate trends for the general location predict a wetter climate with more frequent and higher intensity storm events. | Climate change predictions are not anticipated to influence the potential environmental effects of generation/use/ storage of hazardous waste and materials. | Not Applicable |
| Fish, wildlife, plant communities, | Climate trends for the general location predict a wetter climate with more | Climate trends may result in changes in the distribution of | The Project is anticipated to result in an overall net benefit for fish and wildlife |

[2] Minnesota Climate Projections | Climate (umn.edu)

| Resource Category | Applicable Climate Trends (as identified above in 7.a.) | Project Information | Adaptations |
|---|---|---|---|
| and sensitive ecological resources (rare features) | frequent and higher intensity storm events. | fish, wildlife, and plants. Warmer climate trends may result in more available habitat for invasive species. Risks include the transport and spread of invasive species to the Project area and disruption of fish and wildlife. | resources. Efforts to mitigate the transport and spread of invasive species would be implemented (and are discussed in detail in Section 14). |

**8. Cover types:**

Estimate the acreage of the site with each of the following cover types before and after development:

| Cover Types | Before (acres) | After (acres) |
|---|---|---|
| Wetlands and shallow lakes (<2 meters deep) | 34.1 | 29.6 |
| Deep lakes (>2 meters deep) [1] | 0.0 | 4.5 |
| Wooded/forest[2] | 0.7 | 0.7 |
| Rivers ~~and~~/streams | 0.0 | 0.0 |
| Brush/Grassland | 0.0 | 0.0 |
| Cropland | 0.0 | 0.0 |
| Livestock rangeland/pastureland | 0.0 | 0.0 |
| Lawn/landscaping | 0.0 | 0.0 |
| Green infrastructure TOTAL (from table below*) | 0.0 | 0.0 |
| Impervious surface | 2.1 | 2.1 |
| Stormwater Pond (wet sedimentation basin) | 0.0 | 0.0 |
| Other (describe) | 2.8 | 2.8 |
| **TOTAL** | **39.7** | **39.7** |

[1] This cover type estimate uses the deep water definition of >6.2 feet (2m) in depth. Areas shallower than 6.2 feet are shallow open water wetlands included in the wetlands cover type, although they may be below the OHWL.

[2] The contractor would clear some trees for staging/access; however, this would not be permanent and this cover type would be allowed to regenerate.

| Green Infrastructure* | Before (acreage) | After (acreage) |
|---|---|---|
| Constructed infiltration systems (infiltration basins/infiltration trenches/ rainwater gardens/bioretention areas without underdrains/swales with impermeable check dams) | 0.0 | 0.0 |
| Constructed tree trenches and tree boxes | 0.0 | 0.0 |
| Constructed wetlands | 0.0 | 0.0 |
| Constructed green roofs | 0.0 | 0.0 |
| Constructed permeable pavements | 0.0 | 0.0 |
| Other (describe) | 0.0 | 0.0 |
| **TOTAL*** | 0.0 | 0.0 |

| **Trees** | **Percent** | **Number** |
|---|---|---|
| Percent tree canopy removed or number of mature trees removed during development | | 23 |
| Number of new trees planted[1] | | 0 |

[1] The contractor would clear 23 trees for staging/access; however, this would not be permanent and this cover type would be allowed to regenerate.

**9. Permits and approvals required**

List all known local, state and federal permits, approvals, certifications and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. *All of these final decisions are prohibiteduntil all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

The MLT and MNDNR are consulting with local, state, and federal government units to determine all permits, approvals, and certifications associated with the proposed Project. Table 6 lists anticipated applications.

Table 6. Anticipated local, state, and federal applications

| Unit of Government | Type of Application | Status |
|---|---|---|
| City of Duluth | Special Use Permit for Construction | To be submitted |
| City of Duluth | Fill and Grading, Erosion & Sediment Control | To be submitted |
| City of Duluth | Temporary Access Agreement | To be submitted |
| City of Duluth | Shoreland Use | To be submitted |
| City of Duluth | MS4 Compliance Statement | To be submitted |

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| Unit of Government | Type of Application | Status |
|---|---|---|
| City of Duluth, MNDNR, FEMA | No Rise Certification and / or Letter of Map Revision | To be submitted, if needed |
| MNDNR | Aquatic Plant Management Permit | To be submitted, if needed |
| MNDNR | Public Waters Work Permit | To be submitted |
| MNDNR | Prohibited Invasive Species Permit | To be submitted |
| MNDNR | Lake Superior Coastal Zone federal consistency review letter | To be submitted |
| City of Duluth (LGU) | MN Wetland Conservation Act | To be submitted |
| MNSHPO | Section 106 Consultation - National Historic Preservation Act | To be submitted |
| MPCA | 401 Water Quality Certification | To be submitted, if needed; or included with NWP 27 approval |
| MPCA | National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Permit | To be submitted |
| MPCA | NPDES General Construction Stormwater Permit with a Stormwater Pollution Prevention Plan (SWPPP) | To be prepared. Submittal to MPCA is not anticipated (as this Project considered with other AOC projects planned for the same timeframe would be less than 50 acres above the OHWL) |
| USACE | CWA Section 10/404 Permit – anticipated Nationwide Permit 27 (NWP 27) | To be submitted |

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 10-20, or the RGU can address all cumulative potential effects in response to EAW Item No.21. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 21.

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**10. Land use:**

a. Describe:

i. Existing land use of the site as well as areas adjacent to and near the site, including parks and open space, cemeteries, trails, prime or unique farmlands.

The Project is in the upper portion of the St. Louis River Estuary (SLRE), near the Fond du Lac neighborhood of Duluth, Minnesota (**Figure 2**). The Project would take place in Perch Lake and the adjacent wetlands, and totals approximately 39.7 acres. The surrounding land use is low-density residential. There are several private residential parcels adjacent to the Project area. Land within the Project area is administered by the MNDNR, MnDOT, St. Louis County, or by the City of Duluth. The St. Louis River Water Trail extends along the main river channel in the reach adjacent to Perch Lake. The primary human use of Perch Lake is recreational fishing and scenic enjoyment. No prime or unique farmlands exist in the vicinity of the Project site.

ii. Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

St. Louis River Area of Concern Remedial Action Plan (RAP)

The SLRAOC Remedial Action Plan (RAP) is a comprehensive plan for delisting the SLRAOC through a series of action steps that address the BUIs designated for the estuary (Fond du Lac, MNDNR, MPCA, and WDNR 2020). The RAP details the actions necessary to remove each of the BUIs identified for the SLRAOC.

The RAP identifies Perch Lake as a restoration site associated with actions for delisting of BUI 9: Loss of Fish and Wildlife Habitat. The Project would rehabilitate hydrologically connected habitat to maintain a healthy fish population. The restoration Project at Perch Lake is Action 9.09 in the 2020 RAP document.

City of Duluth Comprehensive Land Use Plan

Duluth's Comprehensive Land Use Plan *Imagine Duluth 2035* (City of Duluth 2018) includes a geographic representation of the City's preferred land use scenario for 2035. It is an updated plan that puts people and natural places at its center, and shifts away from the auto- and industry-centric development of the past, which was represented in the City's 2006 comprehensive plan. The City of Duluth 2018 plan identifies the area surrounding Perch Lake as "low density neighborhood," which is consistent with the existing use and is compatible with the recreation and habitat goals and objectives for the lake itself.

iii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The Project is compatible with the following local zoning and overlay districts (**Figure 9**):

Floodplain:

In accordance with Duluth zoning regulations regarding floodplain ordinances, Article II, Section 51-16 states this Project is permitted under Rule a3, falling in the category of a wildlife and nature

preserve, fish hatcheries, and fishing areas.
The entirety of the Perch Lake Project Area is within a designated FEMA 100-year floodplain. High water surface elevations in Perch Lake are currently controlled by the St. Louis River water level, which in turn is driven by the Lake Superior water level. Post-construction, high water surface elevations would continue to be controlled by the Lake Superior water level. The additional capacity provided by the proposed culvert would reduce lag time for changes in water level, but would not change the high water level. The proposed Project would not increase the frequency, magnitude, or extent of flooding.

City of Duluth Zoning

The Project Area is currently zoned as Rural Residential 1 (RR-1) and Residential Traditional (R-1), which are described below. The Project Area is entirely within the Shoreland Management Zone overlay district (**Figure 9**). All nearby structures are currently compliant with the 50-foot setback requirement from the OHWL, and would continue to be compliant post-Project.
**Rural Residential (RR-1)** – The RR-1 district is established to accommodate large-lot, single-family detached residential uses, typically surrounded by significant open space, on lots of at least 5 acres each. This district encourages distinctive neighborhoods with a semi-rural character. Complimentary uses such as limited agriculture, small-scale institutional uses, parks, minor utilities, and certain temporary uses are allowed.
**Residential Traditional (R-1)** - The R-1 district is established to accommodate traditional neighborhoods of single-family detached residences, duplexes, and townhouses on moderately sized lots. This district is intended to be used primarily in established neighborhoods. Many of the dimensional standards in this district require development and redevelopment to be consistent with development patterns, building scale, and building location of nearby areas.
The objectives of the proposed Project are compatible with existing local land use and the City of Duluth Zoning. The proposed Project would not result in any changes to current zoning designations.

Lake Superior Coastal Zone

The Project is within the Lake Superior Coastal Zone under the jurisdiction of the Minnesota Lake Superior Coastal Program (MLSCP) as administered by the MNDNR. The Project is a federal action that has reasonably foreseeable effects on coastal uses or resources. It would be subject to the Federal Consistency Review. The MNDNR and federal agencies must follow the requirements of 15 Code of Federal Regulations (CFR) 930, Subpart C, which require a review of federal activities or federally funded projects to determine consistency, to the maximum extent practicable, with the enforceable policies of MLSCP.
The evaluation of federal consistency by MNDNR is a brief evaluation of the relationship of the proposed activity and its reasonably foreseeable coastal effects considered enforceable under the review. The review includes identifying whether federally approved state coastal policies are met, such as approved county shoreland ordinances and approved floodplain ordinances. The proposed Project is intended to be compatible with the terms of the review.

iv. If any critical facilities (i.e. facilities necessary for public health and safety, those storing hazardous materials, or those with housing occupants who may be insufficiently mobile) are proposed in floodplain areas and other areas identified as at risk for localized flooding, describe the risk potential considering changing precipitation and event intensity.

There are no known critical facilities proposed in floodplain areas and other areas identified as at risk for localized flooding.

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b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

The Perch Lake Habitat Restoration Project is compatible with all nearby land uses, local zoning ordinances and associated plans. The intended improvement of Perch Lake fish and wildlife habitat supports the recreational fishing uses, scenic qualities, and is compatible with residential use of the surrounding parcels. The Project would improve kayaking and canoeing along the St. Louis River Water Trail because it would open up previously unavailable access into Perch Lake from the main channel of the river.

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 10b above and any risk potential.

No incompatibility has been identified.

**11. Geology, soils and topography/land forms:**

a. Geology - Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

The site is located within the Glacial Lake Superior Plain Subsection of the Laurentian Mixed Forest Province, as described in accordance with the MNDNR Ecological Classification System (MNDNR 2003). Native soils are developed from lacustrine clays and sandy beaches of the ancient lakebed.
Based on the underlying geology, there are no areas within the Project that are susceptible to sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. No karst features are mapped within the proposed Project area.

b. Soils and topography - Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 12.b.ii.

In 2015, the USACE retained RTI Laboratories, Inc. (RTI) to perform sediment sampling at Perch Lake to assess sediment quality. Twelve (12) sediment samples were collected to a depth of 7-feet or until refusal. Sediment cores were primarily comprised of a layer of "black vegetative ooze / soft organic silt" followed by a layer of brown silty fine sand. The USACE undertook a second sampling effort in 2020, which included additional samples in Perch Lake and geotechnical evaluation of TH 23 (USACE 2021). Results of the 2020 sampling reached the conclusion that,

> *"…soils/sediments located within the Geotechnical Boring composite samples do not contain organic analyte contaminants that would present contaminant-related adverse impacts to sediment dwelling organisms. Soils/sediments from the area containing Geotechnical Boring composite samples meet requirements for inorganic*

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*and metal analyte concentrations set forth in MPCA. 2015. 'St. Louis River Area of Concern Quality Assurance Program Plan for Minnesota Based Projects' and are suitable for in-water beneficial reuse."*

Soils mapped within the Project area are listed in **Table 7** below. The locations of these map units and others near the Project area are shown on **Figure 5**. Open water areas of Perch Lake are not mapped.

**Table 7.** Mapped Soil Units within the Project Area

| Map Unit | Soil Series |
|---|---|
| 1026A | Udifluvents, loamy, 0 to 2% slopes, occasionally flooded |
| 1034A | Udifluvents and Fluvaquents, loamy, 0 to 2% slopes, rarely flooded |
| E24F | Miskoaki-Cuttre complex, 5 to 45% slopes |

The Project would include the excavation and disposal of up to 95,000 CY of uncontaminated material. As described in Item 12.b.ii, the contractor would use typical erosion and sediment control BMPs to prevent mobilization of this material into nearby water resources.

The Project area is a relatively small lake/embayment with minimal ongoing disturbance. The Project does not include terrestrial work on steep slopes nor in highly erodible soils. Some erosion happens in all natural systems and sediment is expected to continue to accumulate over time and may require future maintenance to maintain target water depths, roughly 25-50 years in the future.

- NOTE: For silica sand projects, the EAW must include a hydrogeologic investigation assessing the potential groundwater and surface water effects and geologic conditions that could create an increased risk of potentially significant effects on groundwater and surface water. Descriptions of water resources and potential effects from the project in EAW Item 12 must be consistent with the geology, soils and topography/land forms and potential effects described in EAW Item 11.

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**12. Water resources:**

a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

i. Surface water - lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, shoreland classification and floodway/floodplain, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include the presence of aquatic invasive species and the water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

The Project is located within Perch Lake, a DNR Public Waters Wetland (PWI 69-975W), and the St. Louis River, a DNR Public Watercourse (**Figure 7**). The Project area is approximately 15 miles upstream from the confluence of the St. Louis River and Lake Superior. Lake Superior (PWI 16-1) is designated as an outstanding resource value water.

Water Use Classifications

Perch Lake is an "unlisted surface water" and therefore is classified by the MPCA under Minn. R. 7050.0415 Subp. 4. as a Class 2B, 3C, 4A, 4B, 5, and 6 waterbody. The MPCA identified the applicable state classifications and the referenced water quality standards below:

Class 2B: Aquatic life and recreation (Aquatic life and recreation includes all waters of the state that support or may support aquatic biota, bathing, boating, or other recreational purposes and for which quality control is or may be necessary to protect aquatic or terrestrial life or their habitats or the public health, safety, or welfare.). The applicable WQ standards are defined in Minn. R. 7050.0222.

Class 3C: Industrial consumption (includes all waters of the state that are or may be used as a source of supply for industrial process or cooling water, or any other industrial or commercial purposes, and for which quality control is or may be necessary to protect the public health, safety, or welfare.). Class 3C also specifies the protection of cool and warm water sport fish, indigenous aquatic life, and wetlands. The applicable WQ standards are defined in Minn. R. 7050.0223.

Class 4A and 4B: Agriculture and wildlife(includes all waters of the state that are or may be used for any agricultural purposes, including stock watering and irrigation, or by waterfowl or other wildlife and for which quality control is or may be necessary to protect terrestrial life and its habitat or the public health, safety, or welfare). Class 4A also includes a sulfate limit of 10 mg/L for the protection of wild rice where it is present. Class 4A waters also include cold water sport fish (trout waters) and 4B waters include cool and warm water sport fish. The applicable WQ standards are defined in Minn. R. 7050.0220 and part 7050.0224.

Class 5: Aesthetic enjoyment and navigation (includes all waters of the state that are or may be used for any form of water transportation or navigation or fire prevention and for which quality control is or may be necessary to protect the public health, safety, or welfare). The applicable WQ standards are defined in Minn. R. 7050.0220 and part 7050.0225.

Class 6: Other uses and protection of border waters (includes all waters of the state that serve or may serve the uses in subparts 2 to 6 or any other beneficial uses not listed in this part, including without limitation any such uses in this or any other state, province, or nation of any waters flowing through

or originating in this state, and for which quality control is or may be necessary for the declared purposes in this part, to conform with the requirements of the legally constituted state or national agencies having jurisdiction over such waters, or for any other considerations the agency may deem proper). The applicable WQ standards are defined in Minn. R. 7050.0226.

List of MPCA/Clean Water Act (CWA) Impairments in the Project Area

The St. Louis River is listed as impaired on the MPCA/CWA Impaired Waters List. The Project is within the Mission Creek to Oliver Bridge reach and includes the St. Louis River impairments listed in **Table 8**.

**Table 8.** MPCA 2020 Impaired Waters List [Section 303(d) of the Clean Water Act]

| Reach Name | Reach Description | Year Added to List | Stream/River Segment ID | Affected Designated Use | Pollutant or Stressor |
|---|---|---|---|---|---|
| St Louis River | Mission Cr to Oliver Bridge | 2002 | 04010201-532 | Aquatic Consumption | DDT (Dichlorodiphenyl trichloroethane) |
| St Louis River | Mission Cr to Oliver Bridge | 2002 | 04010201-532 | Aquatic Consumption | Dieldrin |
| St Louis River | Mission Cr to Oliver Bridge | 2002 | 04010201-532 | Aquatic Consumption | Mercury in fish tissue |
| St Louis River | Mission Cr to Oliver Bridge | 2002 | 04010201-532 | Aquatic Consumption | Mercury in water column |
| St Louis River | Mission Cr to Oliver Bridge | 2006 | 04010201-532 | Aquatic Consumption | PCBs in fish tissue |

ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

The Project is within the waters of Perch Lake and the St. Louis River; depth to groundwater is not applicable. The Project site is not located in a wellhead protection area.

The Minnesota Department of Health County Well Index Online (CWI) database identifies wells onsite or nearby (**Figure 8**). Two (2) domestic use wells (No. 00274092 and 00407925) are located within 1,000 feet of Perch Lake along 121st Avenue West and Perch Lake Drive.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

i. Wastewater - For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal

wastewater infrastructure.

2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system. If septic systems are part of the project, describe the availability of septage disposal options within the region to handle the ongoing amounts generated as a result of the project. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity and amount with this discussion.

3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects.

The Project would produce no effluent with chemical characteristics to be considered wastewater. Perch Lake sediment would be either hydraulically or mechanically excavated. Excavated materials would be staged on site for partial dewatering.

The risk of the carrier water from Perch Lake containing chemical pollutants is low as sediments have had limited exposure to contaminants. Excavated materials would be loaded into lined dump trucks with an excavator. The material has been tested and passes criteria for re-use on land for residential/recreational use or for in-water placement (USACE 2021). The need for chemical water quality analysis would be evaluated during the permitting process.

ii. Stormwater - Describe changes in surface hydrology resulting from change of land cover. Describe the routes and receiving water bodies for runoff from the project site (major downstream water bodies as well as the immediate receiving waters). Discuss environmental effects from stormwater discharges on receiving waters post construction including how the project will affect runoff volume, discharge rate and change in pollutants.Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity and amount with this discussion. For projects requiring NPDES/SDS Construction Stormwater permit coverage, state the total number of acres that will be disturbed by the project and describe the stormwater pollution prevention plan (SWPPP), including specific best management practices to address soil erosion and sedimentation during and after project construction. Discuss permanent stormwater management plans, including methods of achieving volume reduction to restore or maintain the natural hydrology of the site using green infrastructure practices or other stormwater management practices. Identify any receiving waters that have construction-related water impairments orare classified as special as defined in the Construction Stormwater permit. Describe additional requirements for special and/or impaired waters.

The quality and quantity of stormwater runoff would not change following construction of the Perch Lake Project. Currently, the surrounding landscape has extensive natural cover and low gradient slopes which slows and filters overland flow. The Project footprint is mostly below the OHWL and would not affect the surrounding landscape. The Project is not anticipated to change the course, volume, or rate of stormwater runoff, however the improved connection between Perch Lake and the

St. Louis River may increase the capacity for Perch Lake to buffer against flooding due to spring runoff and large precipitation events.

During construction there is the potential for stormwater runoff effects near construction access points or the culvert installations. The MLT and MNDNR would obtain an NPDES/SDS Construction Stormwater General permit. The MLT and MNDNR, together with the construction contractor, would prepare a Stormwater Pollution Prevention Plan (SWPPP) to address the Best Management Practices (BMPs) necessary to manage, control, and/or treat stormwater runoff before it enters the St. Louis River. BMPs placed during construction would need to include redundant down gradient sediment controls if the Project must encroach the existing 50 ft. of the natural buffer to any of the surface waters or wetlands at the site. These BMPs would need to be located at the OHWL and would be in addition to any sediment control BMPs located below the OHWL of any part of the Project. The SWPPP must identify and address all disturbed areas above the existing OHWL and describe the proposed control structures needed to manage stormwater runoff from the site, including engineering designs for these structures in the construction plans.

The MLT and MNDNR would coordinate with MPCA construction stormwater staff to identify appropriate sediment controls for the Project, which would be incorporated into the plan set and specifications. EAW Item 12b.iv.b further describes BMPs that would be used to mitigate environmental effects to surface water from excavation activities.

The MLT and MNDNR would ensure that erosion is controlled, sedimentation is prevented, and adherence to all permit provisions. The MLT and MNDNR would conduct construction activities in a manner that would minimize soil erosion. Temporary erosion control measures would be installed before commencing construction, inspected, and maintained during construction, and removed when no longer necessary.

iii. Water appropriation - Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Discuss how the proposed water use is resilient in the event of changes in total precipitation, large precipitation events, drought, increased temperatures, variable surface water flows and elevations, and longer growing seasons. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation. Describe contingency plans should the appropriation volume increase beyond infrastructure capacity or water supply for the project diminish in quantity or quality, such as reuse of water, connections with another water source, or emergency connections.

No water appropriation is proposed as part of the Project.

iv. Surface Waters

a) Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical

modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed and identify those probable locations.

Wetland types described in the Project area are defined in accordance with the Circular 39 classification (Shaw and Fredine 1956) and *Wetland Plants and Plant Communities of Minnesota and Wisconsin* classification (Eggers and Reed 2014), and include shallow marsh (Type 3), shallow open water (Type 5), shrub-carr (Type 6), and hardwood swamp (Type 7). **Figure 6** shows wetlands in the Project area. The USACE delineated the wetland boundaries in the Project area in 2015 (USACE 2016) and again in 2021 revising the 2015 boundary to incorporate additional wetland area. **Attachment D** contains the wetland delineation report. SEH scientists provided wetland classifications in portions of the study area outside the wetland delineation limits; these were identified based on aerial photograph review and site visits.

**Table 8** below compares the approximate acreages of each wetland type before construction and after construction. Areas within the study limits that would not be altered by the Project are also included.

**Table 8.** Summary of pre- and post-construction wetland area.

| Habitat Type | Before (Acres) | After (Acres) |
|---|---|---|
| Shallow Marsh (Type 3) | 8.9 | 9.9 |
| Shallow Open Water (Type 5) | 21.0 | 16.5 |
| Shrub-Carr (Type 6) | 3.5 | 2.5 |
| Hardwood Swamp (Type 7) | 0.7 | 0.7 |
| Non-wetland Deep Water | 0.0 | 4.5 |
| **Total** | **34.1** | **34.1** |

The Project would convert 4.5 acres of wetland into non-wetland deep water habitat through the excavation of sediment. This loss of wetland habitat would be offset by Project actions intended to improve the quality of remaining wetlands, which are:

- Revitalize the biologic and hydrologic connections between Perch Lake and the St. Louis River, thereby restoring the influence of Lake Superior seiche and allowing remaining marsh wetlands to function as a Lake Superior Coastal Marsh. This marsh community, designated MRu94 in the MNDNR *Field Guide to Native Plant Communities: The Laurentian Mixed Forest Province* (2003), is listed as a critically imperiled community.
- Removal and ongoing management of non-native invasive plants, primarily narrow-leaf and hybrid cattail mats. This action would promote establishment of more diverse native vegetation including wild rice.

The Project would result in the conversion of shallow open water to mid-depth or deep-water habitat, as well as conversion of emergent wetland to shallow water habitat. No wetlands or

aquatic resources would be converted to upland. Considering the overall net benefit for fish and wildlife resources, the MNDNR does not anticipate the need for any mitigative offsets.

b) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

The proposed deep water and transition zone excavation is below the ordinary high-water level (602.1 ft IGLD85). Hemi-marsh excavation would expand the areal footprint of Perch Lake below the OHWL (see Sheet CN101 in **Attachment A**).

One of the primary goals of the proposed Project is to improve water quality of the surface water. The high amount of floating and emergent vegetation in Perch Lake inhibits atmospheric sources of dissolved oxygen (DO) and the restricted hydrologic connection reduces mixing with the DO rich main channel. The Project would improve conditions by increasing the amount of open mid-depth habitats and connecting deep habitats directly to the river. Further improvement in DO may be seen from removing some of the organic accumulation, thereby reducing the microbial Biological Oxygen Demand (BOD). Anthropogenic impacts, including railroad and highway construction, have resulted in increased sediment deposition within Perch Lake, which has decreased the amount of open water habitat. Direct, permanent changes resulting from this Project include the conversion of shallow open water to deep open water.

**Table 9** below describes the proposed acreages of Perch Lake below the OHWL and OLWL before and after construction.

**Table 9.** Summary of pre- and post-construction lake area.

| **Habitat Type** | **Before (Acres)** | **After (Acres)** |
|---|---|---|
| Open Water – between OHWL (602.1 NAVD88) and OLWL (601.2 NAVD88) | 1.2 | 1.3 |
| Open Water – below OLWL (601.2 NAVD88) | 19.1 | 21.2 |
| **Total** | **20.3** | **22.5** |

The Project would result in the conversion of shallow open water to mid-depth or deep-water habitat, as well as conversion of emergent wetland to shallow water habitat. However, because of the overall net benefit for fish and wildlife resources, the MNDNR is not anticipating the need for any mitigative offsets.

Excavation

Open water habitat ranging from 8 to 10 feet in depth would be restored through the excavation of up to 95,000 CY of sediment. Direct and indirect environmental effects on surface waters related to the Project are discussed below.

Impacts from Excavation of Material

The selected construction contractor would excavate fine sediments and organic matter from Perch Lake. The short-term water quality impact can include turbidity in the water column due to sediment disturbance at the location where the material is excavated. The contractor would minimize these impacts by employing in-water BMPs such as use of a weighted turbidity curtain (detail to be included in SWPPP) at the dredge location. Potential indirect effects include discharge to the main channel; this potential effect would be mitigated by providing appropriate sediment controls as described above.

In-water construction (below the OHWL) includes all excavation operations of Perch Lake. Inherent in the operation of diesel and gasoline-powered machinery are risks of fuel and oil spills associated to equipment failure, such as hydraulic line breakage or leaks from faulty connections or refueling operations. MNDNR and other Project permits would require contractors to have a spill response and prevention plan.

Watercraft Usage

The Project may also increase recreation opportunities by providing a pathway for small craft usage (e.g., canoes, kayaks, paddleboats, etc.) from the St. Louis River into Perch Like via the proposed box culverts.

**13. Contamination/Hazardous Materials/Wastes:**

a. Pre-project site conditions - Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

The USACE conducted sampling of soils and sediment to determine contaminant levels within Perch Lake in 2014 and 2020. Sediment samples were analyzed for a suite of chemical and physical characteristics.

Results from the 2014 contaminant analysis of three (3) sediment samples indicated sampled sediments did not exceed the limit of quantitation for polychlorinated biphenyls (PCBs), chlorinated pesticides, or volatile organic compounds (VOCs; RTI 2015). Five (5) semi-volatile organic compounds (SVOCs) [benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene, phenanthrene, and pyrene] exceeded the limit of quantitation at one (1) of the three (3) sampling locations, which was the deepest sampling location within Perch Lake.

The 2020 study analyzed 25 sediment samples collected from the 0-5 ft. depth range, 25 sediment

samples collected from the 5-10 feet depth range, 19 sediment samples collected from the 10-15 feet depth range, and four (4) geotechnical composite samples from along TH 23 (USACE 2021). The study analyzed samples for the following:

- Physical Kit with Hydrometer
  - Specific Gravity/Density (ASTM-D854)
  - Grain Size with Hydrometer (ASTM-D6913 & ASTM-D7928)
  - Percent Residue (ASTM-D2216)
- Nutrients Kit
  - Ammonia Nitrogen (SM4500 NH3-C)
  - Total Kjeldahl Nitrogen (SM4500 NH3-C)
  - Total Phosphorous (A4500-P-E)
- Organic Indicators Kit
  - Total Organic Carbon (ASTM-D2974)
  - Chemical Oxygen Demand (EPA410.4M)
  - Oil and grease (SW-846 9071B)
  - Cyanide (SW-846 9012B)
  - Percent volatile residue (SM2540G)
- Metals (SW-846 6010D, SW-846 7471B)
  - Arsenic, Barium, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Selenium, Silver, Zinc
- PAHs (SW-846 8270C SIM)
- PCBs (Aroclors, SW-846 8082A)
- Chlorinated pesticides (SW-846 8081A)

The composite samples from along TH 23 were reviewed for the same analytes plus dioxins. Results of the 2020 analysis (USACE 2021) concluded that based on the evaluated sediment sample organic, inorganic, and metal analyte concentrations, sampled sediments do not contain organic, inorganic, and/or metal analyte contaminants that would present contaminant-related adverse impacts to sediment dwelling organisms. Sediments meet requirements for organic, inorganic, and metal analyte concentrations set forth in MPCA's *St. Louis River Area of Concern Quality Assurance Program Plan for Minnesota Based Projects* (2015a) and are suitable for in-water beneficial reuse.

Results from both sediment sampling studies indicate existing contamination or potential environmental hazards are not present within Perch Lake.

Areas outside of the planned excavation limits, but in proximity of the Project include MPCA identified sites at Lake Superior College Emergency Response Training Center, a minimal quantity generator of hazardous waste (facilities roughly 1,000 feet distant from Perch Lake), and an inactive residential petroleum leak site approximately 0.5 miles from Perch Lake (MPCA "What's in My Neighborhood?" https://webapp.pca.state.mn.us/wimn/search accessed December 2021). Several areas outside Perch Lake but within the St. Louis Bay have identified sediment contamination. These areas have been assessed and prioritized for cleanup through the SLRAOC program (see **Tables 3** and **4** above).

b. Project related generation/storage of solid wastes - Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

The proposed Project is not expected to generate measurable amounts of solid waste. The contractor would be responsible for hauling any construction-generated wastes off site to appropriate solid waste management facilities. Should unanticipated materials be encountered during construction activity, they would be evaluated, and the contractor would be responsible for proper disposal, including hauling off-site to an appropriate solid waste management facility if required.

c. Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any new above or below ground tanks to store petroleum or other materials. Indicate the number, location, size and age of existing tanks on the property that the project will use. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

Construction equipment requires fuel (diesel and/or gasoline) and oils (lubricating and hydraulic). The MLT and MNDNR would require the Contractor to comply with U.S. Coast Guard and Minnesota Department of Transportation regulations as applicable to marine work, construction activities, and truck transport for handling of fuels and oils.

No hazardous materials would be permanently stored on-site. Hazardous materials may be stored on- site during specific construction activities. If on-site, hazardous materials would be stored in a designated area at least 100 feet from water or drainage ways. Hazardous material storage on-site would require secondary containment, signage, and preventive maintenance inspections. Spill kits would be stored near any hazardous materials. Vehicle maintenance would only be allowed in designated areas. Hazardous materials may be stored on barges during in-water construction work. Secondary containment, routine preventive maintenance inspections, and spill kits would be required.

The Contractor would take special measures to prevent chemicals, fuels, oils, greases, and other pollutants from entering the waterway, and to have a Contaminant Prevention Plan and a Spill Control Plan in the event of an unforeseen spill of a substance regulated by the Emergency Response and Community Right-to-Know Act or regulated under state or local laws or regulations. All spills must be reported immediately to the Project engineer and any reportable quantities must also be reported to the legally required federal, state, and local reporting channels (including the National Response Center 1-800-424-8802 and the Minnesota Duty Officer). Spill kits to contain and/or neutralize accidental minor discharges are required on-site. These safeguards minimize the chance of a significant impact.

d. Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

Project operations would not generate hazardous wastes.

*September 2021 version; Contains greenhouse gas quantification and assessment as well as adaptation and resiliency information*

**14. Fish, wildlife, plant communities, and sensitive ecological resources (rare features):**

a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

Fish

The fish community of Perch Lake was sampled twice in 2018, in June and September (Cardno 2018). Species present at the time of sampling are common to the region, and included Black Bullhead (*Ameiurus melas*), Black Crappie (*Pomoxis nigromaculatus*), Bluegill (*Lepomis macrochirus*), Brown Bullhead (*Ameiurus nebulosus*), Golden Shiner (*Notemigonus crysoleucas*), Northern Pike (*Esox lucius*), Pumpkinseed (*Lepomis gibbosus*), Spottail Shiner (*Notropis hudsonius*), Tadpole Madtom (*Noturus gyrinus*), Yellow Bullhead (*Ameiurus natalis*), and Yellow Perch (*Perca flavescens*).

The fish community at Perch Lake was less diverse when compared to the communities at two (2) nearby bays (North Bay and Radio Tower Bay) within the St. Louis River Estuary (SLRE) (Cardno 2018). Black Bullhead, Bluegill, and Pumpkinseed comprised 83% of the catch during June sampling. The Perch Lake community is also composed of smaller-sized fish than North Bay and Radio Tower Bay and is predominantly composed of insectivores, with few piscivores. A higher proportion of pollution-tolerant fish (for example, Bullhead) are present in Perch Lake when compared to North Bay and Radio Tower Bay. Results from sampling indicated that Perch Lake could be an important location for young-of-year (YOY) production for panfish, however the existing culvert is likely a velocity barrier.

In general, fisheries habitats of mid-depth, open water (depths of 6 to 8 feet) and deep, open water (depths of 8 to 15 feet) are more limited in the estuary than shallow, open water because of historical habitat alterations. Shallow and mid-depth, open water habitat provides important nursery and foraging areas for Lake Sturgeon and game species such as Walleye, Muskellunge, and Northern Pike, while deep, open water habitat provides overwintering habitat for these species, as well as Black Crappie, Bluegill, and Bass (*Micropterus* spp.).

Wildlife

The SLRE is recognized by the National Audubon Society as an Important Bird Area for waterfowl, raptors, shorebirds, gulls, and passerines, and is noted for being one of the best and most popular sites for bird watching in Minnesota. The area serves as a corridor for migrating songbirds, shorebirds, and raptors and provides critical food and shelter for these migrants.

Birds seen foraging in the marshes of the SLRE includes Bald Eagle, Osprey, Merlin, Common Tern, Northern Harrier, and Belted Kingfisher. Resident birds include Double-crested Cormorant, Virginia Rail, Sora, Marsh Wren, Common Yellow-throat, Swamp Sparrow, Song Sparrow, Yellow Warbler, and a variety of waterfowl. Over the years, more than 230 bird species have been documented in the SLRE.

Perch Lake was included in an avian survey completed by University of Minnesota Duluth – Natural Resources Research Institute (UMD-NRRI) staff in 2018. Perch Lake is located at the western extent of the North Bay site. A total of 103 species, 1,573 individuals, and 14 out of the 16 guilds were observed in North Bay from April–October 2018 (Liljenquist et. al 2019). There were 22 species of conservation concern detected. This Project area had a high number of total, spring, and summer species. North Bay also had a high number of guilds. Species of conservation concern detected during the recent surveys (2010-2015) and 2018 surveys were similar. This area has several unique features, including wooded marsh and shallow wetlands. These habitats are used by a wide variety of species throughout the year, including many breeding marsh birds and migrating waterfowl.

The hemi-marsh surrounding Perch Lake may also be utilized by mammals, specifically muskrat (*Ondatra zibethicus*). Muskrat are an effective aquatic grazer and can be a significant control factor for cattail. In general, muskrat require higher water levels for overwintering; Sojda and Solberg (1993) recommended 4-5 foot depths are needed in most areas.

Aquatic Plant Community

Perch Lake's aquatic plant community is primarily comprised of species common to the region including coontail (*Ceratophyllum demersum*), curly-leaf pondweed (*Potamogeton crispus*), white water lily (*Nymphaea odorata*), and yellow water lily (*Nuphar lutea*). A recent technical report on aquatic habitat mapping identifies the aquatic habitat in Perch Lake as "water lily shallow marsh" (NRRI 2020).

In Perch Lake, the amount of mid- and deep open water habitat is limited and inundated with submerged vegetation such as coontail. The limited amount of open water habitat likely prevents habitat use by larger piscivores due to limited foraging opportunities. Dense vegetation may also limit foraging opportunities for panfish, resulting in small sized individuals.

Marsh/Emergent Plant Community

The marsh community surrounding Perch Lake is strongly dominated by invasive (narrowleaf and/or hybrid) cattails. These form a dense stand and thick thatch, to the exclusion of most other plant species. Some lake sedge (*Carex lacustris*) and other native emergents are present in scattered patches. The NRRI technical report identifies this wetland community as "cattail – bur-reed marsh" (NRRI 2020).

Terrestrial Plant Community

The review area contains adjacent forested wetland, containing a relatively sparse canopy of mostly green and black ash (*Fraxinus pennsylvanica* and *F. nigra*). Access and temporary staging/storage areas would require a minor amount of clearing in this community. A total of approximately 23 trees greater than 3-inches in diameter at breast height (dbh) would be cleared, in locations as shown on sheet CD101 of **Attachment A**. Because the tree clearing is contained to a small area, no mitigation for this effect is planned. The area would be seeded with a native wetland seed mix, and woody species would be allowed to regenerate naturally over time.

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-____) and/or correspondence number (ERDB 20220052) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

SEH conducted a search of the MNDNR's Natural Heritage Information System under license agreement (LA-936) to determine if any rare species or other significant natural features are known to occur nearby the proposed Project. The Natural Heritage Review program provided review of rare species and significant natural features and recommendations for avoidance of adverse effects (**Attachment C,** dated November 24, 2021). The Natural Heritage Review identified the following rare features that may be adversely affected by the Project:

- A Site of Outstanding Biodiversity Significance exists within the Project area; sites of Outstanding, High, and Below Biodiversity Significance exist within a one-mile radius of the proposed Project.
- The Minnesota Biological Survey identifies the following native communities within the Project area:

sedge meadow (WMn82b) and alder – (maple-loosestrife) swamp (FPn73a).

- Vascular Plants: Two leaf waterweed (*Elodea bifoliata*), a state-endangered species.
- Invertebrate Animals: Rusty-patched bumble bee (*Bombus affinis*), a federally endangered species; creek heelsplitter (*Lasmigona compressa*), a state species of special concern; black sandshell (*Ligumia recta*), a state species of special concern.

Vertebrate Animals: Lake Sturgeon (*Acipenser fulvescens*), a state species of special concern; the northern long-eared bat (*Myotis septentrionalis*), a federally-listed threatened species and state-listed species of special concern, can be found throughout Minnesota; however, the NHIS does not contain any known occurrences of northern long-eared bat roosts or hibernacula within an approximate one-mile radius of the proposed Project.

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project including how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

Fish

In the short term, excavation activities and the culvert installation would disrupt nearby fish activity. Fish tend to avoid disturbances such as these and would temporarily find alternative habitat within the SLRE. The construction sequence plans for excavation prior to placement of the new culvert, minimizing the potential for sediment to mobilize outside of Perch Lake and affect fish in downstream water resources.

Long-term outcomes of restoration of Perch Lake include optimized bathymetry and improved connectivity, improving the amount and quality of over-wintering habitat available to fish. Controlling sedimentation and nutrient loading would serve to improve general water quality conditions for fish at the site.

Plants

In the short term, excavation activities and the culvert installation would disrupt existing plant communities. Excavation of organic material from Perch Lake would result in lower density of aquatic plants. This outcome is desired to create open-water habitat and meet Project habitat objectives. Submergent vegetation would reestablish in the hemi-marsh and areas less than eight (8) feet in depth. Areas greater than eight feet deep would remain open, as lack of light generally restricts vegetative growth at this depth.

Rare Features and Ecosystems

Minnesota NHIS queries conducted in 2021 identified multiple rare species or other significant natural features are known to occur nearby the Perch Lake Project areas. The Project has the following potential impacts:

- A Site of Outstanding Biodiversity Significance exists within the Project area. Sites ranked as Outstanding contain the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most ecologically intact or functional landscapes. Mapped native plant communities (NPCs) within the Project area are alder (maple-loosestrife) swamp (FPn73a) and sedge meadow (WMn82b). These communities have conservation status ranks of S5 and S4/S5 respectively, meaning they are apparently secure or secure, widespread, and abundant.

Implementation of this restoration Project is anticipated to improve site biodiversity and increase the potential for rare species occurrences. The improvement of hydrologic connectivity to the river would have the effect of allowing the coastal wetland habitat to experience more hydrologic variability due to the Lake Superior seiche, which may result in the wetland functioning more like the NPC type Estuary Marsh (Lake Superior) (MRu94a). The Estuary Marsh NPC has a conservation status rank of S1 (critically imperiled).

- Lake Sturgeon can be adversely impacted by actions that alter hydrology or decrease water quality, including sedimentation, dredging and filling, dewatering, impoundment, eutrophication, channelization, and pollution/contamination. This Project implements excavation activities to achieve goals including improved bathymetry and decreased sedimentation, improving habitat for Lake Sturgeon. The construction sequence plans for excavation prior to placement of the new culvert, minimizing the potential for sediment to mobilize outside of Perch Lake.
- The excavation of material has the potential to disturb the black sandshell mussel, creek heel splitter mussel, and other mussel species. As the distribution, diversity, and abundance of mussels within the Project area are unknown, an undetermined number of mussels may be impacted. Given that there are no known occurrences of state-listed threatened or endangered mussels in the area, a permit to take mussels would not be needed.
- Construction activities have the potential to adversely impact the rare vascular plant two leaf waterweed. No occurrences of this species are known from within Perch Lake; however due to a documented occurrence in the St. Louis River, the Natural Heritage Review has recommended a survey for the presence of two leaf waterweed. In 2021, scientists from the University of Wisconsin-Superior surveyed the wooded swamp, marsh, and open water communities associated with Perch Lake. The scientists did not encounter two leaf waterweed. The results of this survey have been submitted to NHIS for review.

Known Federally Threatened and Endangered Species

The rusty-patched bumble bee (*Bombus affinis*) is a federally endangered species with potential to occur in the Project area. The U.S. Fish and Wildlife Service (USFWS) identifies zones where there are recent detections of the rusty-patched bumble bee and surveys may be warranted, termed "high potential zones" or "low potential zones." The Project area is not inside a high or low potential zone according to the USFWS online mapper (https://www.fws.gov/midwest/endangered/insects/rpbb/rpbbmap.html, accessed October 2021). The site is within the potential distributional range of the rusty-patched bumble bee, with the most recent past records in 1935 (USFWS) and 1913 (NHIS). Suitability of habitat for bee nesting is poor because it consists largely of open water/saturated soil. The site contains potential foraging habitat. Based on this information, additional surveys to determine species presence or absence in the Project area are not warranted.

Federally listed mammals identified in the Lower St. Louis River area include the Canada lynx (*Lynx canadensis*, threatened), gray wolf (*Canis lupus*, threatened in Minnesota), and the northern long-eared bat (*Myotis septentrionalis*, threatened) (USFWS 2017). The gray wolf and Canada lynx require a relatively large extent of northern forest and are unlikely to be present in the Project area. Northern long-eared bats typically roost during summer months underneath bark or in cavities of live trees and snags (standing, dead, or dying trees); in the winter they typically hibernate in caves or mines. The NHIS does not contain any known occurrences of northern long-eared bat roosts or hibernacula within an approximate one-mile radius of the proposed Project. The Project would clear approximately 23 trees greater than 3 inches dbh.

Invasive Species

According to MNDNR sampling results in the St. Louis River, a variety of invasive species have entered the

harbor over the last several decades, including Alewife, Common Carp, Eurasian Ruffe, Freshwater Drum, Round Goby, Three-spine Stickleback, White Perch, spiny water flea, New Zealand mud snail, and zebra and quagga mussel.

St. Louis County's Aquatic Invasive Species (AIS) Program has not identified any non-native species occurrences within Perch Lake, however curly-leaf pondweed was identified during the 2018 fish and habitat assessments (Cardno 2018).

Impacts from accidental introduction or harboring of invasive species, related to the removal, transport, and placement of dredge material is expected to be minimal. An invasive species management plan would be developed describing ways to minimize risks associated with invasive species during all Project phases. Efforts to mitigate the spread of invasive species are discussed in Section 14.d.

d. Identify measures that will be taken to avoid, minimize, or mitigate the adverse effects to fish, wildlife, plant communities, ecosystems, and sensitive ecological resources.

Measures to minimize disturbance to fish, wildlife, plant communities, ecosystems, and sensitive ecological resource include:

- Minimize vehicular disturbance where possible (allow only vehicle and equipment necessary for construction activities)
- Use of effective erosion prevention and sediment control measures
- Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible
- Use of weed-free mulches and seed mixes

To avoid adverse effects to the northern long-eared bat, trees would be removed between October and March, outside the active season for the bat.

In the short term, excavation activities and the culvert installation would disrupt existing plant communities. Excavation of organic material from Perch Lake would result in lower density of aquatic plants. This outcome is desired to create open-water habitat and meet Project habitat objectives. The proposed excavated areas would experience temporary loss of existing aquatic vegetation. Submergent vegetation would reestablish in the hemi-marsh and areas less than eight (8) feet in depth. Areas greater than eight feet deep would remain open, as lack of light generally restricts vegetative growth at this depth. The improvement of hydrologic connectivity to the river would have the effect of allowing the coastal wetland habitat to experience more hydrologic variability due to the Lake Superior seiche, which may result in the wetland functioning more like the NPC type Estuary Marsh (Lake Superior) (MRu94a). The Estuary Marsh NPC has a conservation status rank of S1 (critically imperiled).

The MNDNR requires preventing or limiting the introduction, establishment and spread of invasive species during activities on public waters and MNDNR-administered lands. Impacts from accidental introduction or harboring of invasive species, related to the removal, transport, and placement of imported or dredge materials are expected to be minimal.

The Contractor shall prevent invasive species from entering or spreading within the Project site by cleaning equipment and clothing prior to arriving at the Project site. The Contractor shall inspect all equipment and clothing at the staging area determined at the pre-construction meeting.

*September 2021 version; Contains greenhouse gas quantification and assessment as well as adaptation and resiliency information*

If the equipment or clothing arrives at the Project site with soil, aggregate material, mulch, vegetation (including seeds) or animals, it shall be cleaned by Contractor-furnished tools or equipment (brush/broom, compressed air, or pressure washer) at the staging area. The Contractor shall dispose of material cleaned from equipment and clothing at a location determined by MLT, MNDNR, or their representative. If the material cannot be disposed of onsite, secure material prior to transport (sealed container, covered truck, or wrap with tarp) and legally dispose of offsite.

The Contractor shall clean equipment and clothing as noted above, prior to entering and leaving the water body. Prior to leaving the water body, the Contractor would drain water from all equipment, tanks, or water-retaining components of boats (motors, live well, and bilge). Immediately after leaving the water body, the Contractor would drain water from transom wells onto dry land.

There are planned sampling efforts for benthic invertebrates and aquatic vegetation following the Project; there are no current plans to sample the fish community. University of Minnesota researchers plan to sample water quality parameters post-restoration. Documented improvements in water quality metrics would be available to quantify success.

**15. Historic properties:**

Describe any historic structures, archeological sites, and/or traditional cultural properties on or inclose proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

In 2015, AECOM conducted a Phase I terrestrial and underwater remote sensing archaeological survey of the Perch Lake Project area (Survey Area Map, **Attachment B**). The primary objectives of the Phase I archaeological surveys (terrestrial and underwater) were to identify potentially significant archaeological sites within the Area of Potential Effect (APE), define the approximate boundaries of any archaeological sites encountered, and determine if any potentially significant archaeological resources would be adversely affected by the proposed federal action (AECOM 2015). USACE contracted additional archaeological testing in 2021 within the Project area.
The Phase I archaeological surveys conducted in 2015 and 2021 did not encounter any historic properties and concluded that no historic properties would be affected. The USACE has submitted this result to the SHPO with a request for review under Section 106 of the National Historic Preservation Act. USACE consultation with the SHPO and Fond du Lac Band Tribal Historic Preservation Office (THPO) is ongoing and may result in additional review or recommendations for protective measures.

**16. Visual:**

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.
Scenery at the Project area includes views of wetland and aquatic ecosystems of Perch Lake and related wildlife and the St. Louis River. Construction operations may temporarily obscure vistas and prohibit access to portions of the St. Louis River. Views of construction activity would cause some visual impact.

Eight (8) residential parcels border the Perch Lake Project area to the north, east and west. Five (5) homes are within 400 feet of the construction area. The MNDNR has notified adjacent residents about the intent of the Project, duration, expected visual impacts, and complaint procedures. MNDNR would continue the relationship with these landowners throughout the duration of the Project.

*September 2021 version; Contains greenhouse gas quantification and assessment as well as adaptation and resiliency information*

Due to the expected Project duration, 24-hour construction activities requiring the use of nighttime lighting may be required. Nighttime lighting would be positioned so it does not impact residents, and the potential for nighttime work would be communicated to residents prior to construction. Visual impacts affecting the closest residential neighbors should be short-term.

**17. Air:**

a. Stationary source emissions - Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

MNDNR would not install any permanent stationary sources of air emissions as part of this Project.

b. Vehicle emissions - Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

Heavy equipment, including construction vehicles, would be used during construction of the proposed Project. Construction-related emissions would be exempt as *de minimis* and they would meet the conformity requirements under Section 176 (c) of the Clean Air Act, and 40 CFR 93.153. Emissions would be minor and temporary in nature, arising from the use of powered equipment during construction. Equipment used would include excavators, loaders, trucks, boats, tugs, and/or pumps. Fuel exhaust emissions contain pollutants including carbon monoxide, nitrogen oxides, reactive organic gases, sulfur dioxide, and suspended particulate matter, all of which carry some associated health risks.

c. Dust and odors - Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 17a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

The proposed Project may create some temporary dust during open-water season construction activities. Fugitive dust could arise from light vehicle traffic at the Project site in association with maintenance operations of equipment and stockpile locations. Activities with the potential to create dust include material removal, stockpiling, placement, grading, and compacting. Dust generation is expected to be minimal because the material being used consists of saturated sediment, sand, gravel, and rip rap.

The Contractor would be required to follow best management practices to reduce dust during construction such as:

- Covering loads during transport during the open-water season.
- Watering exposed soils if fugitive dust becomes an issue.
- Using BMPs on exposed areas and stockpiles.
- Requiring any materials transported onto the Project site to be clean and free of dirt and debris.

Unpleasant odors may be associated with the excavation of muck. Hydrogen sulfide is a byproduct of

anaerobic respiration and is responsible for the "rotten egg" smell associated decomposed organic matter, often associated with wetlands and aquatic environments. During the excavation and transport of the muck, this odor and other organic odors may be present in the vicinity of the proposed Project. If windy conditions are present, the odor is anticipated to disperse readily. The odors are anticipated to be temporary in nature; no long-term odor impacts are anticipated.

**18. Greenhouse Gas (GHG) Emissions/Carbon Footprint**

a. GHG Quantification: For all proposed projects, provide quantification and discussion of project GHG emissions. Include additional rows in the tables as necessary to provide project-specific emission sources. Describe the methods used to quantify emissions. If calculation methods are not readily available to quantify GHG emissions for a source, describe the process used to come to that conclusion and any GHG emission sources not included in the total calculation.

Greenhouse gas emissions related to the proposed Project include those related to the construction of the Project. No operational GHG emissions are anticipated, as no permanent infrastructure is proposed for the Project. According to the plans, construction would begin on or after May 1, 2022, and would be completed by the end of construction season in 2024. For this assessment, construction GHG emissions included:

- On-road vehicle emissions (haul trucks, etc.)
- Off-road vehicle emissions (earthmoving equipment such as excavators, loaders, etc.)

On-road vehicle emissions include those generated by the haul trucks, which would haul material from Perch Lake to the likely disposal location at the former U. S. Steel/Atlas Cement Plant industrial site (6.6 miles round trip). This operation is estimated to consist of 20 trucks per hour for three (3) months. Trucks are assumed to be in operation from 7:00 am to 10:00 pm. Carbon emissions related to the on-road vehicle emissions is estimated to be 305.6 metric tons.

| **On-road Equipment** | Trucks/hr | Hrs/day | Days | Miles | Est. miles | miles/gal | Est. gals | Emission Factors[1] $CO_2$ kg/gal | Emission Factors[1] $CH_4$ g/mile | Emission Factors[1] $N_2O$ g/mile | Emissions $CO_2$ MT | Emissions $CH_4$ MT | Emissions $N_2O$ MT | Emissions $CO_2e$[2] MT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Haul Trucks | 20 | 15 | 90 | 6.6 | 178,200 | 6 | 29,700 | 10.21 | 0.0095 | 0.0431 | 303.237 | 0.002 | 0.008 | 305.568 |

[1] EPA Emission Factors for Greenhouse Gas Inventories Tables 2, 3, and 4 (updated March 26, 2020) https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf

[2] CO2e emissions calculated using Global Warming Potentials from 40 CFR Part 98 Subpart A Table A-1 (CO2e= 1*CO2+25*CH4+298*N2O)

Off-road vehicle emissions include those generated by construction equipment that would remain on the Project site for the duration of construction. This includes earthmoving equipment such as excavators and loaders and/or water-based equipment such as boats, tugs, and pumps. There are potential differences in the specific equipment utilized based on the contractor selected to complete the work. For the purposes of this assessment, it is assumed that two (2) diesel-powered off-road construction vehicles

would be in operation during the construction period. Estimates are provided for two (2) land-based construction vehicles and two (2) water-based construction vehicles.

The off-road vehicle emissions would be in operation for the duration of the construction of the Project. For the purposes of this assessment, construction is assumed to be ongoing May 1 through March 31 of the following year, with some exclusions assumed due to weather or other site conditions. Overall, it is assumed that there is a maximum of 730 days of construction for the Project. While the number of construction days may ultimately be less than the maximum of 730 days, this was the number of days used for this GHG assessment to consider the maximum emissions generated from the proposed Project. Construction is assumed to be ongoing from 7:00 am to 10:00 pm during this time, however some days may vary seasonally (i.e., longer days in the summer months, shorter days in the winter months).

According to this GHG assessment for the Project, carbon emissions related to the land-based construction vehicles emissions is estimated to be 2,689.3 metric tons; carbon emissions related to the water-based construction vehicle emissions is estimated to be 3,172.7 metric tons.

| **Off- road Equipment** | No./day | Hrs/day | Total Days | Gal/hr | Est. gals | Emission Factors[1] $CO_2$ kg/gal | Emission Factors[1] $CH_4$ g/gal | Emission Factors[1] $N_2O$ g/gal | Emissions $CO_2$ MT | Emissions $CH_4$ MT | Emissions $N_2O$ MT | Emissions $CO_2e$[2] MT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Construction Equipment | 2 | 12 | 730 | 10 | 175,200 | 10.21 | 0.2 | 0.47 | 1788.792 | 35.040 | 0.082 | 2689.331 |
| Diesel Ships and Boats | 2 | 12 | 730 | 10 | 175,200 | 10.21 | 0.31 | 0.5 | 1788.792 | 54.312 | 0.088 | 3172.697 |

[1] EPA Emission Factors for Greenhouse Gas Inventories Tables 2, 3, and 4 (updated March 26, 2020) https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf

[2] $CO_2e$ emissions calculated using Global Warming Potentials from 40 CFR Part 98 Subpart A Table A-1 ($CO_2e$= 1*$CO_2$+25*$CH_4$+298*$N_2O$)

b. GHG Assessment

i. Describe any mitigation considered to reduce the project's GHG emissions.

ii. Describe and quantify reductions from selected mitigation, if proposed to reduce the project's GHG emissions. Explain why the selected mitigation was preferred.

iii. Quantify the proposed projects predicted net lifetime GHG emissions (total tons/#of years) and how those predicted emissions may affect achievement of the Minnesota Next Generation Energy Act goals and/or other more stringent state or local GHG reduction goals.

No mitigation to reduce the Project's GHG emissions is proposed. Construction-related emissions would be exempt as *de minimis* and they would meet the conformity requirements under Section 176 (c) of the Clean Air Act, and 40 CFR 93.153. Predicted GHG emissions related to the proposed Project are limited to those generated during construction. No operational GHG emissions are anticipated. The Project sponsor would encourage the selected contractor to reduce GHG emissions from construction, which may include minimizing idling equipment or encouraging carpooling to the site by equipment operators.

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**19. Noise**

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to statenoise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigatethe effects of noise.

Construction activities would generate noise during implementation of the Project. Noise would be generated from machinery operation, back-up beepers, and off-site hauling. Other activities on the site would include mechanical excavation, material handling and hauling, and ancillary work needed to restore the Project site. Construction would take place for two (2) years, but seasonal downtime is expected. Mufflers and manifolds would be required on all vehicles and machinery to reduce noise. Contractors would complete most work during daytime (7:00 am to 10:00 pm) hours. Due to limited seasonal windows for in-water work, dredging may take place outside of the normally designated times. Work during nighttime hours would be coordinated with the City of Duluth and communicated to surrounding landowners.

Noise area classification (NAC) is based on the land use activity at the location of the receiver and determines the noise standards applicable to that land use activity (MPCA 2015b). The rules also establish daytime and nighttime noise level standards based on Noise Activity Classification (NAC) levels. Minnesota Rules, part 7030.0050 defines NAC levels based on land uses as 1, 2, 3, or 4. NAC Level 2 is for commercial and recreational land use types, typical to that of the Project site. NAC Level 1 is for residential land use types. Noise standards are the most stringent in NAC 1 for land uses of residential, religious, and camping areas. Residential areas (NAC 1) are nearby the Project site as close as approximately 400 feet at some locations. NAC 2 and NAC 3 are less stringent, with NAC 3 encompassing manufacturing and industrial land use areas.

Minn. R. pt. 7030.0040 establishes two (2) noise levels, L10 and L50, based on the percent of time noise levels exceed the standard over a one-hour time period: L10 is defined as “noise levels exceeding the standard for 10% of the time for one hour (6 minutes/hour)” and L50 is defined as “noise levels exceeding the standard for 50% of the time for one hour (30 minutes/hour)”. The table below provides L10 and L50 noise levels for each NAC level.

| Noise Area Classification | Daytime $L_{10}$ | Daytime $L_{50}$ | Nighttime $L_{10}$ | Nighttime $L_{50}$ |
|---|---|---|---|---|
| 1 | 65 | 60 | 55 | 50 |
| 2 | 70 | 65 | 70 | 65 |
| 3 | 80 | 75 | 80 | 75 |

According to the Federal Highway Administration, the average noise level at 50 feet from typical diesel-powered mobile construction equipment is 87 decibels (dB) (FHWA 2006, Table 9.1). Sound decreases from a point source at a rate of 6 dB for every doubling of distance from the source (MPCA 2015b). The table below provides an estimated noise level as a function of distance (FHWA 2006; MPCA 2015b).

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| Distance from Source (feet) | Noise Level (dB) |
|---|---|
| 50 | 87 |
| 100 | 81 |
| 200 | 75 |
| 400 | 69 |
| 900 | 33 |

At Perch Lake, the nearest residential properties are approximately 200 feet from the closest point of proposed excavation. However, most excavation would occur greater than 400 feet from residents. Some nighttime work may occur due to the short duration of the Project. The MNDNR would contact all the nearest residents along the shoreline to inform them of the Project and potential for noise levels exceeding NAC Level 1 standards. To date, no residents have expressed concern for the potential for noise and they have been in support of the Project for the aesthetic and recreational benefits it may bring to them. Upon completion of the Project, no new on-going or new permanent noise is expected.

The contractor would be required to minimize noise effects by:

- Requiring all equipment to have properly operating muffler systems.
- Restricting idling time for inactive equipment to 15 minutes.
- Informing construction operators of the nearby residential area and schedule loud operations for mid-day.
- Notifying adjacent landowners and businesses about the intent of the Project, duration, expected noise levels and complaint procedures.

**20. Transportation**

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

Parking and Access

There are two (2) public parking areas for recreation access in the vicinity of the Project south of TH 23. These are unmarked for the number of stalls, but accommodate roughly 25 vehicles between the two lots. The Project would not add nor remove parking spaces. There may be temporary use of these parking areas for equipment staging; however, the bulk of temporary storage and staging would take place in the dedicated area to be constructed in the northeast quadrant of the intersection of 121st Avenue West and TH 23.

Perch Lake does not have any existing public water access locations, and no formal water access is planned as a component of the proposed Project. Construction/maintenance access and a temporary staging area are planned at the northeast quadrant of the intersection of 121st Avenue West and TH 23.

Traffic

The process of installing the new box culvert through TH 23 would result in temporary traffic impacts. There are no options to re-route traffic; therefore, the Project would either require temporarily shifting both lanes, or closing one (1) lane of TH 23 at a time for the installation. Traffic alterations would require speed reductions and would take place over the course of approximately four (4) weeks.

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Construction traffic to haul material from Perch Lake to the likely disposal location at the former U. S. Steel/Atlas Cement Plant industrial site would consist of approximately 20 trucks per hour for three (3) months. The assumed haul route is TH 23 for approximately 6.6 miles round trip. However, the selected contractor would need to have haul routes reviewed and approved by the City of Duluth. Due to the Project schedule constraints including planned completion before a future MnDOT resurfacing Project on TH 23, trucks may operate outside of daylight (7:00 am to 10:00 pm) hours. Any nighttime operations would be communicated to surrounding landowners.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. *If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW.* Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 *(available at: http://www.dot.state.mn.us/accessmanagement/resources.html)* or a similar local guidance,

As described above, the process of installing the new box culvert through TH 23 would result in temporary traffic impacts, including traffic congestion, on TH 23. There are no options to re-route traffic; therefore, the Project would either require temporarily shifting both lanes or closing one (1) lane of TH 23 at a time for the installation. Traffic alterations would require speed reductions and would take place over the course of approximately four (4) weeks. Sediment excavation would take place over three (3) months, and is planned to occur in July, August, and September 2022. During this time, increases in traffic congestion may occur along the route from Perch Lake to the U.S. Steel/Atlas Cement Plant.

Due to the scale and duration of this Project, traffic congestion increases and impacts to the regional transportation system are expected to be temporary and negligible.

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

No effects on the transportation system are expected as a result of the proposed Project and mitigation is not proposed. MLT, MNDNR, and Contractors would coordinate with MnDOT and City of Duluth transportation authorities.

**21. Cumulative potential effects:** (Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)

a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

Cumulative impacts may occur when there is a relationship between the proposed Project and other actions expected to occur in a similar location or during a similar time. The Perch Lake Restoration Project Area is located within the St. Louis River Area of Concern (SLRAOC) in the St. Louis River Estuary. Construction would occur from May 2022 through 2023. Potential effects related to the Project as detailed in EAW items 10-20 above are summarized here.

<u>Erosion of Sediment</u>

The excavation of 95,000 cubic yards of sediment from the Project area and mechanical movement of material from the river to a road vehicle and to an ultimate disposal location would result in the transport of sediment by moving water, resulting in increased turbidity in the river water, or by air, resulting in dust.

Turbidity increases could extend approximately one mile downstream. Mitigation measures employed to reduce this effect include erosion and sediment control BMPs. These effects would be limited to this geographic area and to the timeframe of sediment removal.

Dust would increase in the vicinity of the Project as any dropped sediment dries and becomes airborne. This effect would extend from the Project site along roads on the haul route. The timeline for this effect would be temporary and limited to the sediment removal phase of the Project. The effect would be mitigated by BMPs, watering down exposed soils, and requiring covers on haul loads.

Loss of Wetlands

Following the Project goals, some wetland area would be permanently converted to open water. This effect would be limited to 4.5 acres within the Project area. The expectation is that the mitigation for this loss would be accounted for by improving the quality of the adjacent wetlands.

Contamination with Hazardous Materials

Fuel and oils would be temporarily stored on site to service construction equipment. A spill of these materials would affect waters in Perch Lake, the St. Louis River, and into Lake Superior. Mitigation measures would include a spill response and prevention plan and requiring the contractor to comply with applicable regulations.

Disruption of Fish and Wildlife Communities

Disturbance of the site and excavation of sediment in the river would disrupt fish and wildlife species, including rare and endangered species. The Lake Sturgeon are sensitive to a decrease in water quality and excavation activities would displace them, as they are known to occur in these waters. Other species that are not known to occur, but would similarly be displaced are mussels, which could include black sandshell mussels, creek heel splitter mussel, and others; the rusty patched bumble bee; the Canada lynx; the gray wolf; and the northern long eared bat. These species would be temporarily displaced during construction.

Disruption of Plant Communities

Disturbance of the site would have effects on native and invasive plant communities. Excavation of river and lake sediments in the Project area would also uproot native plants established there. This would be temporary, and the site would be revegetated with native species using weed free mulches and seed mixes. Invasive species have potential to propagate when moved from their current location along transport routes to their final destination. The contractor would be required to follow an invasive species management plan.

Disruption of Vistas

Lights and equipment would have an effect on the Perch Lake and St. Louis River vistas at the Project site. This disruption would be temporary during construction and limited to construction hours of 7am to 10pm, mostly during the daylight hours. When late hours are required, proposers would communicate with the nearby landowners.

Greenhouse Gas Emissions

Operation of construction equipment would release greenhouse gas emissions. This effect would be temporary during construction of the Project.

Odors

Dredging of river sediments would release hydrogen sulfide, which has an unpleasant odor. This would

affect the Project site and a radius of approximately ½ mile, depending on the wind conditions. This effect would be temporary, occurring only during excavation activities.

Noise

Construction equipment would produce noise that would affect a radius of about 900 feet around the Project site. This effect would be temporary and would be mitigated with mufflers, manifolds, work limited to daytime hours, and communication with neighboring landowners.

Transportation Backups

Construction activity would necessitate the closure of lanes when the culverts are being installed. This would potentially cause traffic backups that would result in increased travel time and additional emissions from idling vehicles. This would affect the Project area and up to a mile leading up to the site from either direction. This effect would be temporary and would be resolved when the culvert installation is complete.

b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

As discussed in Section 6.e. above, projects benefiting the SLRAOC are being designed and implemented in the St. Louis River Estuary where the Project is located. These may have temporary effects within the same geographic scales and timeframes for implementation as the Perch Lake Project. Other projects sharing geographic scale or timeframe are a MnDOT led cemetery landscape project related to the recovery and restoration of a Native American cemetery disturbed in 2017, and a MnDOT road connection project to construct a new road between TH 23 and West 4th Street. Both these MnDOT projects are located in the Fond du Lac neighborhood, approximately one (1) mile west of Perch Lake. MnDOT also plans a TH 23 resurfacing project in 2023 in the general vicinity of the Fond du Lac neighborhood, which has geographic overlap with the Perch Lake Restoration Project. The Perch Lake Project is planned so the culvert installation can occur prior to MnDOT's TH 23 resurfacing project; however, these timelines are subject to change. The Perch Lake Project team would continue to coordinate with MnDOT to minimize traffic impacts in the same timeframe. **Table 10** below summarizes the projects with timing/geographic overlap.

**Table 10.** Summary of reasonably foreseeable projects with environmental effects and timelines.

| Project | Anticipated Environmental Effects | Anticipated Timeline |
|---|---|---|
| Spirit Lake[1] | Increased turbidity during active dredging, displacement of fish and wildlife, vegetation | 2022-2023 |
| Munger Landing[2] | Increased turbidity during active dredging, displacement of fish and wildlife, vegetation. Temporary closure of recreation access. | 2022-2023 |
| Mud Lake[3] | Increased turbidity during active dredging, displacement of fish and wildlife, vegetation | 2023 |
| Grassy Point Revegetation | Displacement of fish and wildlife, vegetation | 2022 |
| TH 23 Recovery and Restoration – | Temporary increase in construction traffic | 2022 |

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| Project | Anticipated Environmental Effects | Anticipated Timeline |
|---|---|---|
| Cemetery Landscape Project[4] | | |
| 134th Avenue West Construction[5] | Temporary increase in construction traffic, temporary lane closures on TH 23 | 2022 |
| TH 23 Resurfacing Project[6] | Temporary increase in construction traffic, temporary lane closures on TH 23 | 2023 |

[1] Spirit Lake Sediment Remediation Project EAW: https://duluthmn.gov/media/8112/spirit-lake-eaw-form.pdf
[2] Munger Landing Sediment Remediation EAW https://www.pca.state.mn.us/sites/default/files/p-ear2-185a.pdf
[3] Mud Lake West Decision Summary https://www.pca.state.mn.us/sites/default/files/c-rem1-23.pdf
[4] MnDOT Cemetery site status. https://www.dot.state.mn.us/d1/projects/hwy23-mission-creek/index.html
[5] MnDOT Plan Set. https://www.dot.state.mn.us/d1/projects/hwy23-mission-creek/docs/134th%20Ave%20W%20Planned%20Construction.pdf
[6] MnDOT Hwy 23 resurfacing project page. https://www.dot.state.mn.us/d1/projects/hwy23/index.html

No other reasonably foreseeable projects were identified that would take place within the same geographic scales and timelines.

c. Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

Project actions along with other SLRAOC actions are cumulative in nature. The specific outcomes identified above might result in some temporary negative environmental effects (e.g., increased turbidity) and in some instances may require special consideration(s) in the permitting phase of the Project. Over the long term, the Project's improvements to fisheries and marsh bird habitat should result in positive cumulative outcomes and beneficial effects to the environment of the St. Louis River Estuary.

The reasonably foreseeable projects with overlapping geography or timelines have similar habitat improvement goals with short-term impacts like those listed for the Project in this EAW. The general intent is that the cumulative effects associated with completion of these projects would have a positive effect on the St. Louis River estuary, which would move the SLRAOC toward the goal of delisting by 2025.

Project actions, when combined with reasonably foreseeable projects, should result in limited and temporary water quality effects, including total suspended solids, and limited and temporary effects on localized wildlife and vegetation. The cumulative potential effects on the wetland resources of the St. Louis Bay Estuary due to conversion to open water and fill for the access area are generally minor and have a minor contribution to cumulative potential effects. Wetland impacts due to conversion from marsh or shallow water to deep water would generally be offset by hydrologic and vegetation improvements to the improve quality of the remaining wetlands. Cumulative potential effect on water quality in the generation of total suspended solids and other effects would be controlled by permits and approvals required before commencing construction and effective monitoring during construction. The conditions for these permits require the use of BMPs to minimize and/or avoid adverse environmental effects.

**22. Other potential environmental effects:** If the project may cause any additional environmental effects not addressed by items 1 to 21, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

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All potential environmental effects of which the MNDNR is aware have been addressed above.

**RGU CERTIFICATION.** *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

**I hereby certify that:**

- The information contained in this document is accurate and complete to the best of myknowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60,respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature Sara R Mielke Digitally signed by Sara R Mielke Date: 2022.03.21 16:33:57 -05'00' Date _____

Title EAW Project Manager

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