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: Cedar Creek Restoration Project (will be referred to as "the project" in the EAW)

2. Proposer: The Nature Conservancy

Contact person: Chris Lenhart
Title: Restoration scientist/research professor
Address: 1101 West River Parkway, Ste 200
City, State, ZIP: Minneapolis, MN 55415
Phone: 612-269-8475
Fax: NA
Email: amy.cazier@tnc.org

3. RGU: Department of Natural Resources

Contact person: Reid Brown
Title: Project Manager
Address: 500 Lafayette Road
City, State, ZIP: St. Paul, MN 55155
Phone: 651-259-5100
Fax: NA
Email: reid.brown@state.mn.us

4. Reason for EAW Preparation: (check one)

Required:
☐ EIS Scoping
☒ Mandatory EAW
☐ Proposer initiated

Discretionary:
☐ Citizen petition
☐ RGU discretion

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

Minnesota Rules 4410.4300, Subpart 26. Stream diversion.

5. Project Location:

- County: Isanti
- City/Township: Athens Township
- PLS Location (¼, ¼, Section, Township, Range):

Table 1. PLS Location

¼, ¼	Section	Township	Range
NE ¼ Section 16, SE ¼ Section 16	16	34 N	23 W

- Watershed (81 major watershed scale): Rum River (21)
- GPS Coordinates: (Lat 45.438202°, Long -93.209754°)
- Tax Parcel Number

Table 2. Tax Parcel Numbers

Parcel ID	Section	Township	Range	Owner
010160100	16	34 N	23W	UNIVERSITY OF MN REGENTS OF & CEDAR CREEK FORREST RESERVE

The project site is located approximately 3.8 miles southeast of Isanti, Minnesota. Figure 1 shows the location of the project within the state and county. Figure 2 shows the project on a U.S. Geological Survey 7.5 minute, 1:24,000 scale map, and Figure 3 shows the project site overlaid with 2-foot contours.

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

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

Figure 1: Project location map
Figure 2: USGS 7.5 minute quadrangle map
Figure 3: Project location map with topography
Figure 4: Proposed project practices
Figure 5: Existing land cover
Figure 6: Proposed land cover after construction
Figure 7: Project area with FEMA FIRM overlay
Figure 8: Water resources

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 duringthe life of the project (as detailed below in item 7. Climate Adaptation and Resilience).

DNR, 2025a. Climate Trends. Available online at https://www.dnr.state.mn.us/climate/climate_change_info/climate-trends.html

DNR, 2025b. Minnesota Climate Explorer. Available online at Minnesota Climate Explorer

6. Project Description:

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

The Nature Conservancy (TNC) and the University of Minnesota (UMN) propose to conduct a stream re-meander project at Cedar Creek located approximately 3.8 miles southeast of Isanti, Isanti County, Minnesota to address ditching and degraded in-stream habitat to restore the ecological and hydrologic functions of the creek and adjacent floodplain. The

project will include reconnecting the creek to historic meanders in the floodplain, installing riffles for grade control, installing woody material for instream habitat, and restoring native riparian vegetation. The project area occurs within the Cedar Creek Ecosystem Science Reserve and will be funded through a mixture of public and private funds, including a Lessard Sams Outdoor Heritage Council (LSOHC) grant awarded to TNC in collaboration with the Anoka Sandplain Partnership. The Cummins Foundation will also provide funding, and the University of Minnesota will provide access to the site and conduct monitoring and assessment support.

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.

TNC and UMN propose to reconnect historic meanders and restore wetlands along approximately 8,700 feet of Cedar Creek that was ditched in the early 1900's. The project area begins immediately west of Xylite St NE and south of 261st Ave NE and extends approximately one-mile downstream along the existing ditched creek. The ditched creek is not part of the public ditch system. The entire project occurs within the Cedar Creek Ecosystem Science Reserve. The project will include excavation along the historic meanders to reconnect the creek with the floodplain (approximately 1-3 feet of cut depending on existing channel depths), reconnection of several cutoff oxbow channels, selective tree and shrub harvest for site access and meander connections, and installation of ditch plugs to redirect flow into the restored meanders. Figure 4 shows the proposed project practices. The proposed reconnection of historic meanders within the project area will increase the length of Cedar Creek by approximately 4,150 feet and will benefit the stream by reducing and attenuating flood flows and restoring habitat for aquatic biota. The historic meanders are partially filled with sediment; therefore, soil excavation is required to achieve positive stream flow through the meanders. It is anticipated the project will be completed in two phases. Phase 1 will include excavation along the historic meanders and temporary soil stock piling near the proposed ditch plugs. The meanders will be left offline for one year to allow vegetation to become established on the stream banks. Phase 2 will include plugging the ditch using the soils derived from Phase 1 to redirected flows into the restored creek channel, and the existing ditched channel will be abandoned. Over time, it is expected the old ditch would slowly fill in with sediment and organic matter and become an emergent marsh. In general, earthwork and selective tree / shrub harvest will occur within 30 feet of the creek and along construction access trails. Few trees occur along the historic meanders and tree harvest is expected to be less than 0.5 acres in size.

Construction site access will occur off Xylite St NE, and a temporary access trail will follow the historic meanders to conduct excavation and soils hauling. No infrastructure is proposed to be built for this project, and no alterations to existing infrastructure are proposed. TNC will hire a contractor to conduct all proposed tree harvest and stream activities as described in this document.

Erosion control measures that will be implemented during project construction include installation of temporary sediment Best Management Practices (BMP's) such as 100% biodegradable wood fiber biologs to capture surface soil erosion, and installation of 100% biodegradable natural netting and/or hydromulch (without plastics) on all disturbed soils to protect soils. All disturbed soils will be seeded with a cover crop (oats and winter wheat) and

native seed mixtures tailored to this region of the state. Erosion control measures will be installed prior to construction, and mulch and native seeding will occur immediately after final grading per the project Stormwater Pollution Prevention Plan (SWPPP). Construction will include the use of heavy equipment such as excavators and tracked dump trucks and will involve the movement of soil within the project area to complete the project. Impacts to the environment (e.g., disturbed soil, removal of existing vegetation) will be addressed by reconnecting the stream to historic meanders and seeding diverse native vegetation. No waste is expected to be produced during project construction or post construction. Excess soil derived from the project will be placed within the old ditch to restore floodplain habitat degraded by previous ditching activities. All spread soils will be seeded with native seed and covered with mulch. Woody debris will be repurposed for select instream habitat features or used as channel plug material in the old ditch. Phase 1 project construction (tree harvest and meander excavation) is expected to occur over an 8-week period between December 2026-May 2027, and Phase 2 construction (channel reconnection, ditch plugs, and final seeding) will be conducted over a 4-week period between January-April 2028.

Construction Phasing:

1. Installation of erosion control BMP's
2. Initiate selective tree/shrub removal and temporary stockpiling of harvested material
3. Meander excavation and site stabilization / native seeding along new meanders
4. Channel plugging and final native seeding to establish permanent vegetation
5. Removal of erosion control BMP's following establishment of native vegetation

c. Project magnitude:

Table 3. Project quantities

Description	Number
Total Project Acreage	20.0 acres
Linear project length (stream corridor)	8,700 feet
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)	N/A
Structure height(s)	N/A

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.

Stream ditching, channel incision, and degraded instream habitat have been identified in the project area. The primary goal of this project is to reconnect historic stream meanders to restore the pattern and profile of the creek and improve instream habitat for aquatic biota. The project would also increase the length of the creek and re-wet peat soils adjacent to the creek to restore native vegetation and improve water quality of the creek and downstream resources.

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.

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.

Climate change will cause Minnesota to become increasingly warmer and wetter, and there have been dramatic increases in the intensity and frequency of rainstorms within the state (DNR, 2025a). In the Rum River Watershed where the project is located, the average annual precipitation has increased by 4.56 inches since 1895 (DNR, 2025b). The average annual temperature has increased by 3.60° F since 1895, with the most dramatic increases in the average minimum temperature (increase of 4.14° F since 1895) and the average maximum temperature (increase of 3.08° F since 1895). The predicted future increases in precipitation may affect the frequency and duration of flooding within the project area. There has been increased streamflow observed in many central to southern Minnesota streams and rivers within the last 30 years (Lenhart et al. 2012, Ulrich 2023). However, the proposed project will reconnect the creek with the historic channel and help mitigate impacts from increased flooding by dissipating flood velocity over the floodplain and through attenuation of flood peaks on the floodplain. Temperature increases from climate change may increase stream temperature which could negatively impact aquatic biota, but the anticipated temperature impacts will be mitigated in the project area by reestablishing a narrow stream channel through the floodplain which will have less surface area exposed to solar radiation along the project reach. The project would also increase native vegetation along the stream edge which would provide stream shading from overhanging vegetation.

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.

Table 2. Climate Trends and Adaptations.

Resource Category	Climate Considerations	Project Information	Adaptations
Project Design	Increase in annual precipitation, increase in frequency and intensity of rainstorms	Increase in rainstorm intensity may increase the severity of flooding along the stream channel	The project is designed to allow dissipation of flood energy over the reconnected floodplain
Land Use	Increase in average annual temperature	Partial removal of the riparian canopy may increase ground and water temperatures	All disturbed soil will be revegetated with native species that will also provide near-stream shade of the creek. Re-meandering the creek will restore a deeper channel and

Resource Category	Climate Considerations	Project Information	Adaptations
			maintain deep pools in meanders that will help counteract the increase in solar radiation
Water Resources	Addressed in section 12	Addressed in section 12	Addressed in section 12
Contamination/ Hazardous Materials/Wastes	Increase in annual precipitation, increase in frequency and intensity of rainstorms	Temporary increased risk of fuel contamination from construction vehicles working in the floodplain	Construction will not occur during storms and vehicles will not be parked or refueled in the floodplain
Fish, wildlife, plant communities, and sensitive ecological resources (rare features)	Addressed in section 14	Addressed in section 14	Addressed in section 14

8. **Cover types:** Estimate the acreage of the site with each of the following cover types before and after development:

Table 5 shows the existing and proposed land cover types. The existing land cover consists of wet meadow, shrub carr, and a small, forested island in the middle of the project site that is located outside the proposed construction area. Post-project land cover will consist of similar land cover as pre-project conditions but with a reconnected meandering stream through the wetland complex and the old ditch converted to a meandering stream. The increase in stream acreage (proposed) will be the result of reconnecting meanders that would significantly increase stream length post project. No impervious surfaces occur within the project area and none are proposed. See Figure 5 and Figure 6 for existing and proposed land cover maps, respectively.

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Table 3. Land Cover (existing and proposed).

Cover Types	Before (acres)	After (acres)
Wetlands and shallow lakes (<2 meters deep)	15.1	15.1
Ditched wetlands	1.5	0
Deep lakes (>2 meters deep)	0	0
Wooded /Floodplain Forest/ Shrubs	0	0
Rivers/streams (restored)	0	3.4

Cover Types	Before (acres)	After (acres)
Ditches	1.9	0
Brush/Grassland (upland/grassland/prairie)	1.5	1.5
Cropland	0	0
Livestock rangeland/pastureland	0	0
Lawn/landscaping	0	0
Green infrastructure TOTAL (from table below*)	0	0
Impervious surface	0	0
Stormwater Pond (wet sedimentation basin)	0	0
Other (describe)	0	0
TOTAL	20.0	20.0

Table 6. Green Infrastructure.

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

Table 7. Tree Removals.

Trees	Percent	Number
Percent tree canopy removed or number of mature trees removed during development	N/A	25 (over an approximate 0.5 acre area near northern 1/3rd of the Study Area)
Number of new trees planted	N/A	N/A

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.*

Table 8. Permits and approvals.

Unit of Government	Type of Application	Status
Isanti County	Floodplain Permit/No-Rise Certificate	To Be Applied For
U.S. Army Corps of Engineers	Joint Permit Application	To Be Applied For
Department of Natural Resources	Wetland Conservation Act (WCA) Permit	To Be Applied For
Department of Natural Resources	Water Appropriation Permit	To Be Applied For, If Needed
Department of Natural Resources	Public Waters Work Permit	To Be Applied For
Minnesota Pollution Control Agency	National Pollution Discharge Elimination System (NPDES) Construction Stormwater (CSW) Permit	To Be Applied For
Minnesota Pollution Control Agency	401 Water Quality Certification	To Be Applied For, If Needed
State Historic Preservation Office	Archeological or Historic Features/ Properties	To Be Reviewed During Permitting Process

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. 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 area occurs in a rural setting with the nearest town (Isanti) located approximately 3.8 miles to the northwest. County Road 56 (261 St Ave NE) occurs along the north and east sides of the project site with twelve houses that occur within 0.5 miles of the north and east edges of the project boundary. The project area is comprised of a mosaic of shrub and emergent wetlands with fringes of forest and grassland in upland areas. An approximate 50-foot-wide strip of degraded wetland vegetation comprised of reed canary grass and stinging nettle occurs on either side of the ditched creek and appears to correlate with past ditch spoils placed along the channel. The remaining wetland communities within the project area contain better native vegetation quality and diversity. The entire project area occurs within the Cedar Creek Ecosystem Science Reserve which serves to protect rare and unique natural features in the area. Visitors to the site typically include researchers, professors, students, and outdoor recreationists.

   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.

      The entire project area will be managed by UMN staff with occasional assistance by TNC staff, contractors and volunteers. Management goals and activities completed by resource

managers in the past have included invasive species control, plant and animal assessments and population surveys, and ecological research. Given the site is part of the Cedar Creek Ecosystem Science Reserve, there is considerable research planned by the UMN and TNC to assess the effects of the restoration project including hydrologic and sediment transport change, water quality and plant community response, and greenhouse gas flux in the channel and riparian zone.

In terms of native groups or tribes, the land was ceded as part of the 1837 treaty with the U.S. federal government. The land lies near the boundary between the Dakota and Chippewa traditional territories. Currently there are no known tribal activities although CCESR presents opportunities for engagement. The University of Minnesota has a Tribal Outreach office, and they would be consulted for opportunities for engagement with interested tribes.

The Cedar Creek watershed is part of the Rum River One Watershed One Plan (1W1P) led by BWSR with participation from local SWCDS, counties and other government organizations. Cedar Creek is listed as a priority watershed for protection because of CCESR and other protected areas which help to support good water quality in the creek. It is currently not impaired for any water quality pollutants. The stream restoration project should support the 1W1P goals for watershed storage and nutrient load reduction in the long-term

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

The project area is not zoned by Isanti County (parcel entirely owned by the University of Minnesota) and occurs within a Federal Emergency Management Agency (FEMA) 1% Annual Chance Flood Hazard (Figure 7). No shoreland, wild and scenic rivers, or critical areas overlap the project area.

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.

No critical facilities are proposed within the project area.

b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 10a above, concentrating on implications for environmental effects.

The project is compatible with the nearby land use and rural setting of the area. The proposed project would restore stream sinuosity and enhance native vegetation within the stream corridor, improve water quality, and expand fish and wildlife habitat which parallels goals of the Cedar Creek Ecosystem Science Reserve. The project would also provide opportunities for scientific research. Specific management goals can be reviewed in Section 10 ii above. Although the entire creek corridor is within a FEMA floodplain, no structures or fill will be added that might change the flood elevations within or upstream of the project area.

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

No mitigation measures are required for project compatibility with local land use codes.

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 area occurs in a rural setting with the nearest town (Isanti) located approximately 3.8 miles to the northwest. County Road 56 (261 St Ave NE) occurs along the north and east sides of the project site with twelve houses that occur within 0.5 miles of the north and east edges of the project boundary. The project area is comprised of a mosaic of shrub and emergent wetlands with fringes of forest and grassland in upland areas. An approximate 50-foot-wide strip of degraded wetland vegetation comprised of reed canary grass and stinging nettle occurs on either side of the ditched creek and appears to correlate with past ditch spoils placed along the channel. The remaining wetland communities within the project area contain better native vegetation quality and diversity. The entire project area occurs within the Cedar Creek Ecosystem Science Reserve which serves to protect rare and unique natural features in the area. Visitors to the site typically include researchers, professors, students, and outdoor recreationists.

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.

The entire project area will be managed by UMN staff with occasional assistance by TNC staff and volunteers. Management goals and activities completed by resource managers in the past have included invasive species control, plant and animal assessments and population surveys, and ecological research. Given the site is a science reserve, there is considerable research planned by the UMN and TNC to assess the effects of the restoration project including hydrologic and sediment transport change, water quality and plant community response, and greenhouse gas flux in the channel and riparian zone.

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

The project area is not zoned by Isanti County (parcel entirely owned by the University of Minnesota) and occurs within a Federal Emergency Management Agency (FEMA) 1% Annual Chance Flood Hazard (Figure 7). No shoreland, wild and scenic rivers, or critical areas overlap the project area.

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.

No critical facilities are proposed within the project area.

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 project is compatible with the nearby land use and rural setting of the area. The proposed project will restore stream sinuosity and enhance native vegetation within the stream corridor, improve water quality,

and expand fish and wildlife habitat which parallels goals of the Cedar Creek Ecosystem Science Reserve. The project will also provide opportunities for scientific research. Specific management goals can be reviewed in Section 10 ii above. Although the entire creek corridor is within a FEMA floodplain, no structures or fill will be added that might change the flood elevations within or upstream of the project area.

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

No mitigation measures are required for project compatibility with local land use codes.

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 area is underlain by Cambrian and Ordovician dolomite, sandstone, and shale, with bedrock locally exposed in the St. Cloud area. Glacial deposits are generally less than 200 feet thick.
The project area occurs in the Anoka Sandplain which contains kettle lakes, small sand dunes, and tunnel valleys (DNR, 2025c). There are no karst features, sinkholes, or limestone formations in the area, so groundwater impacts from surface water runoff are not anticipated from the proposed project. The proposed project includes reconnection of the creek with the floodplain and enhancement of deep-rooted native vegetation; these aspects will help attenuate flood water and allow for infiltration of water within the project site. The geology will not limit any aspect of the project, and the project would not have a significant effect on any geologic features.

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, highlypermeable 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 inresponse to Item 12.b.ii.
   - 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.

The Web Soil Survey mapped four unique soil units within the project area. The soils consist of a range of types and textures common to the Anoka Sandplain including fine sand, loamy fine sand, peat, and muck. The broader floodplain area consists primarily of Rifle and Seelyeville soils and Markey muck. Table 9 lists the soils identified in the project area.

Table 9. Soils Data from the Web Soil Survey.

Soil Unit	Parent Material	Farmland Class	Hydric Classification	Drainage Class
541 – Rifle and Seelyeville soils	Organic material	Not prime farmland	Predominantly hydric	Very poorly drained
543 – Markey muck	Organic material over sandy outwash	Not prime farmland	Predominantly hydric	Very poorly drained
Zp – Zimmerman loamy fine sand and fine sand, 7 to 12 percent slopes	Sandy outwash	Not prime farmland	Not hydric	Excessively drained
Zu – Zimmerman fine sand, 1 to 6 percent slopes	Sandy glaciofluvial deposits	Not prime farmland	Not hydric	Somewhat excessively drained

The mapped soils along the stream corridor are susceptible to erosion due to channel ditching that concentrates flood energy within the stream channel. Restoring a meandering creek will slow flood energy and allow water to spread out and slow down which will reduce erosive streambank scour. Increasing the density of native herbaceous vegetation along the stream banks will promote further soil stabilization through deep rooting and surface protection provided by the plants. Additional measures to stabilize soils during project construction are listed in #6 Project Description.

The topography of the floodplain within the project area is relatively flat and contains a deep layer of muck and mucky peat. These soils are susceptible to erosion during flood events considering the ditched condition of the creek and lack of meanders to reduce flood energy. To limit further erosion within the project area, the proposed project includes reconnecting approximately 4,150 linear feet of historic channel to the creek and excavating approximately 5,000 cubic yards of soil from the meandering channel to reconnect the creek to the meanders. The excavated soil is proposed to be placed in the old ditch to create channel plugs for the meanders and to restore wetland habitat in the ditch. The soils will be seeded with a native wetland seed mix with erosion control blanket or weed-free straw mulch placed over the surface of the soil to prevent surface erosion. Exposed soil from reconnecting the creek with the floodplain will also include erosion control measures which will meet requirements of the NPDES permit to limit soil erosion in the floodplain before perennial vegetation becomes established. These measures may include 100% biodegradable biologs and all-natural fiber netting.

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.

Cedar Creek is a mapped public watercourse (PWI M-063-003) and is impaired for aquatic recreation due to elevated levels of E. coli. Nearby public water basins include Ice Lake (no impairment), Cedar Bog Lake (no impairment), Stratton Lake (no impairment) and Beckman

Lake (no impairment). Figure 8 shows the location of all mapped surface waters and impairments. In general, surface water drainage occurs during snowmelt and rain events, with significant increases in discharge and flooding occurring after large snowmelt and rain events.

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 area is not within any mapped wellhead protection areas. The closest wellhead protection area is located approximately 1.3 miles northwest of the project boundary near Minnesota State Highway 65 (MN Atlas, 2025). The surficial water table in the project area is generally less than 5 feet below the ground elevation of the floodplain and at the surface water elevation (baseflow elevation) of the creek. The baseflow of Cedar Creek is supported by surficial runoff and groundwater discharge. Well locations were identified using the Minnesota Well Index (MDH, 2025). No wells were identified in the project area. The nearest well is located approximately 400 feet southeast of the upstream end of the project area (unique no. 435616) and occurs within the Tunnel City aquifer. The second well is located approximately 1,000 feet southeast of the upstream end of the project area (unique no. 186152) and occurs within the Tunnel City/Lone Rock FM aquifer. Both well logs are included in Appendix A. Project activities are not expected to affect either well.

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. N/A

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. N/A

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. N/A

No wastewater will be stored onsite or produced during or after this project.

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.

Pre-Construction Site Runoff

The project area is entirely vegetated which helps filter and trap runoff during flood events. There are no stormwater outfalls that occur within the project area, and there are no point sources of stormwater to Cedar Creek in the project area.

Post Construction Site Runoff

The primary goal of this project is to reconnect historic meanders to the creek which will increase the stream length and restore floodplain hydrology. The filtering capacity of the floodplain will be enhanced through a reconnected floodplain that will reduce sediment and nutrient loading to downstream resources. Runoff from the surrounding land will not be altered.

Stormwater and Erosion Control BMP's

The project will disturb more than one acre of land; therefore, the construction contractor will apply for coverage under the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) General Permit with the MPCA prior to the start of construction. A SWPPP will be required and will include erosion prevention and sediment control best management practices (BMPs) used to comply with the requirements of the permit. BMP's will be employed during construction, and inspection of BMPs will be required by the permittee after each rainfall event that exceeds one-half inch in 24 hours. Sediment BMPs will be installed to prevent runoff to the creek while earthwork is in progress. Immediately after the earthwork is complete, all disturbed areas will be seeded and stabilized with erosion control netting and/or hydromulch and crimped straw mulch.

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 theappropriation 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 appropriations would be required during or after construction. However, it is anticipated that during excavation of the historic meanders, temporary culverts would need to be installed to equalize water levels between the meanders and the ditch to prevent the meanders from flooding and limiting vegetation establishment while the meanders are offline. After vegetation becomes established in the meanders (approximately one year after Phase 1 is completed), the culverts would be removed when the meanders are brought online during Phase 2 of the project. No dewatering pumps or well abandonments are expected for 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.

The National Wetlands Inventory (NWI) indicates that nearly the entire project area contains mapped wetlands, including PEM1A (freshwater emergent wetland), PFO1/SS1D (freshwater forested/ shrub wetland), PFO1/EM1D (freshwater forested/ emergent wetland), PSS1/EM1C (freshwater shrub/ emergent wetland), PSS1C (freshwater shrub wetland), and PEM1C (freshwater emergent wetland).

The project will not convert wetlands to non-wetlands. This project will change the type of wetlands along the proposed creek alignment since the meanders are not currently part of the free-flowing channel. However, the ditch that will be abandoned after the meanders are connected will be restored to wetland. The land cover types shown in Table 5 indicate a decrease in ditched wetland and creek features; these features will be converted to restored stream and type 2 & type 3 wetlands (wet meadow and shallow marsh, respectively).

b) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicialditches) 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.

No other surface waters exist within or near the project area except for those described under "i. Surface Water" above.

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.

According to historical aerial photos accessed through Minnesota Historical Aerial Photographs Online, the 1938 image shows a ditched creek with abandoned meander scrolls on either side of the channel. It also appears that part of the northern half of the project area was hayed. Images taken after 1938 appear to show the land idle of agriculture and persisting as a wetland mosaic as it occurs today. Review of historic aerial images revealed no historic structures or buildings within the project boundary.

Site contamination has not been documented within the project boundary. A desktop review of both the Minnesota Department of Agriculture (MDA) and MPCA's "What's In My Neighborhood" databases did not identify any known environmental contamination within the project area, but one wastewater generation site and one hazardous waste site was located within one-mile of the project boundary. Both sites occur upstream of the project boundary, but it is unknown if any contamination has migrated off the properties where the contaminants where discovered.

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.

Any non-biodegradable waste generated from the project such as waste materials from installation of temporary erosion control BMP's (e.g., packaging materials) and food container refuse will be removed from the project site by the contractor once the project is completed.

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 of the project will not require long-term storage of hazardous materials. Portable tanks of diesel fuel and hydraulic fluid will be used to service heavy machinery but will not be stored onsite; these are typically contained inside construction vehicles (e.g., fuel and hydraulic tanks secured to the bed of a construction truck) that depart the construction site at the end of each workday. Small amounts of grease and petroleum for small engines will be stored in weatherproof containers and stored inside a job box or a contractor trailer which are proposed to be temporarily located in an upland staging area. Construction equipment will be refueled outside of the immediate floodplain using portable tanks of fuel mounted to construction vehicles.

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 is not anticipated to generate hazardous waste during construction. The only potential waste items generated are listed in Item 13.b: refuse or scrap materials from erosion control BMP's which would be disposed of after project completion.

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.

Pre-settlement vegetation derived from the original public land survey records indicate the project area was comprised of oak openings and barrens, wet prairie, and conifer bogs and swamps. Post-settlement, the site was impacted by historic ditching and haying in the riparian corridor. The creek was ditched sometime in the early 1900's and has remained as a straight channel to the present day. A distinct strip of reed canary grass has colonized the ditch spoils on both sides of the ditch, but the interior floodplain contains a diversity of native grasses, sedges, and forbs. Outside the project boundary, the Cedar Creek Ecosystem Science Reserve is managed to protect intact native plant communities and rare species, and a wealth of scientific research has been conducted on the flora and fauna of the area.

Despite impacts from historic ditching and past land use, the stream corridor provides habitat for a variety of wildlife. A detailed species list is not available for the project site, but the project site likely supports a wide range of fauna such as mammals (e.g., deer, racoon, otter, opossum, squirrel, chipmunk, beaver, mice, shrews, bats), reptiles and amphibians (e.g., snakes, turtles, toads, frogs), and insects (e.g., skippers, butterflies, moths, beetles, spiders, ants). According to MPCA biological monitoring station 13UM084 located approximately 2.4 miles upstream of the project site, the creek supports a diverse warmwater fish community including brook stickleback, central mudminnow, Johnny darter, northern pike, pearl dace, black bullhead, brassy minnow, finescale dace, northern redbelly dace, tadpole madtom, and white sucker (MPCA 2025b).

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota Biological Survey Sites of Biodiversity Significance, andother sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-XXX and/or correspondence number (MCE 202X-XXXXX, Appendix B) 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.

A review of rare features for the project area was completed using the DNR Natural Heritage Information System (NHIS) database, which included a one-mile search area along the creek corridor in the project boundary. EOR has a license agreement (LA-1068) to access the NHIS database. Eight state listed species were identified within one-mile of the project boundary, including northern long-eared bat (*Myotis septentrionalis*), beautiful jumper (*Marpissa formosa*), Leonard's skipper (*Hesperia leonardus leonardus*), lark sparrow (*Chondestes grammacus*), hooded warbler (*Setophaga citrina*), Blanding's turtle (*Emydoidea blandingii*), butternut (*Juglans cinerea*), and Fuller's bristle-berry (*Rubus fulleri*).

The northern long-eared bat is a federally endangered and state species of special concern that occurs primarily in forests and openings near woodlands from spring through fall and utilizes natural caves and mines for hibernacula in the winter (DNR, 2025d). The species prefers forested areas, especially near water, and roost in trees. Loose bark, natural cavities, and other crevices in trees are used for roosting and maternity colonies. As such, the presence of trees with these features is an important habitat component for this species. Since tree and shrub harvest is proposed during the winter months when bats are in hibernation, the project is not expected to directly impact the northern long-eared bat.

Beautiful jumper, a species of jumping spider, is known from only seven occurrences in Minnesota and is considered a species of special concern. In Minnesota, the beautiful jumper has been observed in upland prairie, lowland prairie, wet meadow/carr, and marsh communities (DNR, 2025e). Little is known about the biology and life history of the species, but it is possible the project area provides suitable foraging and nesting opportunities during the summer months, and possible overwintering areas. Impacts to this species are expected to be minimal since construction activities are proposed during winter and early spring.

Leonard's skipper is a species of special concern that is found in dry sandy prairies, savannas, and forest openings. Larvae are present in late summer and feed primarily on native grass, but some forbs are also used. Adult skippers emerge in August and seek nectar from late season forbs such as blazing stars, goldenrod, and asters (DNR, 2025f). The project area is predominately wetland and provides a limited amount of its preferred dry prairie habitat, though adult skippers may forage for nectar on late season flowers within the project boundary. Impacts to this species are expected to be minimal since project construction is proposed during winter and early spring when adults are absent.

The lark sparrow is a species of special concern that occurs in dry prairies, savannas, dry oak woodlands, and open forests. This species has an affinity for short or sparse vegetation with patches of bare ground and scattered trees (DNR, 2025g). The project area contains predominately wetlands and provides a limited amount of its preferred dry prairie habitat, though adults and young may utilize the project area for foraging. No impacts to this species are expected since the project area does not contain suitable nesting habitat, and project construction is proposed during winter and early spring prior to spring migration of the species.

Hooded warbler is a neotropic migrant and species of special concern that prefers large tracts of deciduous hardwood forest with canopy openings that provide a shrubby understory. Close-canopy

forests are also used during the breeding season (DNR, 2025h). The project area does not contain large tracts of forest suitable for nesting, but the small, wooded island in the middle of the project site may provide habitat for the species. However, no construction or disturbance is proposed for the wooded island. Impacts are not anticipated for this species since project construction is proposed during winter and early spring when the species is absent from the state.

The Blanding's turtle is a state threatened species that uses a variety of habitats including ephemeral wetlands, open marshes, and bottomland wetlands as well as sandy upland areas for nesting (DNR, 2025i). A combination of wetland complexes and adjacent sandy upland areas are required to support viable populations for Blanding's turtles. The project area contains suitable foraging habitat such as the wet meadows and floodplain areas near the creek, and suitable nesting habitat might occur in the dry upland areas near the project boundary. Overwintering habitat is marginal within the creek, but possible overwintering wetlands and deep marshes occur in proximity to the project area, especially the wetlands located just north of 261st St NE. The proposer will develop a Blanding's turtle avoidance plan specific to this project. Secondly, the proposer will create potential overwintering habitat in the abandoned ditch channel once the channel is meandered.

Butternut (Juglans cinerea) is a state endangered species that grows in mesic hardwood forests and on terraces that are situated above floodplains. The primary threat to this tree species is butternut canker which is a fungus that attacks the cambium layer and slowly girdles the tree (DNR, 2025j). The project area does not contain forest habitat except for the small, wooded island in the middle of the project site. However, no construction or disturbance is proposed for the wooded island, so no impacts are expected for this species. A plant survey will be conducted for the butternut within the corridor of impact for the stream restoration project in 2026. This will focus on any locations where the forested fringe that borders the stream valley comes within 50 -100 meters of the stream corridor. Most of these are wet forests, not likely to support butternut which is classified as a facultative upland (FACU) species.

Fuller's bristle-berry is a state threatened species that grows along swales and wet meadows in sandy plains and may also utilize adjacent upland areas if direct sunlight is available with minimal competition from other plants (DNR, 2025k). The project area contains wet meadow habitat and may support this species; therefore, it is anticipated that a rare plant survey will be required prior to project construction to determine if the species is present within the proposed project area. A plant survey will be conducted within the corridor of impact for the stream restoration project for Fuller's bristle-berry in 2026. The proposer has connections with two native-plant experts who work in the Anoka Sandplain that have experience identifying the species.

A review of Native Plant Communities and Sites of Biodiversity Significance was conducted for the project, and three features were identified in the project boundary including two native plant communities: Alder-Maple-Loosestrife Swamp (FPn73a) and Sedge Meadow (WMn82b), and a Site of Biodiversity Significance with an "outstanding" ranking (Cedar Creek Natural History Area).

In addition, the USFWS Information for Planning and Consultation (IPaC) Resources List was reviewed for information on endangered species, critical habitats, migratory birds, refuges and hatcheries, and wetlands that may occur within the same county as the project area. The IPaC report identified 5 species that may occur within the project area (Table 10**,** Appendix **C)**. The IPaC report did not identify any critical habitats, refuges, or hatcheries within the project area.

Table 10. IPaC Federally Listed Wildlife.

Common Name	Scientific Name	Federal Status
Gray Wolf	*Canis lupis*	Threatened
Northern Long-eared Bat	*Myotis septentrionalis*	Endangered
Whooping Crane	*Grus americana*	Experimental Population, Non-Essential (EXPN)
Monarch Butterfly	*Danaus plexippus*	Candidate Threatened
Western Regal Fritillary	*Argynnis idalia occidentalis*	Candidate Threatened

The Cedar Creek Ecosystem Science Reserve where the project is located contains suitable habitat for all species listed in Table 10, though habitat would be considered marginal for the whooping crane considering the wetland types at the project site. The Cedar Creek Ecosystem Science Reserve includes a wide variety of habitats including a mosaic of wetlands, upland prairies, and forests. The project site contains primarily wet meadow and shrub carr habitats that may support foraging and roosting opportunities for the monarch butterfly, western regal fritillary, and northern long-eared bat. Northern long-eared bats have the potential to roost in the trees along the stream corridor, and as such, it is proposed that all tree harvest activities for the project will be conducted in the winter season before bats emerge from hibernation.

The project might temporarily impact the monarch butterfly and western regal fritillary through direct mortality and disturbance to their host plants (milkweed species and violets, respectively) and reduce nectar sources for adults. However, construction of the project is proposed to occur during the winter months when monarch butterflies have migrated south, so impacts to this species are expected to be minimal. If western regal fritillary larvae overwinter in the project site, this species could be impacted during winter construction through direct mortality from ground disturbance activities. However, over the long-term, the project area will provide suitable habitat for these species following establishment of native vegetation since the proposed project will include native seed mixes with specific species that will provide host plants for both species (e.g., common milkweed, swamp milkweed, and violets).

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.

The project would temporarily impact existing flora and fauna within the construction limits through removal of herbaceous and woody vegetation along the proposed creek re-meander, but it would also restore wetland habitat in the old ditch when the restored meanders are brought online. Selective tree and shrub removal will occur within 30 feet of the creek and will have an impact on any species that might use the trees and shrubs for nesting, foraging, or roosting. Earthwork will also occur along the proposed creek meanders which will temporarily disrupt terrestrial and fossorial species that occur in this area. Likewise, the installation of channel plugs and woody material in the abandoned ditch will temporarily disrupt the streambed and the species that live there such as small fishes, amphibians, and macroinvertebrates.

Project construction will impact habitats that could potentially be used by rare and protected species. Removing trees and shrubs from the project site could impact migratory and breeding birds as well

as the northern long-eared bat if this species roosts within the project boundary. The northern long-eared bat hibernates in caves in the winter and roosts in tree cavities and under exfoliating tree bark during the spring and summer (USFWS, 2025). To limit impacts to the northern long-eared bat and other migratory wildlife, tree harvest is proposed to occur in the winter months when most migratory species are absent from the state.

Vegetation clearing and soil excavation would have the potential to temporarily impact floral resources for bumblebees, butterflies, and other insects; however, nearby forest, wetland, and prairie areas occur in proximity to the project boundary that will provide habitat for pollinators while vegetation establishes in the project site. All areas of disturbed soil from construction of the project will be reseeded with native grasses, sedges, and forbs, and all seed mixes proposed for the project will be reviewed and approved by UMN and TNC staff prior to seed installation to ensure pollinator habitat is reestablished within the project area.

A MBS Site of Biodiversity Significance with an "outstanding" ranking occurs entirely in the project boundary (site name: Cedar Creek Natural History Area). Broadly, this MBS site is 2,164 acres in size and includes a mosaic of upland, wetland, and forest types associated with the Anoka Sand Plain. The proposed project will impact the MBS site during construction, and as such, all disturbed soil from project construction will be reseeded with diverse native vegetation suitable to the local ecotype, and invasive species will be managed over the long-term by UMN and TNC staff. The area of the MBS site that overlaps the proposed construction area will be improved through removal of invasive species along the ditch and by restoration of a natural meandering channel that will add approximately 4,150 feet of stream to Cedar Creek.

Climate change threatens to exacerbate impacts to fish and wildlife. Hotter summers and warmer winters combined with partial tree and shrub removal have the potential to increase stream temperatures within the project area. However, the meandering creek will develop deep pools, and the stream banks will be colonized by dense, overhanging vegetation that will partially shade the creek which will help mitigate impacts from solar radiation post construction.

The project will have an overall net-positive impact on the fish, wildlife, and plant communities within the construction area. While project construction has the potential to spread weedy and invasive species through soil disturbance, invasive species will be reduced over the long-term through targeted vegetation management and establishment of a diverse community of native grasses, sedges, and forbs. The project will include a three-year vegetation management plan that will be implemented by the project contractor with input from UMN and TNC staff. Management activities might include targeted mowing and spot herbicide treatments for both woody and herbaceous invasive species. Mowing is only proposed during the first two years of vegetation establishment to limit impacts to developing native vegetation, particularly forbs.

Overall, the proposed project would have a long-term positive benefit to the natural resources in the project area through the following:

- Restoration of a meandering stream will develop diverse riffle and pool habitat that will support a variety of aquatic biota.
- The project would significantly increase the number of pools in the project area which in turn would provide thermal refugia during the summer months and provide overwintering habitat for aquatic organisms.
- The reconnected floodplain would re-wet floodplain soils and improve riparian hydrology that would benefit native hydrophytic vegetation.

- Restoring a meandering creek would help mitigate the release of sediment and nutrients from the project area which would also improve the water quality of downstream resources.
- Native seeding would increase the diversity and extent of native vegetation within the project site, and invasive species identified in the project area would be addressed through long-term targeted vegetation management.
- Seeding native forbs would improve habitat for pollinators including the federally listed monarch butterfly, western regal fritillary, and the state listed Leonard's skipper.

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.

The project would have a net positive impact on fish and wildlife habitat as mentioned above in Item 14.c. **T**he temporary negative impacts from project construction would be mitigated by the following measures:

- No instream work will occur between March 15 to June 15 per DNR work exclusion dates to allow for fish spawning and migration.
- Tree harvest will occur between January 1 - March 15 to minimize impacts to migratory species and tree nesting/roosting species such as the northern long-eared bat.
- The wooded island within the project site will not be disturbed during project construction.
- Significant native trees and shrub massings adjacent to the creek will be preserved for bank stability and habitat diversity.
- Implementation of appropriate sediment BMP's, including rapid soil stabilization, will minimize soil erosion during project construction.
- Upon completion of earthwork, all disturbed soils will be seeded with native species and stabilized with hydromulch and crimped straw and/or 100% biodegradable natural erosion control netting to minimize soil erosion and promote the establishment of vegetation.
- Long-term vegetation management will be implemented by UMN staff to reduce and minimize the spread of invasive species

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

A Phase I archaeological and cultural resources survey has not been completed in the project area; however, this survey is anticipated to be conducted if the project design moves forward. In addition, as part of the Section 404 permitting process, the U.S. Army Corps of Engineers (USACE) will conduct an internal review of the project to fulfill responsibilities under Section 106 of the National Historic Preservation Act to identify and consider impacts the project may have on known historic resources.

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.

Visitors to the Cedar Creek Ecosystem Science Reserve where the project is proposed might observe disturbance to the stream corridor during project construction such as disturbed soil, temporary stockpiling of soil, and presence of construction equipment. These impacts are considered temporary since active construction is to be phased over a 12-week period, including final soil stabilization, erosion control, and native seeding. The proposed planting plan of native herbaceous vegetation is expected to mature over three years post construction and would resemble present conditions except for the restored meandering stream through the floodplain.

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.

   No stationary source of emissions will be employed during construction of the project or in its completed state.

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 such as tracked dump trucks, excavators, and skid steers will be used during construction. Engine emissions including particle pollution, carbon monoxide, hydrocarbons, and nitrogen oxides will increase at the project site during construction, but the release of these pollutants will be minimized to periods of active construction during the day (generally

between 8 am to 5 pm) and will occur over a 12-week period of active construction. Emissions from construction are considered temporary and are not anticipated to cause or contribute to a violation of ambient air quality standards for any pollutants. Emissions are not expected to be noticeable to nearby landowners due to the distance from the project area (the closest home is approximately 500 feet to the east), nor are emissions likely to be problematic to visitors since few machines will be operating at a given point in time. After construction, there will not be any project-related air emissions.

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 project may generate dust during construction from grading activities and from importing materials over dirt access trails. The effect on air quality from fugitive dust generated during construction will be temporary (between the hours of 8 am and 5 pm during a 12-week active construction period) and localized. Dust minimization and prevention efforts are expected to be consistent with state standards contained in Minn. R. ch. 7011 which provide limitations on the amount of dust released from a project or facility. There are no businesses located adjacent to the project site, and the closest house is approximately 500 feet east of the project boundary. Rapid soil stabilization is proposed for the project which will mitigate the release of dust from the work area. Dry soils may also be sprayed with water to limit the release of dust. After construction is complete and vegetation becomes established, the project area would not create any dust.

Odors generated during construction will be temporary and are expected to be odors typical of construction equipment, primarily dust and diesel exhaust. There will be no manufactured odors emanating from the project area after construction.

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 from the project will result from two sources: the operation of construction equipment, and tree/shrub removal during the conversion of floodplain forest/shrub carr to wet meadow. Emissions from construction equipment emissions were calculated by using methods identified in the EQB guidance document and standard metrics from the EPA's Greenhouse Gas Emission Factors Hub (https://www.epa.gov/climateleadership/ghg-emission-factors-hub). Project construction is estimated to take 40 workdays to complete (Phase 1 and Phase 2 combined) and will require the use of four diesel construction vehicles per day (two excavators and two tracked dump trucks). Fuel consumption at an average of 4 gallons per hour and 8-hour working days was used to calculate total fuel use of 5,120 gallons:

Fuel use = days * hours * fuel use per hour * number of vehicles

Emissions were calculated using this equation from the EQB EAW guidance document:

Tons CO2 = fuel use in physical units *CO2 Emission Factor (kg CO2/physical unit of fuel use) * conversion of kg to short tons

Emissions rates in Table 11 were retrieved from the Emissions Factors for Greenhouse Gas Inventory (EPA, 2025) for diesel nonroad construction vehicles.

Table 11. Rates of GHG Emissions for Nonroad Construction Equipment (Source: Emission Factors for Greenhouse Gas Inventories, Tables 2 & 5)

CO2 (kg/gal)	CH4 (grams/gal)	N2O (grams/gallon)
10.21	1.01	0.94

Totals emissions from construction equipment equate to 59.19 tons of carbon dioxide equivalents (CO_2e) which were calculated using the appropriate global warming potential (GWP) for each GHG and the appropriate unit conversion factor.

Land use conversion from forest to grassland is the second category of emissions from the project. An estimated 0.5 acres of floodplain forest/ shrub carr is proposed for harvest to reconnect the historic meanders. Using EPA's Inventory of Greenhouse Gas Emissions and Sinks to estimate an average carbon loss per acre for conversion from forest to grassland, there would be an estimated loss of 14.81 tons of CO_2e per acre converted, which equates to 3.70 tons of CO_2e for the proposed project land conversion. However, all harvested trees and shrubs would be incorporated into the project for habitat and stream structure which is assumed to be a carbon sink. As a result, the total potential project-related emissions are estimated at 59.19 tons of CO_2e (Table 12**)**.

Table 12. Construction Emissions.

Scope	Type of Emission	Emission Sub-type	Project-related CO_2e Emissions (tons)	Calculation Method(s)
Scope 1	Combustion	Mobile Equipment	59.19	Linear rate of diesel non-road construction vehicle emissions
Scope 1	Land Use	Conversion from Forest to Grassland	3.70	Estimated from nationwide averages for conversion from forest to grassland
Scope 1	Land Use	Carbon Sink	(3.70)	Woody material reused for the project
TOTAL			**59.19**	

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.

The project will require the use of Tier 4 emissions level vehicles, which are construction vehicles that meet requirements established by the EPA to reduce particulate matter, nitrogen oxides, and air toxins from emissions from non-road diesel engines. All the reduction methods considered have already been incorporated into the project.

It is not anticipated that the project will require other inputs during its life. The project will reduce the potential for bank erosion through reconnection of historic meanders and subsequent reduction in stream slope. Establishment of diverse, native vegetation will increase sequestration of carbon through dense plant growth and storage of carbon in the soil through the root systems which will mitigate the release of greenhouse gases released from construction of the project.

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 Noise Levels and Sources

The project is located in a remote, rural area. Sources of noise are from vehicle travel on 261st Ave NE near the north and east project boundary and a quarry located approximately 0.5 miles north of the project boundary.

Noise Generated During Construction

The project is expected to generate noise during active construction and will result from operation of heavy equipment to complete the project. Noise impacts will occur only during periods of active construction during the day (generally between 8:00 am to 5:00 pm) and will occur over a 12-week period of active construction. Noise will be generated by construction equipment during the import of materials, earthwork, and tree removal activities. During project construction, it is anticipated that up to four machines will be operating at the same time (e.g., two excavators to remove sediment from the meander channels and two tracked dump trucks to haul soil to a soil disposal area). Noise levels will vary depending on the equipment in use and the distance between construction equipment and receptors. All construction equipment will contain mufflers to reduce engine noise.

Noise Generated After Construction

After construction, the project is not expected to generate any noise. All noise after construction will be from pre-project sources (261st Ave NE and the local quarry).

Nearby Sensitive Receptors

Sensitive nearby receptors include twelve houses located within 0.5 miles from the project site and any visitors to the area when active construction is occurring.

Conformance to State Noise Standards

State noise standards are contained in Minn. R. ch. 7030. The noise standards are based on the land use at the location of the person that hears the noise and the sound level in weighted decibels (dBA) over ten percent (L10) or fifty percent (L50) of an hour.

The land around the project area is residential/rural. Noise limits for residential locations are L10=65 dBA and L50=60 dBA during the daytime, and L10=55 dBA and L50=50 dBA during the nighttime. Noise generated from construction equipment will be limited to the hours between 8:00 am to 5:00 pm Monday through Friday to mitigate impacts of noise to nearby receptors and site visitors. In addition, all construction equipment will contain mufflers to reduce noise impacts generated during active 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.

The project will utilize a staging area located off 261st Ave NE at the entrance to the project site. The staging area will provide parking for construction vehicles and project materials. It is anticipated that one to three construction-related vehicles will be parked in the staging area during the active construction period between the hours of 8:00 am and 5:00 pm over a 12-week construction period. Traffic related to construction vehicles will include the use of one to two transport trucks for construction workers and one truck for importing materials to the project area. It is anticipated the construction vehicles will utilize 261st Ave NE for one to three hours each day during active construction depending on the construction schedule and need for import/ export of materials or excess soil.

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.

It is not anticipated that there will be a significant impact to traffic operations on nearby roads. The contractor will be required to place signage on 261st Ave NE / Xylite St NE when trucks are entering or existing the project area.

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

No traffic mitigation measures will be necessary.

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 project impact area includes the area within the project boundary and aquatic resources downstream of the project site. Project construction is expected to occur in two separate phases over a 12-week period between December 2026 – April 2028 (meander excavation and revegetation in 2027, and new channel connection and ditch plugging in 2028).

For this project, the DNR believes that most of the negative cumulative potential effects would be due to the planned 12-week construction phase of the project. Foreseeable negative impacts of construction would be due to the potential resuspension of sediments in the stream, temporary destruction of habitat for plants including potential takes for state threatened species such as

Fuller's Bristle-berry and Butternut trees (plant survey results pending). The geographic scale for this project is outlined in Fig 1 and the proposed stream restoration would occur over a roughly 4,000ft area of channelized stream and the immediate surrounding landscape. The timeline for this project is projected at 12 weeks for the first phase of construction, and an unspecified amount of time, but presumably less than the first phase, to plug the ditches to reestablish the meanders of the stream pre-channelization.

The DNR also wants to highlight the many positive impacts in the long term (1 year post project and beyond) that this stream restoration project would bring to the immediate area. Water would run slower due to the restoration of the meanders. This would slow erosion and limit turbulence in the water. Adding the meanders would roughly double the length of the stream, adding habitat back that was lost during channelization. There is potential for community science engagement in the area as this work is to be done at Cedar Creek Ecosystem Science Reserve, a research station owned and managed by the University of Minnesota. There are already existing community science efforts underway at Cedar Creek. Detailed descriptions of the effects of the proposed stream restoration project on various aspects of the affected area are discussed below.

Climate change: The project would build resiliency in the stream channel to buffer potential effects of climate change such as increased temperature and rain events. Rain events are considered seasonal and sporadic and rainfall intensity has increased in recent decades. Average annual temperatures have also been increasing which may have cumulative potential effects with partial removal of the tree and shrub canopy. Climate change effects are anticipated to increase for the foreseeable future; however, the reconnected meandering stream channel would reduce flood energy and attenuate stormwater in the floodplain. In the long term, the re-wetted riparian areas along the re-meander and potential increased water levels in the abandoned straight channel would help to decrease carbon dioxide (CO_2) emissions, helping mitigate climate change.

Cover types: The geographic scale for cover types includes impacts to existing wetlands and the ditched creek. The increase in stream acreage (proposed, Table 5) would be the result of reconnecting the creek to historic meanders that would significantly increase stream length, and parts of the old ditch would be converted to restored wetland.

Water resources: Impacts to water resources include the conversion of the ditch to a meandering stream. Temporary water quality impacts (sediment release) may result during the construction of the project.

Rare species: Project construction could impact habitat that could potentially be used by rare and protected species. Removing trees from the project area could impact the northern long-eared bat if any roost trees are removed during project construction. Excavation and vegetation removal may also temporarily impact state listed reptiles and floral resources for rare butterflies, skippers, and spiders; however, the vast wetland complex adjacent to the project site may provide habitat for rare species during project construction.

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.

An effort was made to notify relevant RGUs about the timeline and planned construction phases of this proposed project prior to submission to the Environmental Quality Board (EQB). The DNR has contacted the Isanti County Highway Department and DNR staff hydrologists for the surrounding counties. No reasonably foreseeable projects for which a basis of expectation has

been laid were identified during these contacts that are planned to interact with the environmental effects of the proposed project within the geographic scale and timeframe specified in Question 21a.

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.

After review, the DNR has deemed this project does not have the potential for significant environmental effects based on the framework outlined in MN Rule 4410.1700 Subpart 7 Decision on need for an EIS – Criteria. Any potential environmental effects are deemed to be short-term in nature, mainly during the 12-week construction phase. Cumulative potential effects as discussed in 21a are not anticipated to be significant. The proposer has outlined methods to minimize the impact of the construction phase of this project in 14d of this EAW. Relevant RGUs have been identified and there is no anticipated conflict with other planned work in the area.

Regarding climate change and adaptation, the DNR has determined that this proposed project would positively impact climate adaptation and resilience in the restored stream. For changes to cover types in the affected area of the proposed project, this project would restore lost habitat, roughly doubling the length of the stream. Also, the old, channelized streambed would be converted to valuable restored wetland habitat. For impacts to water resources, the length of the stream would be roughly doubled at the conclusion of the stream restoration and water would be slowed as meanders are restored. Regarding rare species, there would be unavoidable short-term impacts during the construction phase. Construction would necessitate disturbance of the streambed and the nearby soil on the stream banks. This might impact the surrounding vegetation. The proposer is committed to minimizing these impacts through various minimally invasive construction practices outlined in 14d. These short-term impacts coupled with the long-term benefits of this proposed project suggest no significant accumulation of potential effects in the area of the proposed project.

We have determined that this proposed project will positively impact climate adaptation and resilience in the restored stream. This project will also restore lost habitat, roughly doubling the length of the stream. Water will be slowed as meanders are restored. The old, channelized streambed will be converted to valuable restored wetland habitat There will be unavoidable short-term impacts during the construction phase. Construction will necessitate disturbance of the streambed and the nearby soil on the stream banks. This can impact the surrounding vegetation. The proposer is committed to minimizing these impacts through various minimally invasive construction practices outlined in 14d. These short-term impacts coupled with the long-term benefits of this proposed project suggest no significant accumulation of potential effects in the area of the proposed project.

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 environmentwill be affected, and identify measures that will be taken to minimize and mitigate these effects.

No other additional environmental effects are anticipated from this project. Potential environmental effects have been addressed in Items 1 through 19.

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 myknowledge.
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 William Reid Brown Date 2/13/2026

Title EAW Project Manager

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