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 beaddressed collectively under EAW Item 21.*

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

1. Project title

Crissy Lake Dam Modifications

2. Proposer Contact Information

Pomme De Terre River Association

Contact person: Sophia Maruska

Title: Watershed Coordinator

Address: 12 Hwy 28 E, Ste 2

City, State, ZIP: Morris, MN 56267

Phone: 320-589-4886

Email: sophia.maruska@pdtriver.org

3. RGU Contact Information

Minnesota Department of Natural Resources

Contact person: Yvette Gault

Title: Environmental Review Project Manager

Address: 500 Lafayette Road N

City, State, ZIP: St. Paul, MN 55155

Phone: 651-259-5101

Email: environmentalrev.dnr@state.mn.us

4. Reason for EAW Preparation

Required:	Discretionary:
☐ EIS Scoping	☐ Citizen petition
☒ Mandatory EAW	☐ RGU discretion
	☐ Proposer initiated

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

4410.4300 Subp. 27. A. Wetlands and Public Waters: "For projects that will change or diminish the course, current, or cross-section of one acre or more of any public water or public waters wetland except for those to be drained without a permit pursuant to Minnesota Statutes, chapter 103G, the local government unit shall be the RGU."

5. Project Location

- **Exhibit 1: Location Map**
- County: Stevens County
- City/Township: City of Morris
- PLS Location (¼, ¼, Section, Township, Range): Sections 1 and 12, T124N, R42W
- Watershed (81 major watershed scale): Pomme de Terre River (23)
- GPS Coordinates: General: 45.572205, -95.884554
- Tax Parcel Number: 200001001

6. Project Description

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

The Pomme de Terre River Association is proposing a multi-component project to restore the hydrology and natural habitats of the Pomme de Terre River through Crissy Lake in the City of Morris, Minnesota. The project components include removal of the Crissy Lake Dam, installation of two rock arch rapids to replace the existing structure, and channel restoration extending from the existing dam to the upstream end of Crissy Lake.

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

Project Description

The Pomme de Terre River Association is proposing a multi-component restoration project along the Pomme de Terre River as it flows through Crissy Lake in the City of Morris, Minnesota (**Exhibit 2: Project Components Map**). The restoration work includes removal of the Crissy Lake Dam, installation of two rock arch rapids to replace the existing structure, and channel restoration extending from the existing dam to the upstream end of Crissy Lake (**Attachment 4: Preliminary Construction Plans**). The project will

restore a more natural hydrologic regime, improve aquatic habitat, and provide continuous fish passage along the Pomme de Terre River. Additional benefits include recreational opportunities, as the rock arch rapids will support canoeing and kayaking while eliminating drowning hazards commonly associated with dams.

Background

The Crissy Lake Dam was constructed in 1939 as a Works Progress Administration project for lake level control and to provide employment opportunities. Prior to the Crissy Lake Dam, the Mill Dam was in place to provide power to the local stone mill. The Mill Dam failed in 1897. The Crissy Lake Dam is currently operated and maintained by the Minnesota Department of Natural Resources, Ecological and Water Resources Division. Since construction, sediment accumulation upstream of the dam has reduced water depths to less than two feet across most areas upstream of County Highway 10 under normal flow conditions, adversely affecting recreational use and water quality. Replacing the aging dam with a rock arch rapids will eliminate safety and liability concerns, restore aquatic habitat and fish passage, address stream impairments associated with a poor fish community and elevated turbidity, and reduce or eliminate downstream erosion.

Dam Replacement with Rock Arch Rapids

The Crissy Lake Dam currently acts as a barrier to upstream fish migration. The dam will be removed and replaced with two rock arch rapids, one located just downstream of County Highway 10 and the other at the existing dam site. The replacement will address the aging infrastructure of the 86-year-old dam, restore aquatic habitat and fish passage, and eliminate the hydraulic undertow and bank erosion occurring downstream. In combination with the recently constructed rock arch rapids at Pomme de Terre and Perkins lakes upstream, replacement of the Crissy Lake Dam will provide continuous fish passage throughout the watershed, covering 116 miles of the Pomme de Terre River. The next complete fish barrier upstream is located at the outlet of Rose Lake. Construction will include the removal of the existing dam and installation of two riprap-lined ramps and a series of undulating boulder weirs at a three percent longitudinal slope.

Channel Restoration

The accumulation of sediments upstream of the Crissy Lake Dam has created shallow conditions that adversely affect recreational use and water quality. A channel will be constructed from the existing dam to the upstream end of Crissy Lake in combination with the rock arch rapids. The proposed channel will increase water depths, improve fish passage, and enhance aesthetics and recreational opportunities. Construction will involve excavating the proposed channel and using the excavated material as fill to construct the floodplain areas and green space.

Water Elevation Changes

The Normal Summer Pool Elevation was determined using a modeled normal flow condition of 36 cubic feet per second (cfs), representing the 50 percent flow duration. Under proposed conditions upstream of County Highway 10, the Normal Summer Pool Elevation is approximately 1.2 feet lower than existing conditions; however, excavation associated with construction of the upper channel and proposed reservoir will result in increased flow depths relative to existing conditions. Under existing conditions, normal flow depths in this reach are generally less than 2 feet. Under proposed conditions, the proposed reservoir upstream of County Highway 10 will have a normal pool depth of

approximately 4.8 feet, and the restored channel upstream of the reservoir will have a minimum normal depth of approximately 3.3 feet. Between the Upper Rock Arch Rapids and the Lower Rock Arch Rapids (Existing Dam Location), the Normal Summer Pool Elevation under proposed conditions is approximately 4.2 feet lower than existing conditions. However, due to excavation associated with the construction of the downstream channel, depths under normal flow conditions within the proposed channel will be approximately the same as existing conditions.

Elevations:

- Existing Dam Runout: 1079.6
- Existing Normal Summer Pool Elevation Upstream of Existing Dam: 1080.0
- Proposed Upper Rock Arch Rapids Crest: 1078.0
- Proposed Normal Summer Pool Elevation Upstream of Upper Rock Arch Rapids: 1078.8
- Lower Rock Arch Rapids Crest: 1075.0
- Proposed Normal Summer Pool Elevation between Upper Rock Arch Rapids and Lower Rock Arch Rapids: 1075.8.

Construction Methods

Construction will occur during the fall and winter to ensure channel work occurs during the lowest flow conditions. Methods of construction include:

1. Establish site access – this step may include some tree clearing in upland areas for safe access.
2. Installation of downstream in-channel sediment control devices (floating silt curtain) and other erosion control devices.
3. Dewatering – partial dam removal will allow the drawdown of Crissy Lake for better construction conditions.
4. Full dam removal
5. DNR field review to complete inventory of the exposed basin.
6. Report submitted for SHPO review and approval.
7. Channel excavation.
8. Floodplain fill placement.
9. Channel reshaping and sub-cutting as needed to install rapids.
10. Riprap sealed with aggregate mix installed to create rock arch rapids in the channel.
11. Aggregate mix will be used to fill voids in riprap to improve stability and force flows over the riprap.
12. Install boulder weirs in coordination with Department of Natural Resources (DNR) to create a preferred flow path in the rapids.
13. Following construction, reclamation of the adjacent uplands and establishment of vegetation.
14. Removal of downstream sediment control devices and other erosion control devices.

Typical construction equipment used for these types of projects includes excavators, bulldozers, front-end loaders, and skid steer loaders. This equipment will be used for clearing, dam removal, channel excavation, and installation of rock arch rapids. Side-dump trucks and dump trucks will be used to haul rock, boulders, and aggregate onto the site. Construction activities associated with the project are likely to result in temporary noise and dust. Dust will be minimized through standard dust control measures, such as applying water to exposed soils and limiting the extent and duration of exposed soil conditions. This will be accomplished without causing erosion and sedimentation to the stream. Construction

contractors will be required to comply with applicable local noise restrictions and ordinances to the greatest extent.

Natural Resource Impacts

The proposed project is predominantly made up of deepwater habitat, riverine habitat, and wetlands. The areas surrounding the project area include wetland areas, residential properties, and managed public areas. The aquatic resources along the project components are identified by the Minnesota Wetland Inventory (MWI) and the MN Public Waters inventory (PWI). Construction activities will impact these aquatic resources. Impacts to these aquatic resources will include permanent fill and excavation to Crissy Lake/Pomme de Terre River for the installation of two rock arch rapids and the re-meandering of the river. Impacts to aquatic resources are subject to State and Federal regulations and will require authorization through a Clean Water Act (CWA) and Wetland Conservation Act (WCA) permit and a Minnesota Public Waters Work Permit.

The project was submitted for Natural Heritage review through the Minnesota Conservation Explorer (MCE). This project will adhere to the avoidance and mitigation strategies recommended in the letter from the Natural Heritage review including completely avoiding Minnesota Biological Survey (MBS) sites ranked S1, S2, or S3, retain buffers between the project and MBS sites, minimize vehicle use within the sites, do not park vehicles/equipment or stockpile supplies on these sites, do not place spoils at or near the sites, administer erosion control practices, keep equipment clean and free of invasive species, reseed any disturbed areas, and use weed free mulch and seed.

Best management practices (BMPs) for erosion and sedimentation control during construction will be used as needed and could include sediment control logs, erosion control blankets, and silt fences. Erosion and sedimentation controls will be used to avoid impacts to adjacent land, wetlands, and sensitive habitat areas. The construction activities are likely to produce noise and dust. The construction crew will be required to follow local noise ordinances and restrictions. Limiting the extent of soil exposure or watering exposed soils will be done to minimize dust pollution.

Timing and Duration:

The anticipated schedule is outlined below:

- Project EAW: Fall - Winter 2025
- Plans, Specification, and Cost Estimate: Summer 2025 through 2026
- Desired Construction Start: Fall 2026
- Desired Construction Completion: Summer 2027

c. Project magnitude:

Table 1. Project magnitudes

	Impact Zone
Total project acreage (project area)	59.38 acres
Existing Conditions	55.58 acres of open water (reservoir)
Restored Conditions	Following completion of the project there will be approximately 27.86 acres of open water/restored channel area and 31.52 acres of floodplain/wetland area.
Number and type of residential units	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)	0.08 acres of sidewalks and fishing piers
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.

The purpose of the project is to restore the Pomme de Terre River to a more natural hydrologic regime, provide fish passage to upstream and downstream habitats, and improve recreational opportunities while improving public safety. The project is needed due to the sediment buildup that has occurred upstream of the dam. This has reduced water levels, degraded water quality, and negatively impacted aquatic habitats used by all aquatic organisms. Additionally, dam structures pose a risk to public safety through drowning hazards. Crissy Lake has been used for recreation and the dam increases the risks to the safety of the recreational user.

The beneficiaries of the project include local residents, recreational users, and aquatic organisms. The rock arch rapids will provide canoeing and kayaking recreation while eliminating the drowning hazards that accompany dams. It will allow aquatic organisms to move freely upstream and downstream to breeding and feeding habitats. It will also prevent further sedimentation within the reservoir, improving water quality.

e. Are future stages of this development, including development on any other property planned orlikely 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

The Pomme de Terre River Association completed two dam projects along the Pomme de Terre River in 2025, the Perkins Lake Dam Modifications Project and the Pomme de Terre Lake Dam Modifications Project. These past projects contributed to an overall effort to improve and restore the Pomme de Terre River corridor.

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.

Based on the most recent "National Climate Assessment (NCA)."[1] Report, developed by the U.S. Global Change Research Program (USGCRP), described the climate trends in the Midwest as having increases in temperatures, increases in humidity, increases in droughts, increases in heavy rainfalls, and exacerbated stressors on ecosystems. A review of the University of Minnesota's "Minnesota Climate Projections."[2], indicates that the climate in Stevens County is trending to having increased number of days with 1 or more inches of rain, decreased number of sub-zero temperature nights, and an increase in number of days reaching above 90 degrees Fahrenheit. Historically, the project area receives 3 days/year of greater an inch of rain, 35-40 nights/year of sub-zero temperatures, and 10-15 days/year of above 90 degrees Fahrenheit. The trends for mid-century (2041-2060) include 5 days/year of greater an inch of rain, 20-25 nights/year of sub-zero temperatures, and 30-35 days/year of above 90 degrees Fahrenheit.

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 adaptation and resilience of proposed project

Resource Category	Climate Considerations	Project Information	Adaptations
Project Design	The design of the restoration includes removal of the low head dam, installation of a series of rock arch rapids, and channel meandering restoration.	The project will improve natural hydrology, natural habitats, and water quality. This will be done through the removal of the current low head dam. Removal of the aging dam infrastructure will prevent the growing risk of dam failure.	The project will improve regional protections from the current projected climate trends. Restoring the hydrology and habitats will increase ecosystem resilience to stressors. Removing the dam will prevent environmental impacts that would occur from a dam failure.
Land Use	Changes in land use will include restoring the Pomme de Terre River channel and Crissy Lake pool that will restore aquatic habitats, and fish passage, and water quality.	The project will remove the low head dam and install rock arch rapids to improve fish passage, improve water quality, and restore more natural hydrology.	The project will provide protection from precipitation trends and habitat quality trends that would otherwise be degraded from invasives and non-native species.

8. Cover types.

Cover types within the project area pre-construction and post-construction were estimated based on bathymetric data and review of aerial imagery (**Table 3**).

Table 3. Estimated cover types before and after project completion.

Cover Types	Before	After
	Acres	Acres
Wetlands	3.33	30.97
Shallow lakes (<2 meters deep)	55.24	22.76
Deep lakes (>2 meters deep)	0.34	0.01
Wooded/forest	0.40	0.40
Rivers /streams	0	5.09
Brush/Grassland	0	0
Cropland	0	0
Livestock rangeland/pastureland	0	0
Lawn/landscaping	0	0
Green infrastructure TOTAL (from table below*)	0	0
Impervious surface	0	0.08
Stormwater Pond (wet sedimentation basin)	0	0
Developed Open Space	0.07	0.07
Developed Low Intensity	0	0
Developed, Medium Intensity	0	0
Developed, High Intensity	0	0
TOTAL	59.38	59.38

9. Permits and approvals required

Table 4. Required Permits and Approvals

Unit of Government	Type of Application	Status
U.S. Army Corps of Engineers	Section 404	To be applied for
U.S. Fish and Wildlife Service	Endangered Species Act (ESA) Consultation and Approval	To be completed
Minnesota State Historic Preservation Office	Cultural Resources Review/Concurrence	To be completed
Minnesota Pollution Control Agency	Section 401; National Pollutant Discharge Elimination System (NPDES) permit	To be applied for
Minnesota Department of Natural Resources	Public Waters Work Permit	To be applied for
Minnesota Department of Natural Resources	State-listed Species and Rare Features Review	To be completed

10. Land use

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

Land Use

The existing land use within the project area is predominately open water and herbaceous wetlands with minor tracks of grasslands/pastures and developed areas (**Exhibit 4: Land Use Map**). A review of U.S. Department of Agriculture (USDA) Cropland Data Layer (CDL)[3] indicates that the project area is 84.56 % open waters and 13.19 % herbaceous wetlands (**Table 5).**

Table 5. Land Cover Types of project area (Cropland Data Layer 2024)

Project Component (Land Cover)	Acres in AOI	Percent in AOI
Barren	0.01	0.02%
Corn	0.03	0.04%
Deciduous Forest	0.07	0.12%
Developed/High Intensity	0.12	0.2%
Developed/Low Intensity	0.32	0.54%
Developed/Med Intensity	0.06	0.11%
Developed/Open Space	0.07	0.11%
Grassland/Pasture	0.61	1.04%
Herbaceous Wetlands	8.09	13.62%
Open Water	49.97	84.15%
Woody Wetlands	0.04	0.07%

Land Cover

The U.S. Geological Survey (USGS) maintains yearly land cover data across the United States. Based on this data, the project area is made up predominantly of deep water habitat, shallow water habitat, and wetland habitats (2024)[4] (**Table 6**; **Exhibit 3: Land Cover Map**).

Table 6. USGS National Land Cover Database within the project area

Cover Types	Acres	Percent
Wetlands and shallow lakes (<2 meters deep)	4.72	**7.95%**
Deep lakes (>2 meters deep)	51.81	**87.25%**
Wooded/forest	0.3	**0.51%**
Rivers /streams	0	**0.00%**
Brush/Grassland	0.87	**1.47%**
Cropland	0	**0.00%**
Livestock rangeland/pastureland	0.36	**0.61%**
Lawn/landscaping	0	**0.00%**
Green infrastructure TOTAL (from table below*)	0	**0.00%**
Impervious surface	0	**0.00%**
Stormwater Pond (wet sedimentation basin)	0	**0.00%**

Developed Open Space	0.32	**0.54%**
Developed Low Intensity	0.01	**0.02%**
Developed, Medium Intensity	1.00	**1.68%**
Developed, High Intensity	0	**0.00%**
TOTAL	**59.38**	**59.38**

Parks and Open Spaces

Crissy lake is mainly surrounded by the Pomme de Terre Park which includes the Pomme de Terre Campground and the Pomme de Terre Dog Park. There is a sliver of residential properties located along the south west portion of Crissy Lake north of County Road 10. Parcel data indicates that the majority of the land is owned and maintained by the City of Morris and is labeled as Pomme de Terre Park subdivision. Additionally, the area is zoned as a "municipal conservancy". There are no state parks, federal lands, or county-designated lands located within the project limits. The Darnen Waterfowl Production Area (WPA), Grote WPA, Edwards WPA, Coleman Wildlife Management Area (WMA), and Weiler WMA are located within 2 miles of the project area.

Cemeteries

There are no cemeteries located within the project limits. There are two cemeteries, Summit Cemetery and Calvary Cemetery, located along College Ave and E 7th Street approximately 1.25 miles to the northwest.

Trails

There are no Minnesota State Trails located at or near the project area. Additionally, there are no state-designated snowmobiling trails that intersect the project area. The nearest state-designated snowmobiling trails is the West Central Trail Blazer Trail (Trail No. 233) that follows Highway 59 and State Highway 9 through Morris. There are no Minnesota State Water Trails within or near the project area. The Pomme de Terre River State Water Trail is located approximately 15 miles south of the project.

Farmland Classification[5]

The project area consists of three types of farmland classifications that indicate a soils suitability for food, feed, fiber, forage, and oilseed crops. The classifications identified in the project area include "farmland of statewide importance, not prime farmland, and prime farmland if drained." The most prominent classification are soil series that are considered to be "not prime farmland" with approximately 94.80 % of the project area is considered to be this classification (**Table 7**).

Table 7. Farmland Classification Ratings within the project area (NRCS 2024)

Map Unit Name	Farmland Classification	Sum of Acres	Percent of component
Alluvial land, frequently flooded	Not prime farmland	0.0	0.0%
Biscay silty clay loam	Prime farmland if drained	0.5	0.8%
Quam and Cathro soils, 0 to 1 percent slopes, frequently ponded	Not prime farmland	0.3	0.6%
Lamoure silty clay loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland if drained	0.5	0.9%

Lamoure silty clay loam, 0 to 2 percent slopes, frequently flooded	Not prime farmland	0.1	0.1%
Renshaw loam, 0 to 2 percent slopes	Farmland of statewide importance	2.1	3.6%
Sandberg sandy loam, 2 to 12 percent slopes	Not prime farmland	0.7	1.2%
Sandberg sandy loam, 1 to 6 percent slopes	Not prime farmland	0.0	0.0%
Water	Not prime farmland	55.1	92.9%

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

Pomme de Terre River Comprehensive Watershed Management Plan (2020)[6]

The comprehensive watershed management plan was developed by the Pomme de Terre River Association to meet the requirements of the One Watershed, One Plan (1W1P) program. The plan identifies five priority areas for future work. These in "Northern Lakes Area, Christina/Pelican Lakes Area, Pemme de Terre River Lakes Chain Area, Pomme de Terre River Corridor, and Drywood Creek Area." The plan will address the following "priority issues" for each priority area:

- Drinking water protection
- Groundwater conservation
- Altered hydrology
- Poor quality lakes
- High quality lakes
- Protect and restore perennial cover and shallow basins
- Excess pollutants
- Loss of in-stream habitat
- Aquatic invasive species
- Watershed outreach
- Lakeshore owner education

Stevens County Comprehensive Plan (2017)

Stevens County developed and adopted the comprehensive plan in 2017 with the vision of achieving goals that will sustain the quality of the County's natural resources for residents to enjoy. The natural resource vision and goals described in the plan are "the county will identify unique or sensitive natural features of its landscape, both above and below ground, and developed strategies in conjunction with local landowners, businesses and others to adequately manage these resources for use by future generations.

Minnesota River Fisheries Management Plan 2023-2027[7]

The Minnesota DNR developed and implemented a plan for fisheries management goals within the Minnesota River Fisheries Area for 2023 through 2027. The majority of the goals listed are specific to the growth and management of game fish species. The plan does state that one goal is to "expand fish habitat within the Minnesota River Basin by removing or modifying fish passage barriers." The plan that is available on the Minnesota DNR website.

Minnesota Prairie Conservation Plan (2018)[8]

The Prairie Conservation Plan was developed as a 25-year plan to conserve, enhance and restore the Prairie Region of Minnesota. The Prairie Region is primarily the west and southwest portions of Minnesota and is broken up into the "Prairie" zone and the "Forest/Prairie Transition" zone. The Prairie Conservation Plan describes four approaches to prairie conservation including, "all areas of native prairie should be protected from conversion to other land uses, core areas with a high concentration of native prairie, other grasslands, wetlands, and shallow lakes should be enhanced and restored to ensure that the land remains

40% grassland and 20% wetland, at a minimum, with the remainder used as cropland or for other uses, habitat corridors connecting core areas have been more clearly defined, and they continue to include large grassland/wetland complexes at about six-mile intervals along the corridors. within the corridor complexes, there is a goal of 40% grassland and 20% wetland, and for the remainder of the corridors, 10% of each legal land section should be maintained in permanent herbaceous perennial cover, and the remainder of the prairie region, there is a goal to maintain 10 % of each major watershed in perennial grassland and wetland vegetation."

Minnesota Department of Natural Resources Duck Action Plan (2025-2030)[9]
The Minnesota DNR Duck Action Plan is a five-year plan was developed to assist the DNR with "funding and conservation efforts, enhance existing and develop new partnerships, and conduct research and monitoring, that improves the collective understanding and stewardship of dicks and their habitats" The Duck Action Plan describes four goals including "1) Increase the amount of wetland and grassland habitat for ducks, 2) Maintain and enhance wetland, grassland, and forest habitats for ducks, 3) Increase opportunities for and participation in outdoor recreation related to ducks and their habitats, 4) Increase public awareness and appreciation of wetland conservation for ducks and people."

Minnesota's Wildlife Action Plan 2015-2025[10]
The Plan is a conservation effort to "ensure the long-term health and viability of Minnesota's wildlife with a focus on species that are rare, declining, or vulnerable to decline; enhance opportunities to enjoy Species in Greatest Conservation Need (SGCN) and other wildlife and to participate in conservation; and acquire the resources necessary to successfully implement the Minnesota Wildlife Action Plan." A wildlife action plan 2025-2035 is currently being developed.

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

City of Morris administers a Shoreland Management Ordinance that regulates the "use and development of shorelands of public waters within the City of Morris. The provisions of this Chapter apply to the shorelands of the public water bodies. The provisions were adopted pursuant to the authorization and policies contained in Minnesota Statutes, Chapter 103F, Minnesota Regulations, Parts 6120.2500 - 6120.3900, and planning and zoning enabling legislation in Minnesota Statutes, Chapter 462." Additionally, the City of Morris does administer a floodplain ordinance pursuant of MN Rules Part 6120.5800 which regulates the development and landuse changes within floodplain zones.

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

There are no critical facilities proposed to be built within floodplain areas.

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 nearby land uses, zoning, and each plan described in 9a. Each of the plans listed in 9a all have a commonality in that they have goals to restore, enhance, or

maintain water resources and habitats for both environmental benefits and human benefits. The project is compatible with the Pomme de Terre River Comprehensive Watershed Management Plan as it will restore previously altered hydrology and the loss of in-stream habitats. The project is compatible with the Duck Plan, Prairie Conservation, Fisheries Management, and Wildlife Management Plans through the enhancement or restoration of wetland and aquatic habitats. Finally, the project meets one of the goals of enhancing natural resources for public use as described in the Stevens County Plan. The project is zoned by the city as a municipal conservancy and identified as a DNR Natural Environment Lake. Per zoning ordinance, "no permanent structures shall be placed or constructed within the floodplain or flood fringe area of the Pomme de Terre River." The project proposer will need to coordinate with the city and DNR to meet all requirements under these plans.

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

The proposed project is not incompatible with any city, county, or watershed plans. The project proposer will comply with City shoreland and floodplain ordinances. Any required permit approvals will be obtained prior to construction.

11. Geology, soils and topography/landforms

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 geology of the region where the project is located has been the result of the advance and retreat of glaciers. During the latest glaciation, the Wisconsin Glaciation Period, several glaciers advanced across the state, including the Wadena ice lobe, Rainy lobe, Itasca ice lobe, Superior ice lobes, and the Des Moines Lobe. The advance and retreat of glaciers altered the landscape by cutting out riverbeds, depositing sediments that created the rolling topography, and glacier melting fed the thousands of lakes. The surficial geology that makes up the project area includes terraced outwash and washed floodplain alluvium. A review of the Minnesota Natural Resources Atlas indicates Crissy Lake has a depth to bedrock of approximately 300 feet.

The DNR and Minnesota Geologic Survey assess pollution sensitivity to near-surface geologic materials.[11] This assessment analyzes the rate of water movement through the soil to the water table at a depth of 10 feet. The sensitivity rating is described as high, moderate, low, very low, and ultra-low sensitivity of pollution of groundwater. High sensitivity ratings indicate that water travels through the surface at a rate between hours and a week, low and very low indicates a rate of week to a year and ultra-low indicates a travel rate of greater than a year. The project area is mostly surface water with no ratings, but the surrounding area is identified as having high and moderate pollution sensitivity. This indicates that water moves through the soil at a high rate, and the area is more susceptible to contamination.

The geologic features have no limitations or susceptibility to adverse impacts that would be a concern for the proposed project.

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

Soils

According to the USDA, National Resources Conservation Services (NRCS), Web Soil Survey[12], the predominant soils within the projects area includes: ReA, Renshaw loam, 0 to 2 percent slopes (3.60 %) and SgC, Sandberg sandy loam, 2 to 12 percent slopes (1.20 %). Approximately 92.90 % of the project area is water. All soil units identified within the project area are shown in **Table 8 (Exhibit 5: USDA Soils Map).** The soil data includes each soil series Hydrologic group. The Hydrologic group describes each soil's series runoff potential. Runoff potential is based on the rate of water infiltration of soils that are unvegetated, wet, and receive precipitation during long-duration storm events. The hydrologic groups include (A, B, C, or D) in which A represents high infiltration rates (low runoff potential), B represents moderate infiltration rates, C represents slow infiltration rates, and D represents very slow infiltration rates (high runoff potential). Some soils are labeled with dual hydrologic groups (A/D, B/D, or C/D) to describe runoff potential in soils that have been altered in some way (drainage). In these cases, the first letter represents runoff potential in drained areas and the second letter represents runoff potential in undrained areas. The soils within the project area are characterized by low to moderate runoff, with many of the areas being altered by drainage (**Table 8**). The soil textures within the project area are silty clay loam, loam, and sandy loam (**Table 9**).

Table 8. USDA Soils in the project area.

Soil Symbol	Soils Name	Hydrologic Soil Group	Acres	Percentage
Af	Alluvial land, frequently flooded	-	0.00	0.0%
Be	Biscay silty clay loam	B/D	0.50	0.8%
J130A	Quam and Cathro soils, 0 to 1 percent slopes, frequently ponded	C/D	0.30	0.6%
Lm	Lamoure silty clay loam, 0 to 2 percent slopes, occasionally flooded	C/D	0.50	0.9%
Ln	Lamoure silty clay loam, 0 to 2 percent slopes, frequently flooded	C/D	0.10	0.1%
ReA	Renshaw loam, 0 to 2 percent slopes	B	2.10	3.6%
SgC	Sandberg sandy loam, 2 to 12 percent slopes	A	0.70	1.2%
SsB	Sandberg sandy loam, 1 to 6 percent slopes	A	0.00	0.0%
W	Water	-	55.10	92.9%

Table 9. Soil Textures in the project area.

Soil Textures by Component	Acres in AOI	Percent of Component
Silty clay loam	1.40	2.40%
Loam	2.10	3.60%
Sandy loam	0.70	1.20%
Not Listed	55.10	92.90%

The landscape that surrounds the project area is primarily residential properties, commercial properties, and agricultural land. The Pomme de Terre River flows through the project and has been altered from the construction of the dam. This alteration resulted in the creation of Crissy Lake.

Topography

Based on the Minnesota DNR and U.S. Forest Services "Ecological Classification System"[13] the ecological land classification the project is located in is the Prairie Parkland Province, Northern Central Glaciated Plains Section, Minnesota River Prairie subsection. The Prairie Parkland Province covers 16 million acres along the western border of Minnesota. The area was historically dominated by tallgrass prairie. The province's characteristics were formed from several periods of glaciation. The latest glacial period, the Des Moines lobe, deposited calcareous drift in southern Minnesota while Glacial Lake Agassiz formed in northern Minnesota. This glacial lake deposited deep water sediments. Additionally, Glacial River Warren formed a deep valley where the Minnesota River now flows. The North Central Glaciated Plains Section is predominantly upland prairies with some small amounts of marsh, wetland prairies, and wet meadow communities. The Minnesota River Prairie subsection is characterized by till plain ground moraines, end moraines, and lake plains. The subsection follows the deep cut valley of the Minnesota River. The area is predominantly made up of agricultural fields and operations.

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.

Wetlands and Public Waters

Based on a review of the Minnesota Department of Natural Resources Statewide Wetland inventory, the project area includes herbaceous, woody, open water, and riverine type wetlands (**Exhibit 6: NWI Map**).[14] Of the water resource types located within the project area, the majority are Circular 39 Type 5 wetlands (totaling 56.02 acres; 94.94 % of project areas NWI features) and Type 3 wetlands (totaling 0.92 acres; 1.56 % of project areas NWI features) with small areas of shrub, forested, and riverine types (**Table 10**). Additionally, the project area intersects 1 Public Waters basin (Pomme de Terre Reservoir; ID:75009600) and 1 Public Waters watercourse (Pomme de Terre River; Kittle #: M-055-179) (**Exhibit 7: Public Waters Map**).

Table 10. Wetland features within the project area.

NWI Code	Type	Circular 39	HGM	Acres	Percent of AOI
L2UBH	Lake	5	Lentic Lake Throughflow	56.02	94.94%
PEM1C	Freshwater Emergent Wetland	3	Lentic Basin Bi-directional	0.72	1.22%
PEM1C	Freshwater Emergent Wetland	3	Terrene Basin Bi-directional	0.04	0.07%
PEM1F	Freshwater Emergent Wetland	3	Lentic Fringe Bi-directional	0.16	0.27%
PFO1C	Freshwater Forested Wetland	7	Terrene Basin Bi-directional	0.06	0.10%
PFO1D	Freshwater Forested Wetland	7	Terrene Slope Outflow	0.02	0.03%
PSS1C	Freshwater Shrub Wetland	6	Terrene Basin Bi-directional	0.14	0.24%
R2UBH	Riverine	90	Lotic River Throughflow	0.19	0.32%

Shoreland Classifications and Floodplain Designation

Crissy Lake and adjacent floodplain areas is listed as a Minnesota Public Waters Basin and are classified on the MN DNR Shoreland Classification database as "Natural Environment." Additionally, the entire project is located within Zone A (100-year floodplain) as designated by FEMA.

Aquatic Invasive Species

A review of the MN DNR Infested Waters List, neither Crissy Lake and Pomme de Terre River within the AOI are listed as infested. The nearest infested waters are North Pomme de Terre Lake, Middle Pomme de Terre Lake, and Perkins Lake (including 500ft of Pomme de Terre River) upstream of the project area. These lakes are each infested with zebra mussels.

MPCA 303d Impaired Waters List[15]

The Minnesota Pollution Control Agency (MPCA) maintains a list of waters that are impaired and "fail to meet water quality standards" required by the Clean Water Act. These impairments include "mercury levels that lead to limits of fish consumption, phosphorus and other nutrients that grow algae, sediment that clouds water, bacteria that can make water unsafe for swimming, unhealthy conditions for fish and bugs, PFOS found in fish tissue, and sulfate impairments that may hinder the production of wild rice." Based on the MPCA's 2024 Impaired Waters List, the Pomme de Terre River is listed as impaired both upstream and downstream of the project area. These impairments include fish consumption, fishes bioassessments, mercury in fish tissue, invertebrate bioassessments, and turbidity. Additionally, there are tributaries to the Pomme de Terre River that are impaired, but these flow into the river downstream of the project area. These include Muddy Creek, Dry Wood Creek, and two Unnamed Creeks. There are several lakes upstream of the project area that are listed

as impaired. These lakes are interconnected by the Pomme de Terre River. These lakes include Barrett, Pomme de Terre, Stalker, Ten Mile, and Perkins. These waters and their impairments are listed below (**Table 11; Exhibit 8: MPCA Impaired Waters Map)**. The listed waters are classified into "use classifications" and "affected designated use". The use classifications includes 2B (warm and cool water habitats), 2Bg (general warm or cool water), 2Bm (modified warm or cool water), and 7 (limited resource value water). The affected designated use includes aquatic life (AQL), aquatic recreation (AQR), aquatic consumption (AQC), and limited resource value (LRV).

Table 11. MPCA 303d Impaired Waters List within a one-mile radius of the AOI.

Water body name	Waterbody Type	AUID	Use Class	Affected Designated Use	Impairment
Pomme de Terre River	Stream	07020002-562	2Bg	AQC,AQL	FishesBio; Hg-F

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

The project is located in Minnesota's Groundwater Province 4 "Central Province" and described as "thick glacial sediments with sand and gravel aquifers**".** The City of Morris is transected by the boundary of Province 4 and 5. Province 5 "Western Province" is described as "loam or clay loam textured glacial sediments with limited surficial and buried sand aquifers while the Cretaceous and Precambrian bedrock are also limited aquifers".[16] Based on the Depth of Water Table[17] Map from the Minnesota Department of Natural Resources Ecological and Water Resources Division, the majority of the surrounding area is located in areas with water-tables between 0 and 10 feet in depth. There are many areas where the depths reach upwards of 50 feet in depth.

Based on the Minnesota Department of Health's Source Water Protection database, there are no Drinking Water Supply Management Areas (DWSMA) or Wellhead Protection areas within the proposed project area.[18] Portions of the City of Morris are located within the Morris DWSMA and Morris Wellhead Protection Areas. The majority of the DWSMA is identified with a high vulnerability rating while the other areas have a moderate vulnerability rating.

The Minnesota Department of Health maintains a Minnesota Well Index as an inventory of active and inactive wells in Minnesota.[19] There are no wells located within the project area, but there are several wells located within a 1,000 feet (**Table 12**). Well logs are located in **Attachment 5.**

Table 12. Wells within 1,000 feet of the project area (Minnesota Well Index 2021)

Well No.		Status	Well Type
00747468		Active	Domestic
00190732		Active	Irrigation
00523788		Active	Domestic
00117442		Active	Domestic
00194355		Active	Domestic
00174905		Active	Irrigation
00810579		Active	Domestic
00232287		Sealed	Irrigation
00745494		Active	Domestic
00747492		Active	Irrigation
00816885		Active	Irrigation
00816886		Active	Irrigation
00840057		Active	Irrigation
00840058		Active	Irrigation
00856990		Active	Irrigation

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.

Construction related to the project will not produce or treat any sanitary, municipal/domestic, or industrial wastewater.

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.

Not applicable.

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 sucha 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.

Not applicable.

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.

Not applicable.

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.

Currently, the hydrology in the area of the proposed project has been altered or manipulated. Within the project area, the Pomme de Terre River is impounded by the Crissy Lake Dam. This has resulted in reduced water quality and sediment build-up that has had a negative impact on aquatic communities. During construction, there will likely be some sediment discharge into downstream waters. This will be minimized to the greatest extent possible through BMPs and sediment control structures. Upon completion of the rock arch rapids and channel restoration, the hydrology will be restored to a more natural state, improving water quality, aquatic habitats, and aquatic species movement. Additionally, restoring the floodplain/wetland areas within the reservoir will effectively increase infiltration and reduce runoff volumes.

Best Management Practices (BMPs) during and following construction will minimize and avoid the potential adverse environmental effects. During construction, standard erosion control devices and methods will be used around waterbodies, wetlands, and sensitive resources including along the channels to minimize the stormwater and sediment discharges into these areas. These BMPs will be utilized throughout the entirety of the construction phase. The erosion control devices will consist of, but not limited to, erosion control blankets, silt curtains, and straw sediment control logs. Through coordination with the DNR during the permitting phase of the project, the river association will use “wildlife friendly erosion controls” and other biodegradable devices to minimize lasting impacts to fish and wildlife. Post-construction activities will include the restoration of disturbed areas, which may include, but are not limited to, grading to final contours, seeding, and mulching. Areas of re-seeding will be done using a BWSR native seed mix. The area DNR Ecologist will be consulted to determine the best seed mixes for each site.

The project proposers will develop an erosion control plan, apply for an MPCA Construction Stormwater General Permit, and prepare a Stormwater Pollution Prevention Plan (SWPPP) to address state requirements for construction-related erosion, sediment, and pollution control. The standards and rules established by local and watershed agencies will be followed to the extent possible to mitigate the water quality and quantity impacts created by the proposed project.

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

Water appropriation is not anticipated for this project, but some level of dewatering may be required during construction. The dewatering will remain in the same waterbody rather than pumped to a separate waterbody. A water appropriation permit will be required in any situation in which dewatering occurs at a rate greater than the allowed 6.94 gallons per minute per day (10,000 gallons per day). All project dewatering would comply with the MPCA NPDES Construction Stormwater Permit and discharged in a manner that would not adversely affect the receiving water or downstream properties.

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.

Although the majority of the work is within the basin of Crissy Lake and the Pomme de Terre River channel, there is potential for environmental effects to adjacent wetland basins upstream of the dam. The restoration efforts will require some physical changes to the aquatic and riparian habitats, plant community composition, and hydrologic regimes. These impacts may include temporary impacts from the mobilization and use of heavy machinery, permanent fill, permanent excavation,

and removal of plant communities. The goals of the project are to offset the impacts by the net gain in aquatic habitat quality and function, fish and aquatic organism passage, water quality improvements, and reduction in sediment buildup.

The unavoidable permanent impacts to aquatic resources will require the acquisition of local, state, and federal permits. These permits include Clean Water Act (CWA) permits, Minnesota Wetland Conservation Act (WCA) permits, Minnesota DNR Public Water Works permit, and City permits.

Direct Impacts

Rock arch rapids: The direct impacts from the installation of rock arch rapids includes permanent excavation, permanent fill, and clearing and grubbing. The permanent excavation will be limited to the grading required for the placement of rocks for the rock arch rapids. As alluded to, the permanent fill is limited to the installation of rock for the rock arch rapids. The clearing and grubbing will be limited to only what is necessary to provide contractors with safe access to the rock arch rapid sites for construction.

Channel Restoration: The direct impacts from the restoration of the Pomme de Terre River channel include permanent fill within the reservoir and excavation of the low flow channel. These impacts will establish a meandering channel using natural channel design principles, improving water quality, reducing sedimentation, and restoring natural aquatic habitats.

Indirect Impacts

The indirect impact to wetlands from the project may include change in the hydrology regime of adjacent wetlands. These indirect impacts will be permanent but will overall result in improvements to aquatic resource hydrology, plant composition, and functionality.

Climate Trends

Based on the most recent "Fifth National Climate Assessment (NCA)" report, developed by the U.S. Global Change Research Program (USGCRP), the climate trends in the Midwest as having increases in temperatures, extreme precipitation, droughts, and exacerbated stressors on ecosystems. These trends will result in negative impacts to water resources within the project area. Restoring the Pomme de Terre River will protect against the climate trends by improving ecosystem resilience and enhancing ecosystem functions.

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 BMPs that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

The project will impact the Pomme de Terre River and Crissy Lake. In general, the project will include the installation of the two rock arch rapids and restoring the Pomme de Terre River channel through Crissy Lake. These project components will result in changes in the extent and elevation of Crissy Lake and require excavation and fill within the surface waters of Crissy Lake and the Pomme de Terre River.

As mentioned above, the unavoidable permanent impacts to aquatic resources from the installation of rock arch rapids and channel restoration will require the acquisition of local, state, and federal permits. These permits include Clean Water Act (CWA) permits, Minnesota Wetland Conservation Act (WCA) permits, Minnesota DNR Public Water Works permit, and City of Morris zoning permits.

Direct Impacts

Rock arch rapids: As mentioned in the previous section, the direct impact includes permanent fill and excavation for the placement of rock within the Pomme de Terre River. There will be the removal of channel material to prepare each site for the placement of the rocks for the rock arch rapids. The permanent fill will be limited to the placement of various rock sizes. As mentioned, the project will reduce Crissy Lake's footprint as the proposed runout elevation will be lowered approximately 1.5 feet, resulting in a reduced surface area. Under normal flow conditions (36 cfs, representing the 50 percent flow duration), the normal pool elevation for Crissy Lake upstream of County Hwy 10 is expected to be lowered by approximately 1.2 feet.

Channel restoration: The direct impacts include permanent fill and excavation with the Crissy Lake reservoir to restore the channel of Pomme de Terre River and floodplain areas while maintaining areas of open water. These impacts will restore the river using natural channel design principles, improving water quality, reducing sedimentation, and restoring natural aquatic habitats.

Indirect Impacts

The indirect impacts of the project will include change in hydrologic regime and aquatic communities within the project site. The goal of these changes is that they will be beneficial to the aquatic resources, both at the site and upstream and downstream of the site. The goal of the project is that these benefits will include restoring habitat availability for aquatic species that were impeded by the low-head dam, preventing the accumulation of sediments, and improving water quality.

Climate Trends

As mentioned previously, the climate trends are anticipated to cause increases in temperatures, droughts, heavy rainfalls, and exacerbated stressors on ecosystems. At its current condition, the increase in heavy rainfalls, drought, and ecosystem stressors will cause negative impacts to the Pomme de Terre River, downstream waterbodies, and adjacent wetlands. The restoration project will improve water quality and stream habitat conditions that would be degraded by the climate trends if left in its current condition.

13. Contamination/Hazardous Materials/Wastes

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

No potential for interaction that would be caused or exacerbated by project construction and operation is expected. There are no pre-existing sites located within the project area (**Exhibit 9: MPCA What's in My Neighborhood**). There are forty-four sites within a one-half mile of the project. Of these, 10 are for construction stormwater, 2 are for feedlots, 12 are for hazardous waste, 3 are for hazardous waste – minimal quantity generator, one is for industrial stormwater, one is a petroleum remediation leak site, one is SSTS, one is SSTS – licensed organization, and 12 of the sites have multiple activities. Of these sites only one site, a construction stormwater site, is located within 0.25 miles of the project area. When stormwater drains off a construction site, it can carry sediment and pollutants that harm lakes, streams and wetlands. Stormwater permit requirements are designed to control erosion and limit pollution during and after construction. Due to the nature of the type of site and its permit requirements, no impacts due to pre-project conditions are anticipated.

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

The construction of the project will only generate general garbage. The contractors will be responsible for the containment, handling, and disposal of any garbage accumulated during construction. Additionally, the use of BMPs such as containments and storage bins will prevent any solid waste from reaching and potentially contaminating surface waters and wetlands in the area. All solid waste, including materials and debris, produced from construction, will be disposed of daily and in accordance with the contractor's contract requirements.

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

During construction, hazardous material such as fuel would likely be present in very minimal quantities for minimal amounts of time. No above or below-ground storage tanks are planned for permanent use in conjunction with the project. Temporary storage tanks for petroleum products

may be used for refueling equipment during construction. These sites will be located away from sensitive resources. A spill kit will be kept near all storage tanks at all times.

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.

This project does not expect to generate or store any hazardous waste.

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.

As mentioned, the project area is located within the Prairie Parkland Province, Northern Central Glaciated Plains Section, Minnesota River Prairie subsection of the DNR Ecological Classification System[20]. The Prairie Parkland Province is approximately 16 million acres that spans the western border of Minnesota. The province is considered to be a part of the tallgrass prairie. The prairie areas were promoted in these areas due to low precipitation, short snow cover durations, and heavy winds that cause spring fires that deter forest sprawl. The province geology was heavily influenced by the latest glaciation period, that included Glacial Lake Agassiz and Glacial River Warren. Glacial Lake Agassiz deposited thick deep water sediments while Glacial River Warren cut a deep valley that is now occupied by the Minnesota River.

The Northern Central Glaciated Plains Section is characterized by flat and rolling hills made up of calcareous till, the Minnesota River, and the Prairie Coteau made up of glacial till. The majority of the section is made up of upland prairie communities with the river dissected areas support a mosaic of prairie and wooded communities. There are minimal amounts of marsh wetlands, wetland prairies, and wet meadow communities. The Minnesota River Prairie Subsection are characterized by ground moraines, end moraines, and lake plains. The pre-settlement vegetation was predominately tallgrass prairie with fringe forests located along rivers and streams. These forests included silver maples, elms, cottonwoods, and various species of willow. Today, agriculture has replaced the majority of the prairies. Native tallgrass prairies are rare. There are several key habitats common to the subsection including prairie, wetland-nonforest, lake-shallow, shoreline-dunes-cliff/talus, river-headwater to large, and river-very large (Minnesota River).

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-944) and/or correspondence number (MCE 2025-00837) 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.

There are currently 6 endangered species, 12 threatened species, and 32 species of special concern listed as present in the Pomme de Terre River Watershed by the state of Minnesota. (**Table 13**).[21]

Additionally, federally listed species include the monarch butterfly (*Danaus plexippus*) and Western regal fritillary (*Argynnis idalia occidentalis*) as proposed threatened species and the Suckley's Cuckoo Bumble (*Bombus suckleyi*) as a proposed endangered species.

In addition, a MCE Natural Heritage data review was submitted and the MN DNR Division of Ecological and Water Resources completed an in-depth review of rare natural communities and rare species that are present within the impact zones of the proposed project (**Attachment 1: Minnesota Conservation Explorer – Natural Heritage Review and Conservation Planning Report**).[22] Based on the review by DNR staff, there is one Site of Moderate Biodiversity Significance which also encompasses a Mesic Prairie (Southern) (UPs23a) Native Plant Community that is ranked as imperiled (S2). Additionally, the review indicated the presence of Elktoe (Alasmidonta ligamentina) – threatened, loggerhead shrikes (Lanius ludovicianus) – endangered, northern caddisfly (Limnephilus secludens) – endangered, prairie vole (Microtus ochrogaster) – special concern, and northern grasshopper mouse (Onychomys leucogaster) – special concern.

Avoidance measures will be required to prevent adverse effects to these species. Avoidance measures detailed in the NHIS review for Elktoe included hiring a qualified surveyor to determine if suitable habitat is present or if the species is present. A permit will be required if the species is present. The loggerhead shrike was determined to not be impacted from the project. The northern caddisfly is found in streams but little is known about habitat dependence. It was noted that other caddisfly species are known to be sensitive to changes to the riparian corridor. No avoidance measures were described in the review letter, but the project proposer will coordinate with DNR staff prior to construction to discuss minimization measures should the species be found at the site. The project will administer wildlife-friendly erosion control devices to prevent effects to the prairie vole and northern grasshopper mouse.

Table 13. State-listed Threatened and Endangered Species in Pomme de Terre River Watershed.

Common name	Scientific name	Group	Federal status	State status
A Caddisfly	*Limnephilus secludens*	insect	none	endangered
A Jumping Spider	*Habronattus viridipes*	spider	none	special concern
A Jumping Spider	*Paradamoetas fontanus*	spider	none	special concern
American Ginseng	*Panax quinquefolius*	vascular plant	none	special concern
American White Pelican	*Pelecanus erythrorhynchos*	bird	none	special concern
Black Sandshell	*Ligumia recta*	mussel	none	special concern
Blanding's Turtle	*Emydoidea blandingii*	reptile	none	threatened
Burrowing Owl	*Athene cunicularia*	bird	none	endangered
Creek Heelsplitter	*Lasmigona compressa*	mussel	none	special concern
Dakota Skipper	*Hesperia dacotae*	insect	threatened	endangered
Elktoe	*Alasmidonta marginata*	mussel	none	threatened
Fawnsfoot	*Truncilla donaciformis*	mussel	none	threatened
Few-flowered Spikerush	*Eleocharis quinqueflora*	vascular plant	none	special concern
Fluted-shell	*Lasmigona costata*	mussel	none	threatened
Forster's Tern	*Sterna forsteri*	bird	none	special concern
Great Plains Toad	*Anaxyrus cognatus*	amphibian	none	special concern
Hair-like Beak Rush	*Rhynchospora capillacea*	vascular plant	none	threatened

Common name	Scientific name	Group	Federal status	State status
Henslow's Sparrow	*Centronyx henslowii*	bird	none	endangered
Hill's Thistle	*Cirsium pumilum* var. *hillii*	vascular plant	none	special concern
Hooded Warbler	*Setophaga citrina*	bird	none	special concern
Lake Sturgeon	*Acipenser fulvescens*	Fish	none	special concern
Largescale Stoneroller	*Campostoma oligolepis*	fish	none	special concern
Lark Sparrow	*Chondestes grammacus*	bird	none	special concern
Least Darter	*Etheostoma microperca*	fish	none	special concern
Leonard's Skipper	*Hesperia leonardus*	insect	none	special concern
Loggerhead Shrike	*Lanius ludovicianus*	bird	none	endangered
Louisiana Broomrape	*Orobanche ludoviciana*	vascular plant	none	threatened
Marbled Godwit	*Limosa fedoa*	bird	none	special concern
Mucket	*Actinonaias ligamentina*	mussel	none	threatened
Mudpuppy	*Necturus maculosus*	amphibian	none	special concern
Northern Grasshopper Mouse	*Onychomys leucogaster*	mammal	none	special concern
Olive-colored Southern Naiad	*Najas guadalupensis* ssp. *olivacea*	vascular plant	none	special concern
Poweshiek Skipperling	*Oarisma poweshiek*	insect	endangered	endangered
Prairie Mimosa	*Desmanthus illinoensis*	vascular plant	none	special concern
Prairie Moonwort	*Botrychium campestre* var. *campestre*	vascular plant	none	special concern
Prairie Vole	*Microtus ochrogaster*	mammal	none	special concern
Pugnose Shiner	*Miniellus anogenus*	fish	none	threatened
Purple Martin	*Progne subis*	bird	none	special concern
Red Three-awn	*Aristida purpurea* var. *longiseta*	vascular plant	none	special concern
Red-shouldered Hawk	*Buteo lineatus*	bird	none	special concern
Regal Fritillary	*Argynnis idalia*	insect	none	special concern
Round Pigtoe	*Pleurobema sintoxia*	mussel	none	special concern
Sea Naiad	*Najas marina*	vascular plant	none	special concern
Short-pointed Umbrella Sedge	*Cyperus acuminatus*	vascular plant	none	threatened
Small White Lady's-slipper	*Cypripedium candidum*	vascular plant	none	special concern
Spike	*Eurynia dilatata*	mussel	none	threatened
Spiral Ditchgrass	*Ruppia cirrhosa*	vascular plant	none	special concern
Sterile Sedge	*Carex sterilis*	vascular plant	none	threatened
Trumpeter Swan	*Cygnus buccinator*	bird	none	special concern
Twig Rush	*Cladium mariscoides*	vascular plant	none	special concern
Western Hog-nosed Snake	*Heterodon nasicus*	reptile	none	special concern
Wilson's Phalarope	*Phalaropus tricolor*	bird	none	threatened

The United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation Tool[23] identified the monarch butterfly (*Danaus plexippus*) and Western regal fritillary (*Argynnis idalia occidentalis*) as a proposed threatened species, and the Suckley's Cuckoo Bumble (*Bombus suckleyi*) as a proposed endangered species potentially located within the projects footoprint (**Attachment 2: U.S. FWS Threatened and Endangered Species List; Attachment 3: U.S. FWS Effect Determinations Verification Letter**). No critical habitats were identified within the project area. The IPaC identified one eagle, the

bald eagle (*Haliaeetus leucocephalus*), and 13 other migratory bird species within the project area. The migratory birds includes the American golden-plover (*Pluvialis dominica*), bald eagle (*Haliaeetus leucocephalus*), black tern (*Chlidonias niger surinamenisis*), black-billed cuckoo (*Coccyzus erythropthalmus*), bobolink (*Dolichonyx oryzivorus*), chimney swift (*Chaetura pelagica*), Franklin's gull (*Leucophaeus pipixcan*), lesser yellowlegs (*Tringa flavipes*), northern harrier (*Circus hudsonius*), pectoral sandpiper (*Calidris melanotos*), red-headed wood pecker (*Melanerpes erythrocephalus*), short-billed dowitcher (*Limnodromus griseus*), and western grebe (*Aechmophorus occidentalis*).

The U.S. Fish and Wildlife Service and a Minnesota Endangered Species specialists will be consulted prior to construction to identify measures to avoid or minimize impacts to these species. Some avoidance measures that will be considered includes avoiding suitable habitat locations and change the timing of construction to avoid nesting seasons.

Minnesota Biological Survey (MBS)

A review of current MBS data indicates that there are 2 native plant communities and 1 sites of biodiversity significance located within and adjacent to the project area (**Table 14; Table 15**; **Exhibit 10: MBS Sites of Biodiversity Significance Map; Exhibit 11: Native Plant Communities Map**). The native plant communities occur along the northern portion of the project area and are upland prairie type communities. The Darnen 1 Site of Biodiversity Significance occurs in multiple areas of the project and is of "moderate" biodiversity significance.

Table 14. Native Plant Communities within the project area

Code and Name	*S Rank Code*	*Observation Year*
UPs13d - Dry Hill Prairie (Southern)	S2	1999
UPs23a - Mesic Prairie (Southern)	S2	1999

Table 15. Sites of Biodiversity Significance within a one-mile buffer of the project area

Name	Biodiversity Significance	Acres
DARNEN 1	Moderate	202.7

Noxious Weeds

The Minnesota Department of Agriculture lists 16 species "Prohibited Eradicate Noxious Weeds", 16 species "Prohibited Control Noxious Weeds, 19 species "Restricted Noxious Weeds", and 6 species "Specially Regulated Plants" (**Table 16**).[24] Stevens County does not maintain a county list of noxious weeds. The project will comply with the Minnesota Noxious Weed Law (Minnesota Statutes 18.75-18.91) to effectively control and eradicate weeds that could be present within or near the construction footprint.

Table 16. Minnesota Department of Agriculture's Noxious Weed List

Prohibited: Eradicate	
Black swallow-wort (*Cynanchum louiseae*)	Diffuse knapweed (*Centaurea diffusa*)
Common teasel (*Dipsacus fullonum*)	Johnsongrass (*Sorghum halepense*)
Dalmatian toadflax (*Linaria dalmatica*)	Pale swallow-wort (*Cynanchum rossicum*)
Grecian foxglove (*Digitalis lanata*)	Palmer amaranth (*Amaranthus palmeri*)
Japanese honeysuckle (*Lonicera japonica*)	Red hailstone (*Thladiantha dubia*)
Japanese hops (*Humulus japonicus*)	Tree-of-heaven (*Ailanthus altissima*)
Brown knapweed (*Centaurea jacea*)	Cutleaf teasel (*Dipsacus laciniatus*)
Yellow starthistle (*Centaurea solstitialis*)	Giant hogweed (*Heracleum mantegazzianum*)
Prohibited: Control	
Common barberry (*Berberis vulgaris*)	Leafy spurge (*Euphorbia esula*)
Canada Thistle (*Cirsium arvense*)	Narrowleaf bittercress (*Cardamine impatiens*)
Common tansy (*Tanacetum vulgare*)	Plumeless thistle (*Carduus acanthoides*)
Spotted knapweed (*Centaurea stoebe*)	Purple loosestrife (*Lythrum salicaria*)
Japanese knotweed (*Polygonum cuspidatum*)	Wild parsnip (*Pastinaca sativa*)
Giant knotweed (*Polygonum sachalinense*)	Non-native phragmites (*Phragmites australis*)
Bohemian knotweed (*Polygonum x bohemicum*)	Meadow knapweed (*Centaurea x moncktonii*)
Poison hemlock (*Conium maculatum*)	Round leaf bittersweet (*Celastrus orbiculatus*)
Restricted Noxious Weeds	
Amur honeysuckle (*Lonicera maackii*)	Japanese barberry (*Berberis thunbergii*)
Bell's honeysuckle (*Lonicera x bella*)	Morrow's honeysuckle (*Lonicera morrowii*)
Black locust (Robinia *pseudoacacia*)	Multiflora rose (*Rosa multiflora*)
Common buckthorn (*Rhamnus cathartica*)	Porcelain berry (*Ampelopsis brevipedunculata*)
Glossy buckthorn (*Frangula alnus*)	Siberian peashrub (*Caragana arborescens*)
Crown vetch (*Securigera varia*)	Tatarian honeysuckle (*Lonicera tatarica*)
European alder (*Alnus glutinosa*)	Wild carrot (*Daucus carota*)
Garlic mustard (*Alliaria petiolata*)	Amur silvergrass (*Miscanthus sacchariflorus*)
Lesser celandine (*Ficaria verna*)	Saltcedar (*Tamarix remosissima*)
Winged burning bush (*Euonymus alatus*)	
Specially Regulated	
Amur maple (*Acer ginnala*)	Common poison ivy (*Toxicodendron radicans*)
Norway maple (*Acer platanoides*)	Tatarian maple (*Acer tataricum*)
Amur corktree (*Phellodendron amurense*)	Callery pear (*Pyrus calleryana*)

Terrestrial invasives

There are 11 invasive terrestrial animals, 68 invasive terrestrial plants, and 7 invasive terrestrial pathogens listed in Minnesota (**Table 17**).[25] Although Stevens does not maintain a list of county invasive species, there is potential that these species could be present in these counties as well as the project area. EDDMapS is a tracking and reporting tool, utilized by the MN DNR for both terrestrial and aquatic

invasive species sightings. Of the listed terrestrial species, there have been 32 species reported and verified in Stevens County. These include Birdsfoot trefoil, Bull thistle, Canada thistle, Common tansy, Garlic mustard, Hoary alyssum, Leafy spurge, Oxeye daisy, Queen Anne's lace, Spotted knapweed, White sweetclover, Yellow sweet-clover, Wild parsnip, Reed canarygrass, Smooth brome, Autumn olive, Russian olive, Siberian elm, and Siberian peashrub.

In order to contain and prevent the spread of these species, all construction equipment will be thoroughly cleaned and checked for vegetation both pre-construction and post-construction. The project will comply with the Minnesota DNR Operational Order 113 to "prevent the introduction, establishment, or spread of invasive species by implementing site-level management."

Table 17. Minnesota DNR Listed Terrestrial Invasive Species

Animals		
European starling	Mute Swan	Eurasian swine
Earthworms	Jumping worm	Asian-long horned beetle
Brown marmorated stink bug	Emerald ash borer	Spongy moth
Japanese beetle	Spotted lanternfly	

Plants			
Birdsfoot trefoil	Brown knapweed	Diffuse knapweed	Meadow knapweed
Bull thistle	Butter and eggs	Canada thistle	Common butterbur
Giant butterbur	Common tansy	Common teasel	Cow vetch
Hairy vetch	Creeping Charlie	Crown vetch	Cut-leaved teasel
Dalmatian toadflax	Erect hedgeparsley	Garlic mustard	Giant hogweed
Grecian foxglove	Hoary alyssum	Leafy spurge	Lesser celandine
Musk thistle	Narrowleaf bittercress	Orange hawkweed	Oxeye daisy
Poison hemlock	Queen Anne's lace	Spotted knapweed	White sweet clover
Yellow sweet clover	Wild parsnip	Yellow starthistle	Creeping meadow foxtail
Creeping miscanthus	Johnsongrass	Reed canary grass	Smooth brome grass
Stiltgrass	Amur cork tree	Amur maple	Tatarian maple
Autumn olive	Black locust	Buckthorn	Callery pear
Japanese barberry	Multiflora rose	Non-native bush honeysuckles	Non-native knotweeds
Norway maple	Rowan mountain ash	Russian olive	Saltcedar
Siberian elm	Siberian peashrub	Small-leaf bramble	Tree of heaven
Winged burning bush	Black swallow-wort	Pale swallow-wort	Hooked hair hops
Japanese honeysuckle vine	Porcelain berry	Red hailstone	Round leaf bittersweet

Pathogens		
Butternut canker disease	Dutch elm disease	Oak wilt
Sudden oak death	Heterobasidion root disease	White-nose syndrome
White pine blister rust		

Aquatic invasives[26]

There are 22 invasive animals, 11 invasive plants, and 12 diseases identified by the Minnesota DNR as infesting the waterbodies in Minnesota (**Table 18**). The curly-leaf pondweed, purple loosestrife, and European common reed have been sighted and verified on EDDMaps within Stevens County.

Additionally, a review of the Minnesota DNR Infested Waters List indicated that there are no waterbodies in the project area that are infested with aquatic invasive species. The nearest infested waters are North Pomme de Terre Lake, Middle Pomme de Terre Lake, and Perkins Lake (includes 500ft of the Pomme de Terre River downstream of Perkins Lake) upstream of the project area. These lakes are each infested with zebra mussels. The spread of these species is managed through state aquatic invasive species laws including the "clean, drain, and dispose." The DNR requires all boats exiting a lake to "clean" the watercraft by removing vegetation and species, "drain" the water from the watercraft, and "dispose" of unwanted live bait. The project will comply with the Minnesota DNR Operational Order 113 to "prevent the introduction, establishment, or spread of invasive species by implementing site-level management." To every extent feasible, the contractor will implement practices that will prevent the spread of invasive species. All equipment be thoroughly cleaned prior to construction to prevent contaminating the site with new invasive and cleaned following the completion of construction completion to prevent the spread of any invasive species at the site.

Table 18. Minnesota DNR Listed Aquatic Invasive Species

Animals	
Banded mystery snail (*Vivaparus georgianus*)	Red swamp crayfish (*Procambarus clarkii*)
Bighead carp (*Hypophthalmichthys nobilis*)	Round goby (*Neogobius melanostomus*)
Black carp (*Mylopharyngodon piceus*)	Ruffe (*Gymnocephalus cernuus*)
Bloody red shrimp (*Hemimysis anomala*)	Rusty crayfish (*Orconectes rusticus*)
Chinese mystery snail (*Cipangopaludina chinensis*)	Sea lamprey (*Petromyzon marinus*)
Common carp (*Cyprius carpio*)	Silver carp (*Hypophthalmichthys molitrix*)
Faucet snail (*Bithynia tentaculata*)	Spiny waterflea (*Bythotrephes longimanus*)
Goldfish (*Carassius auratus*)	White perch (*Morone americana*)
Grass carp (*Ctenopharyngodon idella*)	Zebra mussel (*Dreissena polymorpha*)
New Zealand mud snail (*Potamopyrgus antipodarum*)	Signal grayfish (*Pacifastacus leniusculus*)
Red eared slider (*Trachemys scripta elegans*)	Rudd (*Scardinius erythrophthalmus*)
Plants	
Brazilian elodea (*Egeria densa*)	Non-native waterlilies (*Nymphaea*)
Brittle naiad (*Najas minor*)	Purple loosestrife (*Lythrum salicaria*)
Curly-leaf pondweed (*Potamogeton crispus*)	Starry stonewort (*Nitellopsis obtusa*)
Eurasian watermilfoil (*Myriophyllum spicatum*)	Yellow floating heart (*Nymphoides peltata*)
Flowering rush (*Buotmus umbellatus*)	Yellow iris (*Iris pseudacorus*)
Non-native phragmites (*Phragmites australis*)	
Diseases	
Viral Hemorrhagic Septicemia	Lymphosarcoma
Bass tapeworm	Lymphocystis
Neascus	Heterosporis
Dermal sarcoma	Spring Viremia of Carp (SVC)
Myofibrogranuloma	Yellow/White Grub
Largemouth bass virus	Barotrauma

Infested Waters[27]

As mentioned earlier, there are no waterbodies within or adjacent to the project area that have a known infestation of aquatic invasive species. There are several lakes upstream of the project area that are

infested with zebra mussels. Therefore, it will be of the utmost importance to prevent the spread of foreign invasive species into waterbodies with or near the project area. This will be done by thoroughly examining and cleaning equipment pre and post construction.

Rare Features

The Minnesota DNR, Natural Heritage Information System (NHIS)(LA-944; MCE#: 2025-00147), and Minnesota DNR Minnesota Conservation Explorer was consulted to identify the presence of rare features within or near the project area, discuss the potential impacts, and identify minimization and avoidance measures (**Attachment 1: Minnesota Conservation Explorer – Natural Heritage Review**). Based on the review, the DNR staff identified one Site of Moderate Biodiversity Significance and a Mesic Prairie (Southern) (UPs23a) Native Plant Community that is ranked as imperiled (S2). The letter details the avoidance and minimization efforts required for these sites which includes completely avoiding MBS sites ranked S1, S2, or S3, retain buffers between the project and MBS sites, minimize vehicle use within the sites, do not park vehicles/equipment or stockpile supplies on these sites, do not place spoils at or near the sites, administer erosion control practices, keep equipment clean and free of invasive species, reseed any disturbed areas, and use weed free mulch and seed.

Additionally, the review indicated the presence of Elktoe (Alasmidonta ligamentina) – threatened, loggerhead shrikes (Lanius ludovicianus) – endangered, northern caddisfly (Limnephilus secludens) – endangered, prairie vole (Microtus ochrogaster) – special concern, and northern grasshopper mouse (Onychomys leucogaster) – special concern. Avoidance measures will be required to prevent adverse effects to these species. Avoidance measures detailed in the NHIS review for Elktoe included hiring a qualified surveyor to determine if suitable habitat is present or if the species is present. A permit will be required if the species is present. The loggerhead shrike was determined to not be impacted from the project. The northern caddisfly is found in streams but little is known about habitat dependence. It was noted that other caddisfly species are known to be sensitive to changes to the riparian corridor. No avoidance measures were described in the review letter, but the project proposer will coordinate with DNR staff prior to construction to discuss minimization measures should the species be found at the site. The project will administer wildlife-friendly erosion control devices to prevent effects to the prairie vole and northern grasshopper mouse.
Coordination with DNR specialists and regulators will occur throughout the projects planning, design, and permitting phases to ensure the project meets all the regulatory requirements pertaining to the identified in this review. This includes coordinating surveys and avoidance/minimization plans prior to construction.

As previously mentioned, a USFWS review of all federally-listed rare species indicates the potential presence of the monarch butterfly (*Danaus plexippus*), Western regal fritillary (*Argynnis idalia occidentalis*), and Suckley's Cuckoo Bumble (*Bombus suckleyi*) (**Attachment 2: U.S. FWS Threatened and Endangered Species List; Attachment 3: U.S. FWS Effect Determinations Verification Letter**). A "No effect" determination was made for the monarch butterfly. Neither the Suckley's cuckoo bumble bee or the western regal fritillary were covered under the initial evaluation determination key.

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.

Habitats/Plant Communities

The project area is made up of open water associated with the Pomme de Terre River and Crissy Lake surrounded by developed residential properties, managed grasslands, woody wetlands, and herbaceous wetlands. The project will restore the Pomme de Terre River channel through installation of rock arch rapids and a meandering channel. The project will maintain a open water pools. These components will cause disturbance to the current habitats. There will be a reduction in deep water habitat but will be replaced with either riverine habitat or herbaceous wetlands. These aquatic habitats may also be impacted by the altered hydrology. Any negative impacts will be temporary and limited to the construction period. Following completion of the project, the project will result in net benefits to the wetlands, streams, and deepwater habitats within the project area. The benefits include diverse aquatic habitats, improved water quality, improved habitat resiliency, composition, and quality, and restore aquatic habitat connectivity. Increasing the diversity in aquatic habitats (deep and shallow pools, rock riffles, floodplain wetlands, etc) supports a wider range of fish, insects, amphibians, and plant species, which would improve the overall biodiversity and health of the site. Improving the water quality of the site through reduced pollutants, increasing infiltration, and stabilizing oxygen levels would provide benefits such as supporting diverse aquatic communities and reducing algae blooms. Improved habitat resiliency, composition, and quality allows the natural ecosystem to withstand disturbances like flooding, drought, climate change, and human activity. And finally, habitat connectivity allows fish and other aquatic organisms to move freely between waterways, floodplains, and wetlands.

Fish and Wildlife

The majority of the project is located within riverine and deepwater habitats that are utilized by many aquatic species for forage, cover, and breeding habitat. During construction, these species will be temporary impacted by altering hydrologic regimes and temporary dispersion of species. Upon completion of the project, the habitats within the project corridors will be restored to a more natural state and will benefit the fish and wildlife species that utilize it. These benefits will include diverse habitat availability and restored connection to upstream and downstream habitats.

State-listed Species

As mentioned previously, a project review for state listed species identified the presence of Elktoe (Alasmidonta ligamentina) – threatened, loggerhead shrikes (Lanius ludovicianus) – endangered, northern caddisfly (Limnephilus secludens) – endangered, prairie vole (Microtus ochrogaster) – special concern, and northern grasshopper mouse (Onychomys leucogaster) – special concern. Avoidance measures will be required to prevent adverse effects to these species including:

- Elktoe requires hiring a qualified surveyor to determine if suitable habitat is present or if the species is present. A permit will be required if the species is present.
- Loggerhead shrike was determined to not be impacted from the project.
- Northern caddisfly is found in streams, but little is known about habitat dependence. It was noted that other caddisfly species are known to be sensitive to changes to the riparian corridor. No avoidance measures were described in the review letter, but the project proposer will coordinate with DNR staff prior to construction to discuss minimization measures should the species be found at the site.
- Species of Special Concern: The project will administer wildlife-friendly erosion control devices to prevent effects to the prairie vole and northern grasshopper mouse.

Any threatened or endangered species in the project area are protected under Minnesota Statutes, section 84.0895 and Minnesota Rules, part 6212.1800 to 6212.2300 and 6134. Coordination with DNR specialists and regulators will be done during the permitting phase to ensure the project is in compliance with all rules and statutes.

Federal-listed Species

The USFWS IPaC Tool identified the monarch butterfly (*Danaus plexippus*) and Western regal fritillary (*Argynnis idalia occidentalis*) as proposed threatened species and the Suckley's Cuckoo Bumble (*Bombus suckleyi*) as a proposed endangered species within the vicinity of the project area. No critical habitats were identified within the project corridors. Similar to the state listed species, the restoration will not adversely impact these species.

Rare Features

The desktop review of NHIS data, there are two Native Plant Community (NPC) communities located directly adjacent to the project. These are one community labeled UPs13d – Dry Hill Prairie (Southern) and one community labeled UPs23a – Mesic Prairie (Southern). The project will be confined within the footprint of Crissy Lake and Pomme de Terre River and will not impact these habitats. Additionally, the NHIS data identified Darnen 1, a Site of Biodiversity Significance, located along the northern portion of the project. A portion of this site is a marsh that is hydrologically connected to Crissy Lake. Therefore, there is potential for the site to be impacted by the alteration in the hydrology of Crissy Lake. No earth-moving activities will occur within the site. The impact will be hydrologic fluctuation that could result in a change in the open water/marsh extent ratio.

Climate Trends

As discussed previously, the climate trends indicate an increase in heavy rainfall events and increase in high temperatures. There is potential that more heavy rainfall events could lengthen peak flood waters through the Pomme de Terre River, potentially causing transporting and spreading invasive species and infesting connecting waterbodies. High temperatures could alter the habitats present along the project area including the spread of invasive species. The project will counteract these climate trends by improving composition, diversity, and connectivity of aquatic habitats and wetland complexes which provide ecosystem resilience.

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 overall purpose of the project is to restore the Pomme de Terre River corridor that was significantly affected by the construction of the low head dam. Although this project will impact existing aquatic habitats, the results of the project will be have net benefits on the aquatic habitats and the aquatic species that depend on those habitats.

The projects design and permitting phases will be used to reduce or avoid adverse effects to rare features and sensitive resources to the greatest extent possible. Prior to construction, the project proposer will coordinate with the MN DNR and USFWS to develop a plan to avoid or minimize the impact to the sensitive or rare features. If any protected species is encountered or observed

during construction, construction activities will be paused until coordination with federal and state agencies is completed.

All impacts to aquatic resources identified as Public Waters will be reviewed for required mitigation through a Minnesota Public Water Works Permit and required mitigation will be listed in the permit's specific conditions. All wetland impacts outside the public waters jurisdiction will be mitigated through a Wetland Conservation Act (WCA) Permit and the permit conditions. A permit application will be submitted to the U.S. Army Corps of Engineers (USACE), and mitigation will be based on the agency's "jurisdictional determination".

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 review of Minnesota's Office of the State Archaeologist (OSA) public database[28] indicates that there are no archaeological sites located within the project area, but there have been sites documented within several adjacent sections. One section is listed on the Minnesota Indian Affairs Council data layer.

A review of Minnesota's Statewide Historic Inventory Portal (MnSHIP) indicated that there one site located within the project area. This site is a bridge structure along 230 Street across the Pomme de Terre River/Crissy Lake. This bridge is included in the Steven's County 5-year Road and Replacement Plan. Due to this, there has been some cultural/historical significance evaluation completed for the bridge.

A detailed archaeological survey has not been completed for the project. Coordination with SHPO will be done to ensure that the project will not impact any historic or cultural resources. Coordination may include a literature search and review by SHPO to identify any potential sensitive sites within the project area and, if SHPO deems it necessary, a cultural resources Phase-1 Survey will be completed prior to construction.

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.

Currently, the viewscape of the project area includes open water that makes up Crissy Lake and the Crissy Lake Dam. This viewscape is accessed from campsites, a lake access site, and a dog park that make up the Pomme de Terre City Park as well as from adjacent residential properties. The project will change the viewscape from the open water of Crissy Lake to a complex of wetland/floodplain habitat and open water of a river system. The viewscape behind the residential

properties along the southwest shoreline will remain largely unchanged. An open-water reservoir will still be visible from County Highway 10 and the campground, though it will be smaller in extent. Upstream, the landscape will transition from a shallow reservoir setting to a more riverine environment. A similar shift in view will occur in the area between the existing dam and County Highway 10.

There will be temporary impacts to recreationalists, roadway users, and residents near the Crissy Lake Reservoir during construction. These impacts will be confined to the construction zone and during normal daylight hours. The visual impacts may include dust clouds, vapor plumes, and intense light glares. These impacts will be managed by dust control measures (wetting soil, reduced machine speeds on exposed soils, limit exposed soils, etc.), the timing of construction, and the orientation of construction lights. Additionally, users of the Crissy Lake and Pomme de Terre River for recreation will encounter some visual impediments.

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 on air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used to 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 effectsfrom stationary source emissions.

The project will not result in stationary source air emissions concerns.

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.

The use of heavy machinery and equipment typical of construction projects will result in burning of gasoline but is not anticipated to adversely impact current air quality at the site. The emissions will be temporary and will not exceed current emission standards. There are no management measures planned for the project. All equipment will be maintained to operate based on factory-suggested operations including periodic maintenance intervals to avoid inefficiencies in operations that would increase emissions.

The project will not have long-term emissions impacts and will not cause an increase in traffic. No mitigation plans have been established for the project.

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.

Three schools, one day care and one medical facility are located within two miles of the project site. The dust and odors generated during the construction will be minimal and will occur during construction activities that include site access, removal of sediments, and placement of fill for the rock arch rapids. Any Dust impacts will be managed by dust control methods. Odors generated during construction will be the result of exhaust of diesel engines and fuel storage. The odors will be managed by zone restricting, operation timing, and standard emission controls.

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.

The project will require the use of heavy machinery typically used for construction projects. These include excavators, bulldozers, and loaders. All of which burn diesel fuel during construction. Construction emissions from these vehicles were estimated using the Environmental Protection Agency's (EPA) Simplified GHG Emissions Calculator (SGEC) (**Table 19**).[29] For this assessment, it was assumed that the machinery would be in operation for approximately 120 days, 8 hours per day (equivalent to 120 days/year). The exact days and hours per day of construction will vary depending on timing of year and environmental/climate conditions. The EPA's SGEC tool calculates the CO2 emissions based on duration of equipment operations and the estimated quantity (gallons) of diesel fuel consumed by the equipment. The fuel consumption of heavy machinery typical of river restoration projects were estimated based on the Caterpillar Performance Handbook[30]. The handbook indicates the following fuel consumptions of the following heavy machinery when operated with 10 % – 30 % idle time.

- Excavators (15.3 gallons/hour)
- Bulldozers (12.82 gallons/hour)
- Backhoe Loaders (2.2 gallons/hour)
- Graders (14.94 gallons/hour)
- Skid Steers (3.7 gallons/hour)

Table 19. Constriction Emissions calculated by SGEC.

Scope	Type of Emission	EmissionSub-type	Project-related CO_2eEmissions (tons/year)	Calculation method(s)
Lateral Abandonment	Combustion	Mobile Heavy Equipment	479.9 tons/year	EPA Simplified GHG Emissions Calculator (SGEC)

b. GHG Assessment

Due to the nature of the project, no mitigation is proposed to reduce the projects GHG emissions. The emissions will be localized and limited to the construction periods. Upon completion, the project will have no GHG emissions from day-to-day functions. Periodic maintenance may be required to establish vegetation and maintain drainage should blockages occur.

19. Noise

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

Three schools, one day care and one medical facility are located within two miles of the project site. The noise generated during construction will be caused by the mobilization and use of heavy machinery and equipment. Noise impacts will be temporary and restricted to the construction period. Local residents, roadway users, and recreational users around the project area will be effected by increased noise and annoyances during outdoor and everyday activities. All local residents and visitors will be notified about the timing and duration of construction prior to the beginning of construction. The project will not have permanent noise pollution impacts to the site.

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.

Existing transportation will not be impacted from the ongoing construction activities. To every extent possible, public access to the surrounding park amenities will be maintained throughout construction. The construction is located within the Pomme de Terre River/Crissy Lake. There may be some delays for traffic during equipment mobilization and site access.

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,

Peak hour traffic generated will not exceed 250 vehicles nor will the total daily trips exceed 2,500 as a result of the project. Local residents and roadway users may encounter slow speed during mobilization and operations of heavy machinery. There are no traffic improvements necessary to accommodate the temporary construction or operations and maintenance activities associated with the project.

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

The local residents and roadway users will be informed when construction is anticipated in order to allow users to accommodate, if necessary. The project does not require a detour for the project construction.

21. Cumulative potential effects

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

The proposed project is part of a broader watershed-scale effort by the Pomme de Terre River Association to restore hydrologic connectivity, improve water quality, and enhance aquatic habitat conditions throughout the Pomme de Terre River corridor. Within the last three years, the Perkins Lake Dam Modification Project and the Pomme de Terre Lake Dam Modification Project were completed upstream on the same river system.
Although these projects occur within the same watershed and involve similar restoration approaches, the projects are not anticipated to result in significant adverse cumulative effects. Completion of the Crissy Lake Dam Modification, in combination with the previously completed projects, would provide approximately 116 miles of continuous fish passage within the watershed before the next upstream barrier at Rose Lake.

Potential short-term cumulative effects associated with the proposed project are limited primarily to temporary construction disturbances such as localized increases in turbidity, temporary vegetation disturbance, and noise.

Turbidity

Turbidity is anticipated to be temporary, localized, and minimized through implementation of erosion and sediment control best management practices (BMPs), phased construction sequencing, wildlife-friendly erosion control measures, and compliance with state and federal permit conditions. The geographic scope for turbidity is limited to the project area and downstream of the project area in the Pomme de Terre River. The temporal scope includes short-term construction activities anticipated to occur between Fall 2026 and Summer 2027.

Vegetation Disturbance

Vegetation disturbance is anticipated to be temporary, localized, and minimized through implementation of native planting mitigation, erosion and sediment control best management practices (BMPs), phased construction sequencing, wildlife-friendly erosion control measures, and compliance with state and federal permit conditions. The geographic scope for vegetation disturbance is limited to the project area. The temporal scope includes short-term construction activities anticipated to occur between Fall 2026 and Summer 2027.

Noise

Noise is anticipated to be temporary, localized, and minimized through implementation of phased construction sequencing, timing restrictions, and compliance with state and federal permit conditions. The geographic scope for noise is limited to the project area and adjacent areas. The temporal scope includes short-term construction activities anticipated to occur between Fall 2026 and Summer 2027.

Potential long-term cumulative effects include changes in aquatic and wetland cover types. Existing conditions within the project area currently consist predominantly of shallow open water associated with the impounded reservoir. Following restoration, the project area is anticipated to include increased wetland and riverine habitat acreage, including an increase in wetlands from approximately 3.33 acres to 30.97 acres and establishment of approximately 5.09 acres of restored river and stream habitat. The project will result in substantial changes in aquatic and wetland cover types.

Based on the scale, duration, and localized nature of construction impacts, the proposed project is not expected to contribute to significant adverse cumulative environmental effects.

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.

No reasonably foreseeable future projects have been identified within the watershed that are expected to interact with the proposed project in a manner that would result in significant adverse cumulative environmental effects.

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.

Temporary construction-related effects, including turbidity, noise, vegetation disturbance, and in-water work, will be minimized through implementation of BMPs, sediment and erosion control measures, dewatering controls, native revegetation, permit compliance, and construction sequencing requirements.

Given the localized and temporary nature of construction impacts, the absence of substantial hydraulic interaction with other projects, the implementation of mitigation and BMP measures, there is no evidence that the proposed project would contribute to significant adverse cumulative environmental effects.

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.

There are no additional environmental effects to other than what has been provided in this EAW.

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

I hereby certify that:

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

Signature Yvette Gault 2026.06.12 09:10:27 -05'00' Date 6/12/2026.

Title Environmental Review Project Manager

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