December 2022 version

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 form provides information about a project that may have the potential for significant environmental effects. 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 an EIS.

1. Project title: **Lower Knowlton/Munger Trail Culvert Replacement**

2. Proposer: MN Department of Natural Resources

3. RGU: MN Department of Natural Resources

Contact person: Jeramy Pinkerton
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4. Reason for EAW Preparation: (check one)

Required:
☐EIS Scoping
☒Mandatory EAW

Discretionary:
☐Citizen petition
☐RGU discretion
☐Proposer initiated

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

Minnesota Rules part 4410.4300 subpart 26: Stream diversion

5. Project Location:

- County: St. Louis
- City/Township: City of Duluth
- PLS Location (¼, ¼, Section, Township, Range): SW NE 1/4, Govt lot 1 (SE NE) 1/4, Section 23, Township 49, Range 15
- Watershed (81 major watershed scale): St. Louis River
- GPS Coordinates: Latitude 46° 42' 58" N, Longitude 92° 12' 01" W
- Tax Parcel Number: 010-2746-00245, 010-2746-00410, 010-2746-00260, 010-2746-00280, 010-2746-00430

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

- County map showing the general location of the project; see Attachment 3, Figure 1
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable); see Attachment 3, Figure 2
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan. See Attachment 1
- 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).

Minnesota Climate Trends Map
Minnesota Climate Projections (CMIP5)

6. Project Description:

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

The Minnesota Department of Natural Resources, St. Louis River Restoration Initiative, proposes the Lower Knowlton/Munger Trail Culvert Replacement project located in Duluth, Minnesota. The project proposes to replace a concrete box culvert with a bridge, at the location where the Willard Munger State Trail (Munger Trail) crosses Knowlton Creek. The proposed bridge will enhance the hydrological function of Knowlton Creek and will allow for aquatic and terrestrial organism passage under the Munger Trail.

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

Knowlton Creek, a designated trout stream, is a coldwater stream that flows through the Duluth hillside near Spirit Mountain before entering the St. Louis River estuary in Tallas Bay behind Tallas Island. Multiple reaches of the creek have previously been restored. Currently, a box culvert under the Willard Munger State Trail acts as a seasonal barrier to aquatic and terrestrial organism movement due to sheet flow during low water, no substrate/velocity breaks in the culvert, and no bench within the culvert. There are also the remains of an abandoned, filled in, stone culvert under the trail, parallel to the existing culvert.

The Minnesota Department of Natural Resources St. Louis River Restoration Initiative (SLRRI) proposes to replace the 8.5 foot wide by 10.5 foot high concrete box culvert with a bridge that will enhance the hydrological function of Knowlton Creek. The proposed project is located where the Munger Trail crosses Knowlton Creek and would more fully allow for aquatic and terrestrial organism passage under. In addition to being is a seasonal barrier to wildlife passage, the DNR Division of Parks and Trails noted that this culvert was likely damaged during the 2012 flood. The bridge that would replace this culvert would be wide enough to allow Knowlton Creek to reach its flood plain and would provide a bench for wildlife to pass under the Munger Trail. This mimics the Highway 23/Grand Avenue bridge that replaced a culvert in 2016 and provides a terrestrial connection between the Spirit Mountain/Magney Snively area and the St. Louis River Estuary.

Construction of the proposed project would include the removal of the existing culvert and the abandoned culvert, installation of the bridge, and site restoration. The project is proposed to start in January 2025 and to be mostly complete by October 2025; repaving of the Munger Trail is expected to occur in 2026. The Munger Trail would be closed during active construction. Trail users would be directed to use the sidewalk along Pulaski Street, Grand Avenue, and Riverwest Drive. Trees would be removed during the winter of 2025. Prior to construction, the existing culvert would be inspected for evidence of bats. Construction access would

utilize the Munger Trail, as well as a temporary route cut through City of Duluth property paralleling the Munger Trail to access the stream. The temporary access route would require tree clearing and grading in a forested area. Mechanical excavation using excavators and dump trucks between March and July 2025 would be used to remove approximately 10,000 cubic yards of material from the Munger Trail causeway. Then excavators and dump trucks would remove the existing culvert and the abandoned culvert allowing for the re-alignment of Knowlton Creek to a more natural condition. The stream would be restored through this area using natural channel design. Culvert demolition and stream restoration would occur between July 1 and September 15, 2025. Once the culverts are removed, constructing the bridge and restoration of the Munger Trail would occur concurrently with stream restoration. It is anticipated that bridge installation and trail grading would be completed by October 2025. Equipment used for bridge construction and trail restoration may include excavators, a crane, dump trucks, cement trucks, a skid steer and a bulldozer. The trail would likely have a gravel surface until weather conditions allow for proper asphalt installation, though it is anticipated replacement would be complete by October 2026. The trail elevation would be lowered to reduce the amount of fill that needs to be returned to the site. The slopes of the restored trail would be compliant with the Americans with Disability Act (ADA). Vegetation establishment would be initiated as construction activity is complete in an area with final establishment anticipated in 2026.

Stream restoration components:
Channel Shaping: The stream reach would be reshaped to a dimension based on local stable streams, adjusted for differences in drainage area at the site. Reshaping would involve moving on-site materials to match the elevations and profile in the plan specifications and is typically done by an excavator operating alongside or in the channel while the stream is temporarily dewatered. The stream cross sectional area would be approximately 19.5 square feet with a floodplain bench width of at least 18 feet.

Grade Control Structures: Cross vanes and j-hook boulder vanes are two grade control features that may be installed in the stream channel to help prevent incision, decrease near bank stress and bank erosion, and create a stable channel shape. The structures are constructed by configuring boulders in the channel bed so that flows are directed to the center of the channel and away from stream banks. The concentrated stream energy also creates a scour pool below the structure, enhancing fish habitat. Cross vanes span the entire channel and typically are in the shape of an arch with the apex upstream while j-hooks span two thirds of the channel with the hook pointing upstream. They are typically constructed by an excavator operating alongside or in the channel while the stream is temporarily dewatered. Boulders would be reused on site or brought in from a local source.

Rock Riffles: Rock riffles are composed of a specified mixture of fine and mostly coarse substrates that help stabilize the channel bottom and create channel complexity for aquatic organism habitat. Once the channel is shaped, the mixture is added on the top of the substrate as specified in the plans. They are typically constructed by an excavator operating alongside or in the channel while the stream is temporarily dewatered. These structures help stabilize the steepest parts of the stream and typically tie into a grade control structure at their end. They are also designed to have an inner berm, a narrow deeper area the length of the structure that keeps low flows concentrated so that they maintain better depth for fish cover.

c. Project magnitude:

Description	**Number**
Total Project Acreage	4.52 acres
Linear project length	200 feet
Number and type of residential units	Not applicable
Residential building area (in square feet)	Not applicable
Commercial building area (in square feet)	Not applicable
Industrial building area (in square feet)	Not applicable
Institutional building area (in square feet)	Not applicable
Other uses – specify (in square feet)	Not applicable
Structure height(s)	Not applicable (proposed bridge will be lower than existing trail grade)

The linear project length listed above is the length of the stream channel that will be impacted. The length of trail within the construction area is 1,600 feet.

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.

The purpose of the proposed project is to replace a culvert that is seasonal barrier to wildlife passage and replace it with a structure that would allow the stream to fully function hydraulically, and allow for wildlife passage. The proposed project would also help to stabilize the stream channel, reducing the likelihood of negative impacts to open water habitat and an upcoming mitigation project in Tallas Bay of the St. Louis River Estuary. This project would also replace a culvert that the DNR Division of Parks and Trails determined was damaged in the 2012 flood. If the Knowlton Creek culvert were to fail, there is the potential that the material within the vicinity of Knowlton Creek would negatively impact the aquatic habitat downstream, including the open water and wetland habitats in Tallas Bay in the St. Louis River Estuary.

This project would provide ecological benefits to the riparian ecosystem of Knowlton Creek and Tallas Bay, and would help nearby residents and users to safely experience the outdoors.

e. Are future stages of this development including development on any other property planned or likely to happen? ☐Yes ☒ No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

f. Is this project a subsequent stage of an earlier project? ☒ Yes ☐ No
If yes, briefly describe the past development, timeline and any past environmental review.

A 2016 restoration project was completed by the DNR's St. Louis River Restoration Initiative restored approximately 6,500 feet of Knowlton Creek and a tributary upstream and downstream of the proposed project. The 2016 project completed an Environmental Assessment Worksheet (EAW), which indicated that the Lower Knowlton Creek culvert beneath the Munger Trail (the proposed project) would be replaced at a future time. A copy of the record of decision on the EAW is available on the DNR's environmental review website.

The 2016 restoration project was included in the Remedial Action Plan (RAP) for the St. Louis River Area of Concern (SLRAOC). The SLRAOC RAP identified remediation and restoration actions, with the ultimate goal of delisting the SLRAOC by 2030.

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. According to the Minnesota DNR Climate Trends website, Minnesota has warmed by 3.0 degrees Fahrenheit between 1895 and 2020, and annual precipitation has increased by an average of 3.4 inches across the state1. The project actions including providing improved hydrologic connection should improve resilience of Knowlton Creek to changing precipitation events.

[1] Climate trends | Minnesota DNR (state.mn.us)

In general, projections for Minnesota predict that the days per year with more than 1-inch of precipitation will increase, but summer precipitation will be lower (i.e., precipitation events will be larger, but more infrequent) by the end of the century, as compared with the historical period of 1981-20102. Climate change impacts at the location of the project, will likely include warmer temperatures and more periods of drought with periodic flooding.

In the context of the proposed project, a wetter climate includes the risk of more periodic flooding events. The proposed replacement of the existing culvert with a bridge will better accommodate flooding 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	**Climate Consideration**	**Project Information**	**Adaptations**
Project Design	Design should consider increased frequency and duration of heavy rain events and the potential for flooding. Design should consider snow and ice conditions and freeze-thaw cycles.	Climate change risks and vulnerabilities identified include increased frequency and intensity of storm events, and flooding; increased need for maintenance due to freeze-thaw cycles.	The proposed bridge would be designed to accommodate flooding and withstand freeze-thaw cycles. Increasing the opening would enable the stream to better handle increased flows, including those resulting from intense storms.
Land Use	The project should consider existing land use, potential land use changes, and the potential for impacts on climate. Climate trends for the general location predict a wetter climate with more frequent and higher intensity storm events.	Climate change risks and vulnerabilities identified include potential for loss of carbon sequestration due to land use conversion, increased frequency and intensity of storm events, and increased precipitation.	Land use at the project location is an existing culvert conveying Knowlton Creek beneath the Munger Trail and surrounding natural area and recreation use; the continuing use of the location would be the same. The project is intended to improve resilience of Knowlton Creek to changing precipitation and event intensity by improving the hydrologic connection within the stream and to its floodplain.
Water Resources	Addressed in item 12	Addressed in item 12	Addressed in item 12
Contamination/ Hazardous Materials/Wastes	The project should consider the risks for contamination, use of hazardous materials, and waste generation during the construction and operational phases of the project. Climate change predictions are not anticipated to influence the potential environmental effects of generation/use/storage of hazardous waste and materials for this project.	Construction equipment would utilize potentially hazardous materials such as gasoline or diesel fuels, motor oils, hydraulic fluids, and other lubricants.	During construction, contractors would protect soil and water resources from contamination and hazardous materials. Vehicles would be equipped with spill kits for rapid response. All hazardous materials would be stored in containment apparatuses, while not in use.

[2] Minnesota Climate Projections (CMIP5) | University of Minnesota Climate Adaptation Partnership (umn.edu)

Fish, wildlife, plant communities, and sensitive ecological resources (rare features)	Discussed in item 14.	Discussed in item 14.	Discussed in item 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)	0.75	0.75
Deep lakes (>2 meters deep)	0	0
Wooded/forest	3.2	3.2
Rivers/streams	0.1	0.1
Brush/Grassland	0.4	0.4
Cropland	0	0
Livestock rangeland/pastureland	0	0
Lawn/landscaping	0	0
Green infrastructure TOTAL (from table below*)	0	0
Impervious surface	0.4	0.4
Stormwater Pond (wet sedimentation basin)	0	0
Other (describe)	0	0
TOTAL	4.5	4.5

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
Constructed tree trenches and tree boxes	0	0
Constructed wetlands	0	0
Constructed green roofs	0	0
Constructed permeable pavements	0	0
Other (describe)	0	0
TOTAL*	0	0

Trees	Percent	Number
Percent tree canopy removed or number of mature trees removed during development	70-80	To be determined
Number of new trees planted	To be determined	To be determined

The sum of the areas within the Cover Types Table does not equal that of the total area; some wetlands are wooded, and there are woods and impervious surface over the stream due to the causeway, thus these areas are listed in multiple categories.

The project would try to preserve as many trees as possible; the project boundaries and tree removal would be redefined as design for the project is further developed. The number of new trees planted would be determined as the site restoration plan is developed.

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 prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.

Unit of Government	Type of Application	Status
United States Army Corps of Engineers	Clean Water Act Section 404 Permit	To be submitted
Minnesota DNR	Public Waters Work Permit	To be submitted
Minnesota State Historic Preservation Office	Archaeological, Cultural, & Historic Resource Review	Submitted
Minnesota Pollution Control Agency	Clean Water Act 401 Certification	To be submitted, if not included in USACE 404 permit coverage
Minnesota Pollution Control Agency	National Pollutant Discharge Elimination System (NPDES)	To be submitted, if needed
Minnesota Pollution Control Agency	Construction Stormwater Permit	To be submitted
Minnesota Pollution Control Agency	State Disposal System Permit	To be submitted
City of Duluth	Filling/Grading/Excavation Permit	To be submitted
City of Duluth	Wetland Conservation Act	To be submitted
City of Duluth	Erosion & Sediment Control Permit	To be submitted
City of Duluth	Shoreland Permit	To be submitted
City of Duluth	Temporary Access Agreement/License	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.22. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 21.

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.

Land Use
The project site is located on land that is owned by the State of Minnesota and the City of Duluth. The Munger Trail runs through the site on an old railroad causeway. The rest of the site is undeveloped forest, shrubs, wetlands.

Land uses in the surrounding area include a mixed-use development and Spirit Mountain Recreation Area. An active BNSF Railway is located approximately 500 feet southeast of the project area. The old railroad causeway where the Munger Trail is once connected to this active line.

There is a small commercial area with shops and restaurants about one quarter mile away. To the south of the project site sits an old golf course that is being developed as the RiverWest housing development. The parcel borders the project area with nearest homes currently about 800 feet from construction area. There is another residential development located about 500 feet to the north/northeast.

Parks and Open Space

The Munger Trail is a system of multiple use trails between Hinckley and Duluth, Minnesota. The trails offer recreational opportunities for hiking, bicycling, skating, snowmobiling, and horseback riding. The trail is approximately 70 miles long and passes through northern hardwood forest, pine forest, and spruce-fir forest. The project site is near the northern terminus of the Munger Trail in Duluth.

Approximately 700 feet southeast of the project location is the Waabizeshikana Trail, a City of Duluth gravel surface hiking trail that parallels the Munger Trail. The Waabizeshikana Trail also crosses Knowlton Creek downstream of the project area.

The Spirit Mountain Recreational Area (an authority of the City of Duluth) and the City-designated Magney Snively Natural Area are located northeast, and upstream of the project.

Prime or Unique Farmlands

There are no prime or unique farmlands within the proposed project area.

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 (SLRAOC) Remedial Action Plan (RAP)

The SLRAOC RAP is a comprehensive plan for delisting the SLRAOC through a series of action steps that address the beneficial use impairments (BUIs) designated for the estuary[3]. The RAP details the actions necessary to remove each of the BUIs identified for the SLRAOC.

The Knowlton Creek Watershed Project was included in the RAP as a restoration site associated with actions for delisting of BUI 9: Loss of Fish and Wildlife Habitat and is included as Action 9.07 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 adjacent to the project as "recreation" open space, which is consistent with the existing use and is compatible with the recreation and habitat goals and objectives for the project.

Duluth Natural Areas Program

The proposed project is in alignment with the Duluth Natural Areas Program, which designates certain lands with environmental value as permanently protected natural places[4]. Lower Knowlton Creek is located within the Tallas Island Project Area of the greater St. Louis River Natural Area.

[3] St. Louis River Area of Concern 2020 Remedial Action Plan (October 1, 2019 – September 30, 2020) (widen.net)

[4] Duluth Natural Areas Program | Home (duluthmn.gov)

Master Plan for the Minnesota – Wisconsin Boundary Trail

The proposed project includes a portion of the Munger Trail, formerly known as the Minnesota-Wisconsin Boundary State Trail. The Munger Trail was authorized in 1973 to provide a trail connection between the Twin Cities and Jay Cooke State Park. The Master Plan[5] specifies the trail be designed so it conforms to the existing landscape and minimizes adverse impacts on the resources. The proposed project fulfills this specification, by eliminating the wildlife passage barrier.

2021 Knowlton Creek MNDNR Fisheries Management Plan

Long range Goal 2 of the 2021 Fisheries Management Plan is to increase the connectivity and resiliency of Knowlton Creek. Objectives 1 and 2 of this goal are to investigate road and trail crossing to determine which, if any are barriers to aquatic organism passage and to work with partners to replace or reconfigure crossings that are barriers to aquatic organism passage. The current culvert under the Munger Trail at Knowlton Creek has been investigated and determined to be a seasonal barrier to aquatic organism passage. This project will eliminate the barrier to aquatic organism passage.

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

City of Duluth Zoning

The project area is located within several zoning districts. The route to access the project area is located within the mixed-use planned (MU-P) and the mixed-use neighborhood (MU-N) zoning districts. The project area for the culvert replacement is located in the industrial general (I-G) zoning district. A small portion of residential traditional (R-1) is included in the EAW review area. The project is compatible with zoning.

Shoreland Zoning

The project is located within the City of Duluth cold water shoreland management zone.

Floodplain

The project area is located within the general floodplain overlay. The general floodplain includes areas designated as Federal Emergency Management Agency (FEMA) Flood Zone A or A1. Designated Flood Zone A or A1 areas include areas which have a 1% annual chance of flooding (100-year flood). The proposed project will be designed to accommodate flood events.

Wild and Scenic Rivers

No wild and scenic designated rivers occur within the project area.

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.

Other

No other special districts or overlays are present. No restrictions are known to be present.

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.

The proposed project would not construct any critical facilities. The proposed work should help mitigate some future increases in precipitation and flooding by reconnecting this area with its floodplain to allow excess flows to spread out and dissipate energy. The project does not propose any facilities or hazardous material storage.

[5] Master Plan for the Minnesota-Wisconsin Boundary Trail and West Addition (state.mn.us)

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

Land uses in the surrounding area include a mixed-use development and Spirit Mountain Recreation Area. The BNSF Railway is located southwest of the project area. There is a small commercial area with shops and restaurants nearby. This project would help nearby residents and users to safely experience the outdoors while improving habitat and reducing negative environmental impacts to the area. The project is not anticipated to have any interaction with the BNSF Railway that could have implications for environmental effects.

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

There are no known potential incompatibilities with nearby land uses, zoning or plans.

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 Duluth Complex subtype of gabbro to troctolite form the bedrock geology of these watersheds. The Natural Resource Conservation Service (NRCS) Web Soil Survey indicates that the depth to bedrock is more than six feet in the project area. Based on the underlying geology, there are no areas within the proposed 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. No effects on geological features are anticipated from the proposed project.

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.

The NRCS soil types within the project are primarily classed as E25D, Urban land-Amnicon-Rock outcrop complex (U-A-ROC) with 0-18% slopes, E18B Urban land-Cuttre Rock outcrop complex (U-C-ROC), 0 to 8% slope, and 1020A, Bowstring and Fluquavents (B&F), loamy with 0 to 2% slopes, frequently flooded (report is available upon request).

The B&F soil class is hydric and exhibits slow infiltration with high runoff potential, while the U-A-ROC and U-C-ROC are predominantly not hydric and allow for faster infiltration. The hydraulic conductivity (Ksat) for this area of Knowlton Creek ranges from 0.0 to 6.0.

The NRCS Erosion Hazard ratings and soil compaction ratings for this area of Knowlton Creek are slight however the rutting hazard ratings are severe. Care still needs to be taken to prevent soil loss.

The overall project objective is to replace a culvert with a bridge allowing the stream channel to reconnect with its flood plain and reconstructing the stream channel to a more stable and resilient condition, better able to handle future rain and flood events, ultimately reducing sedimentation reaching the St. Louis River. Construction vehicle traffic would be confined to a minimal number of access roads and routes to prevent rutting of the compactable soils. Construction activities in areas of fine textured soils would be limited to periods when soils are dry to moist but not wet.

Rock moved during construction would be reused on-site. Any additional rock needed to construct the in-stream features would be locally sourced from pits within 30 miles of the project site.

Approximately 10,000 cubic yards (cy) of soil would be excavated during the construction phase of this project. A small amount of the material may be reused on site. The bulk of the material would be transported off-site and disposed of/reused within permit constraints at the contractor's discretion.

- 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.

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.

Watersheds

The proposed project is located in the St. Louis (#73) major watershed, and unknown DNR minor watershed #3189. Knowlton Creek has a watershed of 1,472 acres.

DNR Public Waters

The project lies within the lower elevations of Knowlton Creek watershed and includes both stream bank and in-stream work. Knowlton Creek (S-002-003.5) is a public water and designated trout stream, which flows into the St. Louis River Estuary (PWI# 975W). From the mouth of Knowlton Creek, the St. Louis River flows about nine miles further where it empties into the Lake Superior. Lake Superior is an Outstanding Resource Value Water (ORVW).

The creek is about 1.8 miles in length with an average slope of 8.1%. Only 5% of the watershed is urban and 9% rural, keeping most of the watershed in forest, wetland, or shrub/grass cover. The watershed is typical of those in Duluth in that they have short, steep gradients, and run through areas of shallow soils over bedrock causing flashy flows that rise and dissipate quickly.

Knowlton Creek is designated cold water shoreland zone by the City of Duluth and has a FEMA mapped floodplain. The St. Louis River (S-002) is a public water with a mapped floodplain and designated general development shoreline zone. It is also an area of Minnesota Biological Survey site of moderate biodiversity significance, a DNR lake of outstanding biological significance and a wild rice lake identified by DNR Division of Wildlife staff. There are many documented invasive species present in the St. Louis River including Alewife, Common Carp, Eurasian Ruffe, Freshwater Drum, Round Goby, Three-spine Stickleback, White Perch, Spiny Water Flea, Snails, Quagga and Zebra Mussels. Current water quality impairments within one mile of the Project are shown in the table below.

MPCA 2023 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
Kingsbury Creek	Mogie Lake to St. Louis Bay (SLB)	2012	04010201-626	Aquatic Life	Benthic macroinvertebrates bioassessments
Kingsbury Creek	Mogie Lake to SLB	2022	04010201-626	Aquatic Life	Chloride
Kingsbury Creek	Mogie Lake to SLB	2012	04010201-626	Aquatic Life	Fish bioassessments
St. Louis River	Pokegama R to Mouth of SLB at Blatnik Bridge	2002	04010201-501	Aquatic Consumption	DDT
St. Louis River	Pokegama R to Mouth of SLB at Blatnik Bridge	2002	04010201-501	Aquatic Consumption	Dieldrin
St. Louis River	Pokegama R to Mouth of SLB at Blatnik Bridge	2002	04010201-501	Aquatic Consumption	Dioxin (including 2, 3, 7, 8-TCDD)
St. Louis River	Pokegama R to Mouth of SLB at Blatnik Bridge	1998	04010201-501	Aquatic Consumption	Mercury in fish tissue
St. Louis River	Pokegama R to Mouth of SLB at Blatnik Bridge	1998	04010201-501	Aquatic Consumption	Mercury in water column
St. Louis River	Pokegama R to Mouth of SLB at Blatnik Bridge	1998	04010201-501	Aquatic Consumption	PCB in fish tissue
St. Louis River	Pokegama R to Mouth of SLB at Blatnik Bridge	1998	04010201-501	Aquatic Consumption	PCB in water column
St. Louis River	Pokegama R to Mouth of SLB at Blatnik Bridge	2002	04010201-501	Aquatic Consumption	Toxaphene

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.

There are no known aquifers, springs, or seeps within the project area. Depth to water table is less than 10 feet according to the Minnesota Hydrogeology Atlas series HG-03. The proposed project is not located in a MDH wellhead protection area. According to the MDH Wellhead Index, the nearest well is an unverified, sealed well (ID# 552017) located approximately 1,900 feet east of the project area, within the Spirit Mountain Recreation Area.

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.

This project will not generate or release wastewater during construction or operation.

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.

This project will not generate or release wastewater during construction or operation.

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.

This project will not generate or release wastewater during construction or operation.

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 or are classified as special as defined in the Construction Stormwater permit. Describe additional requirements for special and/or impaired waters.

Knowlton Creek drains to the St. Louis River behind Tallas Island and ultimately to Lake Superior. There would be minimal land changes associated with the proposed project which would be limited to the area of the existing culvert / proposed bridge. The quality and quantity of stormwater of pre- and post-project runoff would not be impacted.

Total disturbance would be about 4.5 acres. Erosion is not expected to be impacted in the long term but there is higher risk in the short term if a high rainfall event occurs during construction, or before the site revegetates. Erosion control would be addressed with the implementation of the NPDES/SDS Construction Stormwater General Permit and associated Stormwater Pollution Prevention Plan (SWPPP) to comply with requirements per MPCA guidelines. The project would also adhere to guidelines associated with the City of Duluth Erosion Control permit which will include best management plans (BMPs) for perimeter sediment control including vegetated buffers, silt fence, and wattles, and erosion control practices such as minimizing the area of disturbance, rapid re-vegetation, mulching, erosion blankets, and/or hydromulch.

Given that Knowlton Creek is a designated trout stream, additional stormwater control is required as outlined in Sections 23.9, 23.11, and 23.12 of the NPDES/SDS Construction Stormwater General Permit. These requirements include immediately initiating the stabilization of exposed soils and completing stabilization within seven calendar days when not working in an area, use of redundant BMPs within 100 feet of the stream, and minimizing an increase in stream temperature caused by stormwater from one and two year 24-hour precipitation events. The area of disturbance will not exceed five acres, therefore Section 23.10 is not applicable.

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.

The Project would not appropriate any water for construction or operation. Knowlton Creek may be temporarily dewatered, and the streamflow diverted around the active construction area before being returned to the stream. This would limit impacts to water quality at the project site and areas downstream during construction.

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.

City of Duluth ordinances require the applicant submit a complete wetland delineation performed by a professional wetland delineator. A Certified Minnesota Wetland Professional at Short Elliott Hendrickson (SEH) completed a wetland delineation survey in May 2024 ((Attachment 2, select figures; full report available upon request).

The delineation study area included an approximately 5-acre area, centered on the existing culvert, and extending east and west along the Munger Trail. Four wetland basins were identified, delineated, and classified in the delineation study area.

Wetland and Aquatic Resource Characteristics

Wetland 1 - Drains east to Knowlton Creek		
Size (acres)	**Eggers & Reed Classification**	**Circular 39 / Cowardin Classification**
0.2029	Linear Ditch – Shrub-Carr	Type 6 / PSS1B
0.0579	Shrub-Carr	Type 6 / PSS1B
0.0302	Coniferous Swamp	Type 7 / PFO4B

Wetland 2 - Drains east to Knowlton Creek		
Size (acres)	**Eggers & Reed Classification**	**Circular 39 / Cowardin Classification**
0.1438	Linear Ditch – Shrub-Carr	Type 6 / PSS1B
0.1174	Fresh (Wet) Meadow	Type 2 / PEM1B

Wetland 3 - Drains west to Knowlton Creek		
Size (acres)	**Eggers & Reed Classification**	**Circular 39 / Cowardin Classification**
0.101	Hardwood Swamp	Type 7 / PFO1B

Wetland 4 - Drains west to Knowlton Creek		
Size (acres)	**Eggers & Reed Classification**	**Circular 39 / Cowardin Classification**
0.0138	Linear Ditch – Shrub-Carr	Type 6 / PSS1B
0.5384	Shallow Marsh	Type 3 / PEM1C
0.0909	Shrub-Carr	Type 6 / PSS1B

The total wetland acreage within the delineation study area is 1.2963 acres, however some of the wetlands are outside of the areas of disturbance. Disturbed wetlands is estimated at 0.75 acres. Potential wetland impacts from the proposed project include excavation, leveling, tree removal, rutting by heavy machinery, and seeding/planting or other erosion control measures.

The Wetland Conservation Act (WCA) and Clean Water Act (CWA) require that impacts to aquatic resources be avoided or minimized; project alternatives are needed in justifying all impacts. Wetland replacement/mitigation is the last resort when avoidance is not feasible, and minimization has already been achieved. Avoidance, minimization, and mitigation protocol for wetlands is generally determined during the permitting process under consultation with the local Technical Evaluation Panel (TEP), which includes representatives of the US Army Corps of Engineers, DNR, Board of Water and Soils Resources, St. Louis County Soil and Water Conservation District, City of Duluth, among possibly others.

A *Joint Application Form for Activities Affecting Water Resources in Minnesota* will be submitted to the USACE and the City of Duluth (the Minnesota WCA Local Government Unit (LGU)) for wetland boundary and type review and approval. Any development impacting wetlands requires the formal approval by the WCA LGU and the USACE.

The wetlands are not identified as public water wetlands and are not situated below the ordinary high water level (top of bank) (OHWL) of the creek channels. Therefore, WCA rules apply. According to Minnesota Rules, part 8420.0415, subpart D, the project is anticipated to qualify for a “No Net Loss Determination” from the WCA LGU. The project is anticipated to result in only temporary wetland impacts; no permanent impacts are planned at this time. Restoration objectives include erosion control, bank stabilization, aquatic habitat improvement, and establishing a hydraulic connection between the channel and floodplain.

Although existing wetlands would be impacted by construction related activity, impacts will be temporary in nature. Adjacent wetlands are anticipated to be positively impacted by the proposed project, which would receive increased frequency and duration of overbank flooding and a reduction of sedimentation. In the riparian wetland areas that are disturbed, native vegetation would be seeded or planted, and areas would be mulched with straw or covered with erosion control blankets.

No wetlands would be converted to upland and any impacted wetlands would be restored so there will not be any permanent impacts to the host watershed. It is expected that wetland development in areas adjacent.

to the stream would occur due to increasing the frequency and duration of overbank flooding. The project is not expected to have any effect on future wetland impacts due to climate change. Other alternatives may be proposed during the permitting process by the TEP. No mitigation actions are proposed or expected.

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 project would improve conditions in lower Knowlton Creek, by removing a seasonal barrier to wildlife passage. The project would require the excavation of approximately 10,000 cubic yards of material from the Munger Trail causeway to remove the existing culvert and the abandoned culvert allowing for the re-alignment of Knowlton Creek to a more natural condition. Temporary impacts to Knowlton Creek would result from the removal.

Impacts to Knowlton Creek would require State and Federal permits. All actions below the DNR established OHWL, would need to be permitted with a DNR Public Water Work Permit. Section 404 permitting would be required from the Army Corps of Engineers for all actions proposed below the Corps-established Ordinary High Water Mark (OHWM). Minnesota DNR Public Waters Work Permit and Corps Section 404 permitting would be facilitated through the Joint Permit Application process.

The project objective is anticipated to allow Knowlton Creek to reconnect with its floodplain and reconstruct the stream channel to a more stable and resilient condition. A more stable channel is anticipated to reduce erosion potential during storm and flood events, and ultimately reduce sedimentation in the downstream St. Louis River. The project is expected to be an overall enhancement of the aquatic resource and a net benefit for fish and wildlife resources.

The Project would be constructed to minimize erosion to the greatest extent possible. Construction timing is planned for low flow conditions in summer or fall. The stream flow may be routed or pumped around the active construction site. Construction would halt during significant rain events and exposed soils covered. Disturbed areas would be kept to a minimum. Erosion control measures would include seeding and mulching all exposed soils, stabilizing soils, installing erosion control blankets, re-vegetating exposed soils, and maintaining erosion control measures until re-vegetation is complete. Generally, exposed banks would be seeded or planted with native vegetation and/or covered with biodegradable erosion control blanket that would be staked in place. The plantings would minimize long-term erosion of stream banks. Watercraft cannot currently utilize Knowlton Creek, and this project would not change that.

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.

No evidence of contamination has been identified in the project area. The MPCA's *What's In My Neighborhood* database indicates that there are not any contaminated sites within the project area. Despite this, excavation of soils could expose some hidden contamination at any project site. If unknown materials are encountered (i.e., buried containers, unknown seepage, oils, etc.), the proposer would evaluate the risk of contamination and remove the materials under guidance from local or MPCA hazardous material authorities.

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.

No significant solid wastes are anticipated to be generated by the project, though there will be small amounts of construction related wastes, such as plastic and paper containers and packaging. Any waste produced would be removed from the project site either at the end of each workday or during final clean-up and properly disposed of.

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.

During the construction phases of the project, fuels, oils, lubricants and other materials typical for use by earthmoving equipment may be present on site. An accidental release or spill of any of these substances could occur and could result in potentially adverse effects to on-site soils. However, the amounts of fuel and other lubricants and oils would be limited and the equipment needed to quickly contain any contamination would be located on site. No other chemicals or hazardous materials are needed for or would be generated by the project.

The Contractor would be required to prepare a Spill Prevention and Response Plan to address accidental spills or the release of any hazardous material or petroleum products. The plan would be required to include the following measures to avoid and/or minimize spills during construction activities:

- Fueling and equipment maintenance would not be allowed within 100 feet of the water's edge without deploying spill capture methods.
- The contractor would maintain fuel spill containment kits and trained spill response personnel on site at all times.
- Any spill or release of a hazardous material or petroleum products would be reported to the construction site supervisor who would take immediate action to minimize the potential for groundwater or surface water pollution.
- In the event of a significant spill or release of a hazardous material or a petroleum product, the

construction site supervisor would immediately deploy on-site equipment and supplies to contain the spill and contact the MDNR, MPCA and the Minnesota Duty Officer, according to emergency procedures identified in Minnesota Rules, part 7045.0574.

- Temporary, above ground, on-site fuel storage would not be allowed within the 100 year floodplain.
- Below ground storage tanks would not be allowed.

To minimize any potential for spills, fuels for construction would be stored at staging areas away from the stream and pervious surfaces. Equipment refueling and maintenance would be done away from the stream and pervious surfaces, thus reducing the risk of potential contamination.

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.

The project would not generate or store hazardous wastes during construction.

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

Knowlton Creek is a designated trout stream. Fingerling Brook Trout were stocked in Knowlton Creek in 2014 and 2015 to re-introduce Brook Trout to the stream. Adult and juvenile Brook Trout were found below the waterfalls that creates a barrier to upstream movement for the first time in 2018. No Brook Trout were found downstream of the project area. Other species found in the area in 2018 include Largemouth Bass, Brook Stickleback, Central Mudminnow, Creek Chub, Johnny Darter, and White Sucker.

Wildlife

The St. Louis River Estuary (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.

Resident wildlife species likely include white-tailed deer, black bears, furbearers (coyotes, bobcats, raccoon and mink), cottontail rabbits and a variety of small mammals (mice, voles, shrews). Reptiles and amphibians also use the area.

Vegetation

The Project is located within the Split Rock Till Plain Land Type Association, a part of the North Shore Highlands subsection and Northern Superior Uplands Section of the Ecological Classification System of Minnesota. Historically, the forest type in the area was comprised of white and Norway pine, cedar, aspen, and birch. Today, the project area is dominated by tree species including aspen, birch, and ash along with alder and willow near the stream.

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota 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 (MCE2024-00583) from which the data were obtained and attach the

Natural Heritage Review letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

Threatened and Endangered Species Consultation: The Information for Planning and Consultation (IPaC) tool was utilized to generate a list of species and other resources under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS), that are known or suspected to occur near the project area (the IPacC species list is available upon request). Federally-listed species known or suspected to occur near the project area include the Canada lynx (threatened), the gray wolf (threatened), the northern long-eared bat (endangered), the tricolored bat (proposed endangered), the piping plover (endangered), and the monarch butterfly (candidate). There were no critical habitats within the project area identified in the IPaC report.

According to the DNR Natural Heritage Review letter (MCE 2024-00583, Attachment 4) two state-listed species have been documented within one mile of the project area: soapberry (state special concern) and pale sedge (state threatened). A qualified botanist surveyed the project area on June 14, 2024. No rare plant species were observed during the survey.

There are no federally identified critical habitats within the search area for the project. A Conservation Planning Report was generated through the DNR's Minnesota Conservation Explorer (MCE) (available upon request). The Conservation Planning Report indicated there are no Minnesota Biological Survey (MBS) Sites of Biodiversity Significance, DNR native plant communities, calcareous fens, DNR old growth stands, Lakes of Biological Significance, nor Minnesota Prairie Conservation Plan features within the project area.

No USFWS Bat Habitat Conservation Plan (HCP) features were found within the project area. The nearest known roost tree is located approximately 11 miles west of the project area.

The St. Louis River Estuary is directly downstream of the Knowlton Creek project area and is a designated Lake of Biological Significance and MBS Site of Moderate Biodiversity.

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.

Contracting documents would include language that requires preventing or limiting the introduction, establishment and spread of invasive species during construction activities. Among other things, the contractor would be required to prevent invasive species from entering or spreading within a project site by cleaning equipment and clothing prior to arriving at the project site. If invasive species are determined to occur within the project limits, the contractor would also be required to clean equipment prior to leaving the project limits.

Since no state-protected plant species were detected during the plant survey, no state-protected plants are anticipated to be impacted by the proposed project.

Approximately 800 trees greater than 3 inch diameter breast height would need to be removed during the winter of 2025. Tree removal in the winter would ensure that no take of bats would occur. The existing culvert would be inspected for evidence of bats prior to construction. For these reasons, no negative impacts on bats are anticipated to result from the proposed project.

The proposed project is not anticipated to result in adverse impacts to Canada lynx or gray wolf. The proposed project is located within the Duluth City limits, and does not exhibit desirable habitat for either of these large mammals.
The proposed project is not anticipated to result in adverse impacts to monarch butterflies. The existing condition of the project area is an existing culvert. Currently, there is no pollinator habitat at the project area,

therefore no impacts to pollinators, including the monarch butterfly will result.

The proposed project is not anticipated to result in adverse impacts to piping plover. The existing condition of the project area is an existing culvert. Currently, there is no beach habitat at the project area, therefore no impacts to shore birds, including the piping plover will result.

The proposed project is anticipated to result in a positive impact on fish and wildlife. The existing culvert is seasonal barrier to wildlife passage. The proposed bridge will allow the stream to fully function hydraulically, allow for wildlife passage. The bridge will be wide enough to allow Knowlton Creek to reach its flood plain and provide a bench for terrestrial organisms to pass under the Munger Trail.

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.

To avoid and minimize impacts to aquatic species, construction BMPs would be used to exclude turtles from the construction area and prevent erosion/sedimentation to aquatic habitat. Erosion control materials would exclude mesh (plastic, nylon, etc.) that could cause entrapment of wildlife.

The DNR Public Waters Work Permits would include work exclusion periods to protect fish spawning and migration. No activity affecting the bed of the protected water is planned during exclusion periods. For Knowlton Creek, the exclusion period is September 15th through June 30th of the same year.

A NPDES/SDS Construction Stormwater General Permit and associated Stormwater Pollution Prevention Plan (SWPPP) would be required by the MPCA. Given that Knowlton Creek is a designated trout stream, additional stormwater control requirements are necessary. These requirements include immediately initiating the stabilization of exposed soils and completing stabilization within seven calendar days when not working in an area, and the use of redundant BMPs within 100 feet of the stream. These BMPs would minimize adverse effects to fish and wildlife during construction of the project.

15. Historic properties:

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close 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.

The Munger Trail sits on the abandoned Duluth Short Line (Short Line) railroad corridor. The Short Line in the project area was constructed in 1887 and abandoned in 1977. The Munger Trail was developed in the 1980's as a recreational trail. The Duluth Short Line Railroad Corridor Historic District has been determined to be eligible for Listing in the National Register of Historic Places with a period of significance from 1870-1970 according to surveys completed by Andrew Schmidt (Summit Envirosolutions) in 2011 and Miranda Van Vleet (MN Historical Society) in 2014 (reports available upon request).

According to the Minnesota Office of the State Archaeologist's Public Viewer, there are no other known historic structures, archaeological sites, and/or traditional cultural properties in the same sections as the proposed project.

There are several sites listed on the National Register of Historic Places that are within the City of Duluth, however none of these are within the proposed project area.

State archeologists with the DNR initiated a Phase 1 archeological survey in October 2023. A project review request has been to the Minnesota State Historic Preservation Office (SHPO). At the time of this EAW publication, a review response has not yet been received.

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.

Because the project area includes an existing culvert under the Munger Trail, substantial changes to scenic views or vistas are not anticipated. Scenery at the project area includes views of Knowlton Creek from the Munger Trail, which may be enhanced by the project. Construction operations may temporarily impact visual aspects of the area, though these would be expected to be negligible.

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.

    Stationary source emissions are not planned 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 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, 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.

    Odors and dust from the construction activities may occur. Dust would be visually monitored and recorded in conjunction with the NPDES Construction Stormwater Permit inspections. Appropriate dust control BMPs, such as soil wetting or misting/water vapor, would be implemented by the construction contractor as necessary. Specific BMPs would be determined based on severity, weather conditions, and site conditions. Dust and odor from construction equipment would be temporary in nature.

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.

    GHG emissions related to the project were calculated using emission factors from the Environmental Protection Agency (EPA). Emission categories for the project are shown below, as provided in the EQB

Guidance. 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.

Emission Categories for GHG Assessment

Emission Category	Scope	Project Phase	Type of Emission	Estimated GHG Emissions per year (metric ton of Co_2e)
Direct	Scope 1	Construction	Combustion – Stationary Sources	521
Direct	Scope 1	Construction	Combustion – Mobile Sources	13.8
			Total	**534.8**

Construction Emissions

During construction, gas and diesel-powered equipment would be utilized and generate GHG emissions. Construction equipment would generally stay within the project area for the duration of construction. GHG emissions related to construction of the project are anticipated to be minor and temporary in nature. Construction is anticipated to occur from January 2025 to October 2026, with seasonal breaks. The estimated construction timeline includes:

- Tree-clearing on access road and in project area – January 1, 2025, to March 15, 2025.
- Excavation and staging – Begin March 2025
- Demolition, bypass or construction dewatering, and stream channel construction - July 1, 2025, through September 15, 2025
- Construction work outside of the OHWL of public waters – May 2025 to October 2025
- Munger Trail and guardrail work upon completion of the culvert replacement – September to October 2025.
- Asphalt paving – through October 2026
- Vegetation establishment – temporary coverage in 2025; final establishment in 2026

For the purposes of this GHG assessment, it is assumed that there would be 334 days of construction for the project. This assumes construction would be ongoing from January 1, 2025, through October 31, 2025. An additional 30 days in 2026 was assumed for asphalt paving. It is anticipated there would be fewer than 334 days for construction, due to inclement weather or site conditions, but the maximum of 334 was used for the calculations in the GHG assessment.

Anticipated construction equipment includes 330-class or smaller excavators, a crane, a dump truck, skidsteer, loader, generator and dewatering pump, concrete truck, paver, roller, grader, and compactor. The equipment would be utilized in stages and not all equipment would be used in the same timeframe. For the purposes of this GHG assessment, it was assumed that two pieces of diesel-powered equipment would be in operation for 12 hours each day, totaling 4,008 hours per machine.

The default diesel fuel consumption rate of 0.05 gallons per horsepower-hour[6] was used to determine the fuel usage for all equipment. Gallons of diesel fuel that would be used during construction are estimated using the information provided above. Emission factors are based on Table 2 and 5 of the EPA's Emission Factors Hub[7], and were utilized to estimate the emissions of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) generated by construction of the project. Emissions of carbon dioxide, methane, and nitrous oxide are multiplied by their global warming potentials and summed using the following equation to estimate total greenhouse gas emissions (CO_2e): $CO_2e = 1*CO_2+25*CH_4+298*N_2O$.

[6] Microsoft Word - Guidelines for Calculating Emissions from Internal Combustion Engines - March 2023 - FINAL.docx (aqmd.gov)

[7] GHG Emission Factors Hub | US EPA

Construction Emissions

Stationary Sources						Emission Factors[8]			Emissions			
Off-road Equipment	No. Vehicles	Consumption Rate (gal / hr per hp-hr)	Engine Size (hp)	Hours	Total gals	CO_2 (kg/gal)	CH_4 (g/gal)	N_2O (g/gal)	CO_2 (MT)	CH_4 (MT)	N_2O (MT)	CO_2e^2 (MT)
Diesel Equipment	2	0.05	125	4,880	50,100	10.21	0.91	0.56	511.52	4.56E-02	2.81E-02	521.0
											Total	521.0

The operation of mobile vehicles related to the construction of the project, includes commuting construction workers and dump trucks that may haul material to or off-site. For the purposes of this assessment, it was assumed that two on-road passenger vehicles and one dump truck would travel 20 miles per day, to and from the project during the 334-day construction period. Emission factors are based on Table 2, 3, and 4 of the EPA's Emission Factors Hub[8], and were utilized to estimate the emissions of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) generated by construction of the project. An assumed vehicle year of 2017 was used for gas mileage efficiency.

Construction Emissions

Mobile Sources							Emission Factors			Emissions			
Off-road Equipment	Veh/day	Fuel	Days	Miles/ day	Miles/ gals	Est. gals	CO_2 (kg/gal)	CH_4 (g/gal)	N_2O (g/gal)	CO_2 (MT)	CH_4 (MT)	N_2O (MT)	CO_2e^2 (MT)
Passenger Cars - workers	2	Gas	334	20	25	534.4	8.78	0.0054	0.0018	4.7	7.21E-05	2.40E-05	4.7
Dump Truck	1	Diesel	334	20	7.6	878.9	10.21	0.0095	0.0431	9.0	6.35E-05	2.88E-04	9.1
												Total	13.8

According to this GHG assessment for the Project, greenhouse gas emissions due to the construction equipment are estimated to be 534.8 metric tons (MT).

b. GHG Assessment

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

No mitigation to reduce the project's GHG emissions is required. Construction-related emissions would be exempt as de minimis and 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 SLRRI would encourage the selected contractor to reduce GHG emissions from construction, which may include proper maintenance of vehicles and construction equipment, turning off equipment when not in use, and using energy efficient lighting for construction.

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

Not applicable

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.

[8] GHG Emission Factors Hub | US EPA

The GHG assessment indicates the project may generate 534.8 metric tons of emissions during construction. No operational emissions are planned. Over the course of the 50-year net lifetime of the project, these emissions equate to 10.7 metric tons per year. This accounts for 0.00000764% of the state of Minnesota's 2020 emission and the Next Generation Act (NGA) goals.

Description	CO_2e (tons)
Project First Year Total Emissions	534.8
2020 MN Emission & Next Generation (NGA) Goal[9]	140,000,000
Project's First Year % of NGA Goal	0.000382%
Project Annual Emissions/50 Year Net Lifetime	10.7
Project's Annual Lifetime % of NGA Goal	0.00000764%

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 state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

Existing sources of noise in the area include Highway 23/Grand Ave, a major highway that parallels the Munger Trail just over 200 feet to the north of project site, and an active rail line approximately 600 feet to the south. The Munger Trail is also utilized a snowmobile trail in the winter.

Construction activities would occur about 550 feet from the nearest sensitive receptors, which are the residences to the northeast of the project area. The stream is in a deep valley, so the travel of noise would be minimized by the surrounding ridges and forested areas. Access routes along the Munger Trail may have residences and a long-term care facility 100 to 150 feet from the route. The residences and the long-term care facility are closer to Highway 23 than the Munger Trail/access route and would already have increased noise levels due to the highway. The active rail line also runs within 120 feet of the long-term care facility. The SLRRI would contact these residents to inform them of the Project and provide them a description of work hours.

Minnesota Rules, part 7030.0040 establishes two 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 ten percent of the time for one hour (6 minutes/hour)" and L50 is defined as "noise levels exceeding the standard for 50 percent of the time for one hour (30 minutes/hour)." 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 1 includes residential areas while NAC 3 includes highways and rail lines.

Noise standards established for NAC Level 1 areas are as follows: daytime standards (7:00 am to 10:00 pm) for the respective L levels are 65 decibels (dBA) (L_{10}) and 60 dBA (L_{50}); and nighttime standards (10:00 pm to 7:00 am) are 55 dBA (L10) and 50 dBA (L50). According to the Federal Highway Administration, the average noise level at 50 feet from an excavator is 81 dBA (FWHA Construction Noise Handbook, Table 9.1). Sound decreases from a point source at a rate of six dBA for every doubling of distance from the source (MPCA Guide to Noise Control in Minnesota). The table below provides an estimated noise level as a function of distance, based on information from the FHWA handbook and the MPCA guide.

Expected noise level at different distances from construction equipment.

[9] Greenhouse gas emissions in Minnesota 2005-2020 (state.mn.us)

Distance from Source (Feet)	Noise Level (dBA)	Notes/Reference
50	81	Average referenced for excavator/generator in Table 9.1, FHWA handbook
100	75	Calculated based on the MPCA guide
200	69	Calculated based on the MPCA guide
400	62	Calculated based on the MPCA guide
800	56	Calculated based on the MPCA guide

Construction activities would generate noise during the implementation of the project. Noise would be generated from machinery operation, back up beepers, pile driving, 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.

The contractor would be required to minimize noise effects by:

- Restrict equipment operation (7am – 10 pm).
- Require all equipment to have properly operating muffler systems.
- Notify adjacent landowners and businesses about the intent of the Project, duration, expected noise levels and complaint procedures.

All noise impacts would be temporary and limited to construction.

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.

Construction Access and Staging

Construction access would utilize the Munger Trail, and a route cut through City of Duluth property paralleling the Munger Trail to access the stream. Staging for construction equipment would be arranged by the contractor. Potential staging areas for staging and parking of equipment may be available in the parking overflow at the Grand Avenue Chalet, pending permission granted by the City of Duluth/Spirit Mountain.

Traffic

There would be construction traffic using the intersection of Riverwest Drive /Grand Avenue and Riverwest Drive /Munger Trail. The proposer would notify businesses in the Riverwest development adjacent to the project area about upcoming construction timelines. There is a traffic light at the Riverwest Drive and Grand Avenue intersection, which should alleviate congestion. Some construction traffic my also take the Munger Trail to Pulaski Street, though this should be limited. There would be signage and flaggers if needed. If construction takes place during the K-12 school year, the project team would review local busing schedules to avoid student pickup/dropoff timeframes.

Residential/vacation home development on Riverwest Drive could also add construction traffic to Riverwest Drive. Construction has been ongoing 2023.

No other known projects are anticipated to add traffic impacts at this location.

Munger Trail

During construction of the project in 2025, the Munger Trail would be closed in the project area. Trail users would be directed to use a detour on the sidewalk along Pulaski Street, Grand Avenue, and Riverwest Drive.

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,

The proposed project is anticipated to have minimal impacts on congestion and no impact on the regional transportation system. There would be a minimal increase in vehicle traffic between the Munger Trail and Highway 23 on Riverwest Drive, but the stop light at the intersection at Highway 23/Riverwest Drive should minimize these impacts. Also, the access to the construction site on the Munger Trail would be one lane, limiting the number of vehicles that can enter and leave the site.

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. Mitigation is not proposed. The proposer and the contractor would coordinate with the City of Duluth transportation authority.

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.

The proposed project impact area includes the 4.5 acre area surrounding the proposed project, along with the 200 feet of stream work and areas downstream, including Tallas Bay. The project proposes to start in early 2025 with tree clearing; project construction is expected to occur March through October 2025, with final trail repaving being complete by October 2026.

Potential environmental effects of construction from the proposed project includes the potential for temporary water quality/stormwater pollution and temporary wetland impacts. Impacts to cover types, land use, geology, hazardous and solid waste generation, fish, wildlife, and plants, visual, air, green house gas emissions, noise, and transportation are expected to be negligible.

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.

The DNR is aware of several reasonably foreseeable future projects in the vicinity of the Knowlton Creek project including: continued expansion of the RiverWest housing development, City of Duluth snowmobile trail expansion/development, expansion of the Spirit Mountain chalet, and a dredging project within Tallas Bay. However, none of these projects has the potential to interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

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.

There are no reasonably foreseeable future project for which an expectation has been laid that could combine with the environmental effects from the proposed project within the same geographic scales and timeframe of the proposed project to create potential effects greater than those from the proposed project.

Compliance with public waters, wetlands, stormwater, and erosion and sediment permits would help mitigate impacts. The Knowlton Creek Culvert replacement project is expected to add to the resiliency of the Tallas Bay dredging project, as the Knowlton Creek project would stabilize the stream, allow the stream to access the flood plain, and remove the risk of this culvert washing out and refilling Tallas Bay with sediment.

22. Other potential environmental effects: If the project may cause any additional environmental effects not addressed by items 1 to 19, 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.

    There are no other known or potential environmental effects that were not discussed in EAW items 1 through 21.

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

I hereby certify that:

a. The information contained in this document is accurate and complete to the best of my knowledge.
b. 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.
c. Copies of this EAW are being sent to the entire EQB distribution list.

Signature Becky Horton Date Nov. 15, 2024

Title EAW Project Manager