

July 2013 version

ENVIRONMENTAL ASSESSMENT WORKSHEET

This Environmental Assessment Worksheet (EAW) form and EAW Guidelines are available at the Environmental Quality Board's website at:

<http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm>. The EAW form provides information about a project that may have the potential for significant environmental effects. The EAW Guidelines provide additional detail and resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item, or can be addresses collectively under EAW Item 19.

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

1. Project title: Goose Prairie Marsh Enhancement Project

2. Proposer: Minnesota Department of Natural Resources

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3. RGU: Minnesota Department of Natural Resources

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4. Reason for EAW Preparation: (check one)

Required:

EIS Scoping

Mandatory EAW

Discretionary:

Citizen petition

RGU discretion

Proposer initiated

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

Subp. 27. 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:

County: Clay

City/Township: Goose Prairie Township

PLS Location (1/4, 1/4, Section, Township, Range): W 1/2 of 14, S 1/2 of 15, 22, N 1/2 of 27 and N 1/2 of 26, T141, R44

Watershed (81 major watershed scale): Wild Rice River Watershed

GPS Coordinates: 709650 5209196 Zone 14

Tax Parcel Number: 11.027.2000, 11.027.1000, 11.026.2500, 11.022.2400, etc.

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

- County map showing the general location of the project; (Attachment A)
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable); (Attachment B) and
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.
- Attachment C. Original Clay County Ditch 18 project map.
- Attachment D. Overview of project details with 2013 Farm Service Agency aerial photography.
- Attachment E. Water control structure detail.
- Attachment F. Detail of dike alignment and road raise.
- Attachment G. Preferred outlet realignment configuration with existing and proposed profiles.
- Attachment H: County Ditch 18 channel survey.
- Attachment I: Illustration of alternative stable states in shallow lakes.
- Attachment J: Wild Rice River Watershed historic vegetative cover (Marschner 1908) and 2011 National Land Cover Dataset.
- Attachment K: Federal Emergency Management Agency flood insurance rate map 27027C0300E.
- Attachment L. Flood stage inundation map.
- Attachment M. Soils according to the Natural Resource Conservation Service Web Soil Survey.
- Attachment N. Minnesota Biological Society sites of biodiversity significance and native plant communities.

6. Project Description:

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

The Goose Prairie Marsh Enhancement Project proposes changes to improve management of surface waters near Goose Prairie Marsh in Clay County. The project would include installation of a water control structure, raising 115th Ave N, realignment of CD 18 from the marsh to the water control structure, and selective repair of CD 18 downstream of the new control structure. This is a joint project between the Minnesota Department of Natural Resources (MN DNR) and the Wild Rice Watershed District (WRWD).

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

The Goose Prairie Marsh Enhancement project is located approximately 2 miles northeast of Hitterdal, MN in Clay County, Goose Prairie Township (Attachments A and B). Goose Prairie Marsh (DOW # 14008600) and unnamed lake DOW # 14008400 are mostly contained within the Goose Prairie Wildlife Management Area (WMA). Clay County Ditch 18 (CD 18) was constructed through this area in about 1915, prior to establishment of the WMA (Attachment C). Branch 1 of CD 18 is also located in the project area and runs from unnamed public basin DOW # 14008400 to the main CD 18 channel. CD 18 and Branch 1 still technically flow through the Goose Prairie Marsh area; however, the channels have not been maintained since the WMA was established in 1957 and are now predominantly wetlands with some open water and cattails.

Water levels in Goose Prairie Marsh are currently controlled by two culverts under 115th Avenue North, a 24-inch culvert with a flow line at 1,204.5¹ and an 18-inch culvert with a flow line at 1203.6. The lake level has consistently been higher than this run out elevation because flow through the remnant ditch channel between Goose Prairie Marsh and the road culvert has been impeded by a buildup of sediment and cattails. This has contributed to a degradation of wildlife habitat conditions in the marsh.

There are four major components to the Goose Prairie Marsh Enhancement project: installation of a water control structure, raising 115th Ave N, realignment of CD 18 from the marsh to the water control structure, and selective repair of CD 18 downstream of the new control structure (Attachment D). A selective repair of Branch 1 is also likely to occur in order to ensure capacity to manage water levels in public basin DOW #14008400.

Installation of a water control structure - This project would remove both culverts under 115th Ave N and replace them with a water control structure made of reinforced concrete with two, 5-foot stoplog bays adjustable from 1203.6 to 1208.5 (Attachment E). The water control structure would be located near the center of section 22, T141, R44 adjacent to 115th Ave N. A 24-inch reinforced concrete outlet pipe would be installed to convey discharge water under 115th Ave N with an invert elevation of 1203.6. A permanent easement would be obtained from the private landowner in that location to construct and maintain the structure and watercourse. The easement would be obtained prior to permitting and would grant permission to build the project and access to maintain the project into the future. The structure would include a fish barrier to reduce the upstream movement of fish into Goose Prairie Marsh. A thorough explanation of the management decision to reduce fish populations is included in part 6d. Geotextile filter fabric, sand bedding, and riprap would be used at the pipe outlet. Construction of the water control structure would likely take place in late summer/fall when water levels are expected to be at their lowest and to give amphibians and reptiles a chance to emigrate from the area before freeze-up. Cofferdams would be used during construction to provide dewatering for construction access.

Raise 115th Ave N - Two sections of 115th Ave N would be raised to an elevation of 1212.0 and an emergency spillway section would be raised to 1209.5 (Attachment F). The road would be made of class 5 aggregate with two 12 ft. driving lanes, each with a 3% runoff slope. The road side slopes would be designed to meet minimum road safety standards. Use of this minimum safety standard would help to minimize wetland impacts.

Realignment of CD 18 from Goose Prairie Marsh to the water control structure - A new channel would be constructed from the open water area of Goose Prairie Marsh to the new water control structure (Attachment G). The new channel would be located to the west of the existing channel. The

¹ All elevations are in NAVD 88 datum.

existing channel would remain in its current state. The new outlet channel would have a bottom width of eight feet and 4:1 slopes. Construction of the new channel with this alignment would facilitate future maintenance access, adequate conveyance of water to manage water levels to meet the project purpose, and would avoid wetland impacts and high project costs associated with the inaccessible nature of the existing channel within extensive cattails and floating bogs.

The realignment of the channel would be completed utilizing provisions in MN Stat. 103E.227 - Impounding, rerouting, and diverting drainage system waters. Under 103E.227, a governmental subdivision might petition to impound, reroute, or divert drainage system waters for beneficial use. The current section of CD 18 in this area would be abandoned from the ditch system as part of this process. The intended outcome is to provide natural resource benefits and at the same time, not impair the function of the drainage system or reduce benefits to landowners.

Selective repair of CD 18 downstream of the new control structure - This project component would selectively clean out sediment and beaver dams and would remove a restrictive culvert from CD 18 from 115th Ave N to 130th Ave N. A survey and sediment borings within the 20,000-foot reach of this channel was completed in 2013 (Attachment H). Several areas of sediment accumulation above the culvert-to-culvert grade line were identified as well as two inactive beaver dams. Selective removal of sediment and these beaver dams would occur for approximately 4,000 linear feet of this channel. Survey work also revealed that a culvert, located on the Korell Waterfowl Production Area (WPA) owned and managed by the U.S. Fish and Wildlife Service (USFWS), downstream of the project site that is sized inconsistent with current standards. The culvert would be replaced by a low water channel crossing to provide for continued maintenance and hunting access. Property owners in the selective repair area include two private landowners, the USFWS, and the State of Minnesota. No easements would be needed or obtained from these landowners.

Selective repair of Branch 1 - Sediment might be removed from Branch 1 if it is determined during final engineering or review of wetland issues that improved water conveyance is needed to maintain the function of the existing wetland basin. If sediment removal is recommended, the excavation would be completed and construction would implement practices similar to those for selective removal of sediment in CD 18 downstream of the control structure. Branch 1 would not be abandoned from the ditch system.

General Construction Operations - Standard construction techniques would be used to complete all project features. Equipment that might be used include: scrapers, graders, packers, dump trucks, truck-mounted cranes, hydraulic excavators, and skid-steers. All construction would take place Monday through Saturday, from 7:00 a.m. to 7:00 p.m. This work should be completed within one construction season, lasting from three to five months.

All channel modifications would likely precede the installation of the water control structure to improve flow to drain the area for construction. Spoil would be piled adjacent to the channel on non-wetland areas.

Future Operations and Maintenance - Once constructed, the operation of the water control structure would be based on an operation and maintenance agreement which would be approved by both the MN DNR and the WRWD. The operation and maintenance plan would attempt to balance wildlife management goals with flood management goals. The preferred water level management regime (Table 1) would provide the area wildlife manager with the ability to manage water levels during the bird nesting season and provide the WRWD the ability to manage for flood waters, reducing downstream flood damage. The area wildlife manager would also be able to conduct periodic drawdowns of the marsh to improve habitat conditions (Table 2).

MN DNR Section of Wildlife would develop a comprehensive management plan prior to project completion. The management plan would outline wildlife habitat goals, objectives, management thresholds, actions, and desired outcomes. Goals and objectives would focus on improving wildlife habitat conditions in Goose Prairie Marsh, attaining or maintaining Minnesota Pollution Control Agency (MPCA) eutrophication standards in the basin, reducing or maintaining low densities of fish, and promoting habitat conservation practices surrounding the basin. Thresholds would be based on measurable parameters such as average Secchi disk readings, aquatic plant abundance, plant species richness, and fish densities. The plan would be revisited at least every 10 years to assess effectiveness and determine if any changes or updates need to be made.

Table 1. Possible annual water level management plan

Possible Annual Water Level Management Plan		
Date	Target water elevation	Objective
March 15 – April 15	Gated up to 1207.5	Minimize downstream flood damage
April 16 – August 15	Drawdown to 1205.0 would be completed by May 1	Minimize bounce for nesting birds and provide adequate water level for aquatic plants
August 16 – October 15	1205.0	Maintain normal pool unless flood conditions occur
October 16 – March 14	Drawdown to 1204.6 by freeze-up	Allow water depth for waterfowl hunting access but complete or nearly complete drawdown by freeze up for spring storage

Table 2. Possible water level management plan during drawdown

Possible Water Level Management Plan During Drawdown		
Date	Target water elevation	Objective
March 15 – April 15	Gated up to 1207.5	Minimize downstream flood damage
April 16 – August 15	Drawdown to 1205.0 would be completed by May 1	Minimize bounce for nesting birds
August 16 – October 15	Initiate and complete drawdown to 1203.6	Allow for reptiles and amphibians to relocate before freeze up
October 16 – March 15	Maintain water levels as low as possible through winter	Increase likelihood of winter fish kill
March 16 – April 15	Gated up to 1207.5	Minimize downstream flood damage
May 1 – August 15	Initiate and complete drawdown to 1203.6	Expose bottom to consolidate sediment and encourage growth of emergent plants
August 16 – October 15	Allow to slowly refill to 1204.6	Provide fall migration habitat and hunting access
October 16 – March 14	1204.6	Provide storage in preparation of spring flood

Table 3 shows the expected results of operation of the structure and current conditions based on hydrologic modeling (HEC-HMS).

Table 3. Hydrologic modeling (HEC-HMS)

Event	Current Conditions		Post-project conditions	
	Start elevation	Peak water surface elevation	Start elevation	Peak water surface elevation
10-yr, 24-hr Rainfall	1205.0	1207.3	1205.0	1207.1
25-yr, 24-hr Rainfall	1205.0	1207.6	1205.0	1207.5
50-yr, 24-hr Rainfall	1205.0	1207.9	1205.0	1207.9
100-yr, 24-hr Rainfall	1205.0	1208.2	1205.0	1208.2
100-yr, 10 day Runoff	1205.0	1209.1	1204.5	1209.6

c. Project magnitude:

	WC Structure	Road Raise	Channel Cleanout	Outlet Channels
Total Project Acreage	0.1 acre	2.7 acres	1.8 acres	2.3 acres
Linear project length	21 ft.	1,900 ft.	4,000 ft.	5,000 ft.
Number and type of residential units				
Commercial building area (in square feet)				
Industrial building area (in square feet)				
Institutional building area (in square feet)				
Other uses – specify (in square feet)				
Structure height(s)	14.4 ft.			

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.

This project would provide the MN DNR Section of Wildlife the ability to manage water levels on Goose Prairie Marsh to improve wetland wildlife habitat and water quality. Goose Prairie Marsh is a 200-acre shallow lake that traditionally had very good waterfowl habitat conditions. According to a 1959 lake survey conducted by the Minnesota Division of Game and Fish, Goose Prairie Marsh was one of the better duck marshes in the state. It supported an abundant and diverse submerged and emergent plant community which provided quality migratory and breeding habitat for waterfowl and other wetland wildlife. Recent surveys conducted by the MN DNR Section of Wildlife in 2009 and 2012 show that waterfowl habitat conditions in Goose Prairie Marsh have deteriorated.

There is evidence that shallow lakes can exist in either of two stable state conditions, one of clear water with abundant aquatic vegetation and invertebrates with good water clarity or one of turbid water, with little or no rooted aquatic vegetation, abundant algae and poor water clarity (Scheffer 2004). Management of shallow lakes typically focuses on maintaining a clear-water state or trying to switch it from a turbid-water state to a clear-water state. In the clear-water state, rooted

aquatic vegetation helps to protect the bottom sediments from re-suspension, compete with algae for nutrients, and provide food and habitat for wildlife.

A number of factors could be contributing to the poor conditions in Goose Prairie Marsh including: increased nutrient loading, altered hydrology, high water levels, undesirable fish, and changing climatic conditions. The objectives of this project are to manage water levels to promote growth and increase diversity of native aquatic vegetation, reduce water level fluctuations during the waterfowl nesting season, and improve water quality within the lake. The invasion of hybrid cattail, sedimentation, and the presence of beaver dams have worked to obstruct flow in this area for a number of years. In addition, consolidated agricultural drainage within the watershed and an above-average precipitation pattern for the past 20 years have resulted in higher than normal water conditions in Goose Prairie Marsh and DOW # 14008400. High water levels have likely reduced the frequency and intensity of winter fish kills and decreased light availability for submerged aquatic plants. Construction and maintenance of drainage channels (ditches) has also artificially increased connectivity between streams and basins which has substantially increased the likelihood that fish populations would persist in the marsh and smaller wetlands along CD 18.

The project would allow the MN DNR Section of Wildlife to conduct temporary drawdowns of the lake to improve waterfowl and wildlife habitat and water quality. Drawdowns are a common management tool for improving water quality and habitat conditions in shallow lakes. Shallow lakes evolved with periodic droughts of varying intensities which drawdowns are able to mimic. Drawdowns are an effective and relatively inexpensive tool which can restore aquatic vegetation, improve water quality, remove fish or temporarily reduce fish abundance, and increase invertebrate abundance (MN DNR Shallow Lake Program Plan, 2010). During a drawdown, bottom sediments are consolidated and organic material is broken down, which can provide a more suitable substrate for a greater diversity of aquatic plants. Bottom sediments typically hold a large, viable seed bank from the aquatic plants that the lake has supported in the past. The life history of most species of emergent aquatic vegetation requires a period of drying before seeds would germinate.

Temporary drawdowns would also reduce or eliminate the existing fish community. Since shallow lakes tend to winterkill frequently, the fish communities are usually dominated by few species that are able to tolerate low dissolved oxygen levels (e.g. fathead minnow, black bullhead). Fish in shallow lake systems can increase turbidity by suspending sediment during foraging, affecting invertebrate populations, and changing the rate of nutrient cycling (Scheffer 2004). According to MN DNR wildlife lake surveys, fish found in Goose Prairie Marsh include bullheads, bass fingerlings, minnows, and brook sticklebacks. Research has clearly documented a relationship between basins with high densities of fish, including native species such as black bullhead and fathead minnow and poor habitat conditions (Hanson et al 2005, Herwig et al 2006, Zimmer et al 2006). Recent research has shown that fish biomass increased the probability that lakes would be in a turbid state (Nolby 2015). Attachment I shows some of the positive feedback loops associated with undesirable fish in shallow lakes and how they can influence water clarity, invertebrate populations, submerged plants, and algae. Temporary drawdowns would be used to decrease the fish population and the fish barrier on the water control structure would reduce the risk of fish re-establishment from downstream. The fish barrier would be incorporated to mimic the level of connectivity of Goose Prairie Marsh prior to construction of the extensive drainage system. A reduction in fish abundance should increase the abundance and diversity of submerged aquatic plants and aquatic invertebrates. An abundant and diverse aquatic plant community and increased numbers of invertebrates would provide high-quality habitat for wildlife.

The MN DNR has demonstrated the effectiveness of water level management to transform a basin in a turbid condition to a clear-water state with abundant aquatic vegetation. Examples include East Twin in Lincoln County, Stinking Lake in Becker County and Lake Augusta in Cottonwood County. Each of these lakes experienced dramatic increases in aquatic vegetation abundance, increases in water clarity and decreased total phosphorus following a drawdown (MN DNR wildlife lake survey data, 2002-2013). While each shallow lake system is different, it is expected that the Goose Prairie Marsh system would benefit from temporary drawdowns and water level management.

The primary purpose of this project is to improve wildlife habitat conditions in Goose Prairie Marsh. Shallow lakes such as Goose Prairie Marsh provide critical waterfowl and wetland wildlife habitat. MN DNR's Long Range Duck Recovery Plan suggests that at least 1,800 shallow lakes would require protection and management to achieve desired targets set for the recovery of duck populations. The MN DNR Section of Wildlife's Shallow Lakes Program Plan reiterates the goal of 1,800 managed shallow lakes and sets the goal to actively manage the majority of the 1,553 shallow lakes in Minnesota with a portion of their shoreline under public ownership (WMAs, State Forests, State Parks, WPAs, National Wildlife Refuges, county lands) for high quality wetland wildlife habitat with special emphasis on waterfowl habitat by 2056. Goose Prairie Marsh matches this criterion since the majority of its shoreline is within the Goose Prairie WMA. As of 2010, the MN DNR managed 300 shallow lakes for wildlife resource benefits. This project would not only benefit wildlife and the habitat they depend on in this area, it would also benefit the public who uses this area for hunting and other outdoor recreation.

In addition to wildlife habitat improvements, this project would reduce the risk of downstream local and regional flooding damage while maintaining an adequate outlet for upstream landowners. The goals would be to reduce the frequency and duration of water overtopping local roads and seepage onto adjacent tillable acres during the growing season, and to reduce extreme water level bounces in the area. The upstream area of Goose Prairie Marsh catchment is approximately 7 square miles (4,336 acres). Goose Prairie Marsh would provide approximately 292 acre-feet of storage at the proposed summer pool run-out elevation of 1205.0. The completed project would provide approximately 700 acre-feet of storage at the proposed flood-stage run-out of 1207.5. Downstream landowners would be benefited by temporarily retaining flood waters in Goose Prairie Marsh until downstream conditions permit release. The rate and timing of water release would depend on downstream conditions. No downstream easements would be needed. Downstream effects of increased discharge duration can include more constant flow volumes, water temperatures and oxygen concentrations, less sediment transport, and changes to the vegetative community. This project provides retention in the headwater area of the South Branch of the Wild Rice River drainage basin and would provide both local and Red River flood damage reduction.

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

CD 18 is a legal drainage system which extends 2 miles upstream of the project area. Landowners upstream of the project have inquired about repair of this channel under the provisions of 103E in the future. Based on recent survey data, it is likely that selective removal of sediment would occur in limited portions of this channel upstream of the site in accordance with provisions of 103E sometime in the near future.

The restorable wetland inventory indicates that approximately 33 acres of wetlands could be restored along CD 18 in the area of the selective cleanout. Landowners within these areas might become interested in wetland restoration activities. No environmental review needs are anticipated for this type of project.

- f. Is this project a subsequent stage of an earlier project? Yes
If yes, briefly describe the past development, timeline and any past environmental review.

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

	Before	After		Before	After
Wetlands	17.2	17.4	Lawn/landscaping		
Deep waterstreams			Impervious surface	1.1	1.2
Wooded/forest			Stormwater Pond		
Brush/Grassland	1.5	1.6	Other (describe)		
Cropland	0.4	0.0			
			TOTAL	20.2	20.2

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

<u>Unit of government</u>	<u>Type of application</u>	<u>Status</u>
MN DNR	Public Waters Work Permit	Application to be submitted
MN DNR	Dam Safety Permit	Application to be submitted
MN DNR	Wetland Conservation Act	Application to be submitted
U.S. Army Corps of Engineers	Clean Water Act Section 404	Application to be submitted
MPCA	NPDES Construction Stormwater	Application to be submitted
Wild Rice WD	Design plan review	Review pending
SHPO	Section 106 Review	Letter received
Wild Rice WD	Ditch Modifications	Application to be submitted
Goose Prairie Township	Road Changes	Application to be submitted
LGU	Wetland Conservation Act	Application to be submitted
Clay County Zoning	Land Alteration Permit	Application to be submitted
U.S. Fish & Wildlife Service	Bald Eagle Non-Purposeful Take	Application to be submitted
U.S. Fish & Wildlife Service	Special Use Permit	Application to be submitted

The project would likely be funded from a combination of funds that might include MN DNR wildlife habitat funding, MN DNR Flood Hazard Mitigation Program Funds (state bonding), Outdoor Heritage Funds as recommended by the Lessard-Sams Outdoor Heritage Council, local watershed district funds, and regional funds from the Red River Watershed Management Board.

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 9-18, or the RGU can address all cumulative potential effects in response to EAW Item No. 19. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 19

9. Land use:

a. Describe:

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

Land use and vegetative cover in the area has changed dramatically since the early 1900's.

Marschner pre-settlement vegetation analysis shows that the majority of the Wild Rice Watershed was dominated by prairie and wet prairie, whereas the 2011 National Land Cover Dataset shows the area is now dominated by cultivated crops (Attachment J). The conversion of native habitat to mostly row crops, installation of drainage infrastructure, energy production affecting land use, changes in population demographics, climate change, and invasive species have created a highly altered landscape, requiring resource managers to take a more active approach to water level management.

Goose Prairie Marsh is mostly surrounded by the Goose Prairie WMA. The WMA is 490 acres and consists of approximately 318 acres of wetland and 172 acres of upland grassland and forest. WMAs are established to protect wildlife habitat, provide citizens with opportunities for hunting, fishing, wildlife watching, and to promote wildlife based tourism. The Korell WPA is located in the area of the proposed selective ditch repair and is approximately 763 acres of type 1 and 3 wetlands and grasslands. WPAs are acquired for the benefit of migratory waterfowl. Within five miles of the Goose Prairie Marsh project area there are approximately 1,420 acres of WMA and 5,520 acres of WPA. These WMAs and WPAs are open to public hunting (though some have restrictions), trapping, hiking, photography, and wildlife and nature viewing.

The private land in the surrounding area is used for residences, row-crop production, mostly corn and soybeans, and pastureland for livestock. There is also approximately 170 acres of private land with perpetual conservation easements on them in the project area. There is prime farmland and farmland of statewide importance in the project area. There are no parks or trails near the site.

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

Several plans have relevance to this project including the Clay County Comprehensive Plan, wildlife habitat planning resources, The Shallow Lakes Program Plan, MN DNR's Long Range Duck Recovery Plan, and the Wild Rice River Watershed District Plan.

The project is consistent with the vision and goals of the Clay County Comprehensive Plan. This project is consistent with the plan's vision statement "Preservation of Natural Resources, Open Spaces and Recreational Opportunities," Natural Resources Goal 1- "Identify, protect, and preserve the County's high quality natural, scenic, cultural and open space areas," and Natural Resources Goal 2- "Develop flood hazard mitigation planning and implementation steps." The project area is located within areas classified as special concern, shoreland, and general rural area.

The project area is located within high priority areas for wetland and grassland conservation identified by the USFWS Habitat and Population Evaluation Team (HAPET) and is near a prairie corridor area but is within an area classified as agricultural matrix in the Minnesota Prairie Conservation Plan which has clear goals to protect and improve existing wetland and grassland resources.

The project is consistent with management objectives for shallow lakes identified in the MN DNR Shallow Lakes Program Plan. The Plan sets the goal of 1,800 managed shallow lakes and to actively manage the majority of the 1,553 shallow lakes in Minnesota with a portion of their shoreline under public ownership for high quality wetland wildlife habitat with special emphasis on waterfowl habitat by 2056.

The project is also consistent with the goals presented in the Wild Rice Watershed District's 2003 Water Management Plan. The project is consistent with Goal A-2, "The control and alleviation of damage from floodwaters," Goal A-3, "Administer and maintain the drainage systems of the District in order to fulfill their original function," Goal D-1, "The District will promote the enhancement of fish and wildlife habitat where it is determined to be in the best interest of the citizens and landowners of the District," and Goal F-1, "All initiatives of the District should utilize potential cooperative efforts with the appropriate federal, state, county, and township agencies."

According to the Red River Basin Commission's Final Comprehensive Report (2011), the area of Goose Prairie Marsh is classified as very high in its relative contribution to Red River peak flood flows. This is defined as, "for most floods, the flood flow contributions from this portion of the watershed coincide with the flood peaks on the Red River, the contributions are of significant magnitude, and the addition of flood storage in this area is very likely to reduce peak flood flows on the Red River."

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

The project is within a special flood hazard area subject to inundation by the 1% annual chance flood. It is in zone A with no base flood elevation determined according to Federal Emergency Management Agency (FEMA) map 27027C0300E (Attachment K).

The project is also within a shoreland-related special protection and agricultural preservation areas according to the Clay County Comprehensive Plan. The special protection area is an area where, due to the sensitive nature of its soils, flora, fauna, or other natural features, must be protected more closely from overdevelopment. The agricultural preservation area is intended to preserve and promote the use of land for agricultural purposes and to protect it from encroachment from non-agricultural development.

- 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 main goal of the project is to improve wildlife habitat and water quality, which is consistent with the objectives of the surrounding public land. Objectives of the surrounding public land include protecting wildlife habitat and providing the public with opportunities for hunting and wildlife viewing. The Clay County Comprehensive Plan provides support for the existing public

land to continue as that use into the future. The secondary goal of the project is to reduce flood damage and therefore would be compatible with the preservation of agriculture.

- c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 9b above.

Permanent flowage easements would be obtained from all riparian landowners up to elevation 1209.6. This is the expected level for a 100-year 10-day runoff event based on hydrologic modeling (Table 3). This water level could affect 10 private landowners in the area during a 100 year flood inundation event (Attachment L). There would be less than 1 acre of farmland affected by the project in the area of the channel re-alignment; however, the reduced risk of flooding to farmland adjacent to CD 18 could result in net benefits to local farmland. Local landowners have been included in project development through engagement in a local watershed team and they have generally supported the project.

10. Geology, soils and topography/land forms:

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

The topography of the Red River Basin was shaped by the Laurentide Ice Sheet, a continental glacier, during the last two stages of the Wisconsin glacial age. This topography was subsequently modified by glacial Lake Agassiz. The geomorphic associations in this project were formed by the Red River Lobe. The Red River Lobe was part of the most recent glacial advance, which receded about 9,000 years ago. The glacial setting is mirrored in the present topography; the glacial lake bottom is now represented by the relatively level valley bottom near the Red River, the rolling to undulating area reflects the glacial lake near-shore area, and the hummocky area reflects where stagnant ice of the end moraine wasted away.

There are no known karst conditions in the project area according to the MN DNR Karst Feature Inventory GIS layer. The bedrock in the project area is covered by glacial sediment that varies from 350 to 450 feet thick according to the Minnesota Geological Survey County Atlas.

The project is not expected to have any effect on the geology of the area. A geotechnical analysis would be conducted as part of final engineering.

- b. Soils and topography - Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.

The topography of the project area is rolling to undulating ranging from approximately 1190 ft. to 1225 ft. (LiDAR). Review of the NRCS soil survey shows that soils found in the project area

include: Haplaquolls and Histosols, Langhei-Barnes loams, Quam clay loam, Barnes-Langhei loams, Hamerly loam, Darnen loam, and Vallers loam (Attachment M). These soils have a slight rating for off-road, off-trail erosion, except Haplaquolls and Histosols which are not rated. A review of the NRCS surface water management assessment show ratings from not limited to very limited. The soils in the project area are considered to have moderate erodibility (K factors 0.24-0.32). A detailed geotechnical analysis would be performed as part of the continued design work including soil borings at relevant locations and evaluations of stability, seepage and settlement based on the materials proposed to be utilized in the embankment. Disturbed areas would be stabilized by seeding and mulching following excavation and/or embankment work. During the construction phase, erosion and sedimentation would be controlled through the implementation of the Storm Water Pollution Prevention Plan (SWPPP) developed to meet the requirements of the MPCA National Pollutant Discharge Elimination System (NPDES) permit.

The creation of the outlet channel from Goose Prairie Marsh to the water control structure would require approximately 31,000 cubic yards of excavation. Excavated material would be side cast into spoil banks adjacent to the ditch in non-wetland areas where it would remain, as is typically done in drainage ditch projects.

During construction, all erosion control measures required by the MPCA SWPPP and MN DNR Public Waters Permit would be installed and maintained including but not necessarily limited to; floating silt fence in public water basins, standard silt fence, bio-rolls/straw wattles, and erosion control blankets. All erosion control measures would be biodegradable or similarly wildlife-friendly. Post-construction all disturbed areas would be re-vegetated with a wetland or upland soil stabilization mix (Minnesota State Seed Mix 32-241 or equivalent) and covered with Minnesota Department of Transportation (MN DOT) Type 1 mulch. The seed mix would provide a temporary cover crop for rapid soil stabilization to prevent erosion and provide weed competition but also provide native species for long-term native vegetation establishment similar to the current plant community. All seeded areas would be checked for bare spots, washouts, vigorous plant growth, and significant weed infestations until the project area is stabilized. Future vegetation maintenance would be the responsibility of the individual landowner or the WRWD in areas under WRWD easement. Once the disturbed areas are re-vegetated the project is not expected to cause erosion or sedimentation problems.

NOTE: For silica sand projects, the EAW must include a hydrogeologic investigation assessing the potential groundwater and surface water effects and geologic conditions that could create an increased risk of potentially significant effects on groundwater and surface water. Descriptions of water resources and potential effects from the project in EAW Item 11 must be consistent with the geology, soils and topography/land forms and potential effects described in EAW Item 10.

11. 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, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

The project would directly affect Goose Prairie Marsh, a public body of water (DOW # 14008600), and an unnamed public body of water (DOW # 14008400). Both of these basins

along with Branch 1 of CD 18 and numerous wetlands are upstream of the proposed water control structure. According to MN DNR watershed suite data, Goose Prairie Marsh has a 4,336 acre (6.78 square miles) level 8 watershed with a 25:1 watershed to lake basin ratio. The MN DNR completed a hydrographic survey for Goose Prairie Marsh and DOW # 14031400 on December 17, 2013. The ordinary high water elevation (OHW) of Goose Prairie Marsh was determined to be 1207.5. The OHW of the unnamed water (DOW#14008400) was later estimated by LiDAR to also be about 1207.5. Bodies of water downstream of the control structure include CD 18, an unnamed public body of water (DOW #14031400), and a number of smaller type 3 and 1 wetlands on state, federal and private land. The OHW of DOW # 14031400 was determined by field survey to be 1205.3. CD 18 flows for approximately 5 miles to the north discharging into Stiner Creek which flows approximately 3 miles and discharges into the South Branch of the Wild Rice River.

There is limited water quality data available for Goose Prairie Marsh. A wildlife lake habitat survey was completed 7/13/2009 by MN DNR and water clarity was measured by a mean Secchi disk reading of 4.2 ft. On 7/9/2012 the basin was surveyed again and the mean Secchi disk reading dropped to 1.2 ft. The 7/9/2012 survey also found a total phosphorus level of 0.104 ppm and conductivity of 588 umhos. Eutrophication standards for class 2B shallow lakes, such as Goose Prairie Marsh, in the Lake Agassiz Plains ecoregion are applied on a case-by-case basis. As a guide, the adjacent ecoregion, the North Central Hardwood Forest, eutrophication thresholds total phosphorous of 60 parts per billion (ppb), chlorophyll a of 20 ppb, and Secchi transparency of at least 1.0 meter. Sufficient data has not been collected to determine if Goose Prairie Marsh meets or exceeds MPCA eutrophication thresholds. No waters in the project area are listed on the MPCA Impaired Waters List and there are none within 1 mile of the project (MPCA, 2015). The South Branch of the Wild Rice River is classified as 2B, 3C meaning the quality shall be such as to permit the propagation and maintenance of a healthy community of cool or warm water sport or commercial fish and associated aquatic life and their habitats. These waters shall be suitable for aquatic recreation of all kinds, including bathing, but not protected as a source of drinking water. Stream segment number 09020108-637 portion of the South Branch of the Wild Rice River was assessed for aquatic life in 2009 and water quality standards were met for all assessed standards. Aquatic consumption and recreation use have not been assessed (MPCA, 2015).

- 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 not within a MDH wellhead protection area. The Minnesota Department of Health County Well Index was searched and there are no known wells in the project area.

The closest MN DNR observation well (No. 14043) is approximately six miles to the west and shows that depth to groundwater was between 6 and 8.8 feet during 2014.

- b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.
 - i. Wastewater - For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.
 - 1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste

loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

- 2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.
- 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.

This project would not generate any wastewater.

- ii. Stormwater - Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

Erosion and sediment control measures and a SWPPP would be developed to follow current MPCA NPDES regulations. This SWPPP would include a description of the construction activity and the proposed erosion prevention and sediment control BMPs to control the discharge of sediment and for other potential pollutants from the site. The final details of the erosion control, sedimentation control or stabilization measures would be included in the SWPPP, however it would include but not necessarily be limited to; floating silt fence in public water basins, standard silt fence, bio-rolls/straw wattles, and erosion control blankets. All erosion control measures would be biodegradable or similarly wildlife-friendly. Post-construction all disturbed areas would be re-vegetated with a wetland or upland soil stabilization mix (Minnesota State Seed Mix 32-241 or equivalent) and covered with Minnesota Department of Transportation (MN DOT) Type 1 mulch. The seed mix would provide a temporary cover crop for rapid soil stabilization to prevent erosion and provide weed competition but also provide native species for long-term native vegetation establishment similar to the current plant community. This SWPPP is anticipated to include BMPs such as bio-rolls and rock checks in areas of new excavation during the construction phase. All disturbed areas that are not returned to agricultural production, would be seeded to permanent grass cover following the project grading work. The contractor shall be responsible for following all SWPPP requirements during construction. Construction oversight would be the dual responsibility of the MN DNR and WRWD to ensure compliance of SWPPP requirements. The WRWD would identify a person knowledgeable and experienced in the application of erosion prevention and sediment control BMPs who would oversee the implementation of the SWPPP, and the installation, inspection and maintenance of the erosion prevention and sediment control BMPs before and during construction. The WRWD shall ensure the individual identified has been trained in accordance with this NPDES Permit training requirements.

The project would only result in approximately 0.1 acre of additional impervious surface as a result of the road reconstruction and gravel surfacing. Runoff from the construction site would be received by CD 18 and adjacent unnamed wetlands. The water flows north via CD 18 to Stiner Creek and then to the South Branch of the Wild Rice River. Runoff

from the project site would be reduced when compared to the existing condition as a result of the modified outlet structure.

No chemicals or other wastes, other than those connected to construction, would be associated with this project and are therefore not a hazard for groundwater contamination during project operation. Construction equipment fueling and repair would be addressed as part of the General Stormwater Permit to minimize potential effects from spills.

- 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. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

No water would be appropriated as part of this project.

iv. Surface Waters

- a) Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. 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.

Effects on the wetland complex between Goose Prairie Marsh and the water control structure - The complex of wetlands between Goose Prairie Marsh and 115th Ave N has been subject to high water levels in recent years due to a number of factors. This project would change the controlling outlet elevation of this area from the road culverts to the new water control structure. It would also change the water management regime by the creation of a new conveyance channel along the western boundary of this wetland complex. The new conveyance channel would be excavated to 1203.6 to allow for periodic drawdowns of Goose Prairie Marsh but the outlet control structure would normally be set at 1205.0 resulting in the ditch partially filled with water. According to survey data, the water surface elevation in these wetlands was between 1206 and 1205 on 7/8/2013. These wetlands are expected to sustain a similar water level after construction of this project. This conveyance channel would alter the flow of water through the wetland complex by diverting the majority of flow to the new conveyance channel. These wetlands would likely experience similar water level fluctuations as Goose Prairie Marsh. No spoil from the excavation of this channel would be placed in wetlands. Overall, no substantial changes in wetland type or acres are expected in these areas from this project. A review by a TEP would be conducted prior to final engineering to avoid, minimize, and mitigate wetland impacts. Local landowners proposed a standard repair of the current CD 18 channel through these wetlands but the proposal was rejected because it likely would have resulted in more wetland impacts than the channel realignment.

Effects on wetlands near and adjacent to the control structure and road raise - Some wetlands and unnamed lake DOW # 14031400 would be permanently impacted by construction of the control structure and the road raise. Wetland fill impacts associated with the control structure and road raise would be limited to the footprint of the control structure and the footprint of road embankment materials.

Approximately one acre of permanent wetland impacts are expected due to the road raise. These impacts would include the addition of fill to the wetland to create a base for the road and water control structure. Temporary impacts including disturbance of sediment and vegetation, of less than 0.5 acre are expected due to the footprint of the construction area. These wetlands would continue to be tied to water level fluctuations of Goose Prairie Marsh, as they currently are.

Effects on wetlands along the area designated for selective repair on CD 18 downstream of the new control structure - The National Wetlands Inventory indicates that approximately 58 acres of wetlands are adjacent to this reach of CD 18. Selective excavation of the about 4,000 feet of the channel might result in a change in type of some areas from type 3 to type 5 wetlands. Debris and sediment would be removed from the ditch channel and placed in spoil banks in non-wetland areas. No excavation would take place through existing wetland basins. This project component would be reviewed by a TEP in order to avoid, minimize, and mitigate wetland impacts. Selective cleanout of about 5,000 feet of this ditch system was completed in 2009 in other areas. These repairs were designated as exempt from the WCA.

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

Effects on Goose Prairie Marsh (DOW #14008600) - The project would provide wildlife managers with the ability to manage water levels in Goose Prairie Marsh and adjoining wetland areas. Consistently high water levels in recent years have degraded waterfowl habitat conditions by decreasing light availability for submerged aquatic plants, and the likelihood of severe fish winterkills which decrease the abundance of undesirable fish. Active water level management would result in improved habitat conditions within the system including establishment and maintenance of desired submerged aquatic plants, the basis for the clear-water state in the marsh.

The project would allow for larger water level fluctuations during large flood events, such as 100-year events and greater, prior to the growing and wildlife nesting season but should reduce fluctuations during the critical wildlife nesting season. The water control structure would be capable of storing water in Goose Prairie Marsh up to 3.5 feet over normal summer pool elevation which is one foot over the OHW. Large

water level fluctuations of Goose Prairie Marsh could result in environmental effects such as shoreland erosion, flooding or destruction of wildlife burrows, nests, or houses, and the flow of nutrients could be altered. Vegetation could also be disturbed in that some could die due to inundation, seed distribution could be altered, and cattail mats might separate from the wetland bottom and become floating bogs. Movement of floating cattail bogs can be problematic in wetlands by uprooting submerged plants and the bogs can become lodged in culverts and water control structures. The use of wetlands for flood storage can negatively impact plant diversity, water quality, turbidity, and can destabilize shorelines; however, use of the wetland outside of the growing season can reduce these impacts (Apfelbaum and Lewis, 1998). The operation and maintenance plan for Goose Prairie Marsh would address these impacts by only allowing flood water to be stored until May 1 of each year. Inundation for 20 to 30 days in early spring can negatively affect the composition and condition of riparian plant communities; however, this project would provide more stable water levels in the long run compared to current conditions which would have an overall positive effect on these riparian communities.

Goose Prairie Marsh currently has low to moderate watercraft use, mostly during the waterfowl hunting season. The project is expected to make watercraft access more difficult during construction and future drawdowns. Every shallow lake is different, but drawdowns would likely be needed approximately every 10 years.

Effects on Unnamed Public Basin (DOW #14008400) - It is estimated that this basin has an OHW similar to Goose Prairie Marsh. Repair of Branch 1 and active management of water levels in the marsh should have similar effects on water levels in this basin. A review by a TEP would be conducted prior to final engineering to avoid, minimize, and mitigate wetland impacts. As discussed in the project description, the repair of Branch 1 would not be part of this project if it has substantial environmental effects on wetlands that would require mitigation.

This is potentially an important part of the project that would allow this basin to be drawn down with Goose Prairie Marsh and gain the expected benefits of the drawdown such as a reduced fish population and increased aquatic vegetation. Without this full connectivity, in times of high water, fish could recolonize Goose Prairie Marsh from DOW #14008400.

A SWPPP would be adequately designed for the site to minimize turbidity and sediment movement during and after construction. This plan would be strictly followed and might include but not be limited to use of staked hay bales, silt fence, fiber logs, erosion control blankets, mulch, and silt curtain.

12. Contamination/Hazardous Materials/Wastes:

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

The MPCA website, "What's in My Neighborhood?" was consulted and there are no known contaminations in the area.

- 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.

Minimal solid waste would be generated by the construction of this project. All existing culverts would become property of the contractor upon removal and would be removed from the sites to be recycled or disposed of properly off-site. It would be the responsibility of the contractor to dispose of any incidental construction solid waste appropriately off-site. Construction oversight by the MN DNR and WRWD would ensure that no solid waste would impact the site. No solid waste would be generated after construction completion.

- 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 above or below ground tanks to store petroleum or other materials. 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.

The only chemicals or hazardous materials to be used or present at the project site would be during construction and could include fuel, oil, and hydraulic fluid within the construction equipment. Although the potential for accidental spill or release of hazardous materials is low, the project is being constructed within or adjacent to waterways that would allow for quick spread of spilled material to the downstream channel and wetlands along County Ditch No. 18.. As a result, the contractor would be required to prepare a Spill Prevention and Response Plan to address accidental spills or the release of any hazardous material or petroleum products.

The plan would be required to include the following measures to avoid and/or minimize spills during construction activities:

- Fueling and equipment maintenance would not be allowed within 100 feet of the water's edge without deploying spill capture methods.
- The contractor shall maintain fuel spill containment kits and trained spill response personnel on site at all times.
- In the event of a significant spill or release of a hazardous material or a petroleum product, the construction site supervisor would immediately deploy on-site equipment and supplies to contain the spill and contact the MPCA.

- 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.

Hazardous waste would not be generated by this project.

13. 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. Goose Prairie Marsh is mostly surrounded by the Goose Prairie WMA. The WMA is 490 acres and consists of approximately 318 acres of wetlands and 172 acres of upland grassland and forest. Native northern dry prairie has been identified on 23.5 acres of the WMA by MN DNR Division of Ecological and Water Resources (Attachment N). According to the National Wetlands Inventory (NWI) Circular 39, Goose Prairie WMA contains 211 acres of shallow marsh (type 3), 125 acres of shallow open water (type 5), and 46 acres of shrub swamp (type 6) wetlands. The Korell WPA is approximately 763 acres of wetlands and grasslands which provide nesting and brood-rearing habitat for many species of waterfowl and other prairie and wetland species. The Korell WPA contains many smaller wetlands including 11 acres of seasonally flooded (type 1), 99 acres of shallow marsh, 1 acre of shallow open water, 0.4 acre of shrub swamp, and 3 acres of wooded swamp (type 7) wetlands. Within five miles of the Goose Prairie Marsh area there are approximately 1,420 acres of WMA, 5,520 acres of WPA, and 120 acres of Reinvest in Minnesota (RIM) easements.

Goose Prairie Marsh has been surveyed by the MN DNR four times, in 1956, 1959, 2009, and 2012. According to the 1959 game lake survey, Goose Prairie Marsh had very good waterfowl habitat with abundant nesting cover for dabblers, hardstem bulrush stands for diver nesting, and a good variety of waterfowl food. It was noted that “this area is one of the better duck marshes in the state.” The 1959 survey noted 16 species of emergent and submerged aquatic vegetation. At the time of the last wildlife lake habitat survey conducted on 7/9/2012 species richness had dropped to 5 and 18% of the survey plots lacked any vegetation. Aquatic plants that have been found in Goose Prairie Marsh, according to all surveys, are listed in Table 4.

Table 4. Plant species found in Goose Prairie Marsh according to all surveys.

Common Name	Scientific Name
Berchtold's pondweed	<i>Potamogeton berchtoldi</i>
bushy pondweed	<i>Najas flexilis</i>
cane	<i>Phragmites communis</i>
cattail	<i>Typha spp.</i>
clasping-leaf pondweed	<i>Potamogeton richardsonii</i>
coontail	<i>Ceratophyllum demersum</i>
floating-leaf pondweed	<i>Potamogeton natans</i>
giant bur-reed	<i>Sparganium eurycarpum</i>
greater bladderwort	<i>Utricularia vulgaris</i>
hardstem bulrush	<i>Scirpus acutus</i>
lesser duckweed	<i>Lemna minor</i>
mare's tail	<i>Hippuris vulgaris</i>
muskgrass	<i>Chara spp.</i>
narrowleaf pondweed	<i>Potamogeton spp.</i>
northern water milfoil	<i>Myriophyllum sibiricum</i>
reed canary grass	<i>Phalaris arundinaceae</i>
sago pondweed	<i>Stuckenia pectinata</i>
sedge	<i>Carex spp.</i>
softstem bulrush	<i>Scirpus validus</i>
spikerush	<i>Eleocharis palustris</i>
star duckweed	<i>Lemna trisulca</i>
watermoss	<i>Drepanocladus or Fontinalis spp.</i>

Common Name	Scientific Name
willow	<i>Salix spp.</i>

The MN DNR Section of Fisheries has not conducted a formal fish survey on Goose Prairie Marsh but game fish are unlikely to be abundant in the system due to frequent winterkills. Fish species have different tolerance levels to winterkill conditions, with game fish such as trout, bluegill, and largemouth bass being the most susceptible, and bullheads and fathead minnows being the most tolerant. Lakes with regular winterkill events are usually dominated by bullhead and minnow species. MN DNR wildlife lake surveys have noted that bullhead, bass, minnows, and brook stickleback have been present in Goose Prairie Marsh. A goal for the temporary drawdown of Goose Prairie Marsh is to greatly reduce or eliminate the existing fish community due to the degraded habitat conditions that fish can cause in shallow lakes. Benthivorous fish such as bullheads stir-up bottom sediments and uproot aquatic vegetation. Planktivorous fish consume small invertebrates that filter feed on algae. These invertebrates can filter enough algae out of the water to have positive impacts on water clarity. Fish can also increase the internal nutrient loading in a lake through their metabolic activities (Zimmer et al. 2006). A fish barrier would be incorporated into the water control structure to extend the time the basin has reduced fish populations for as long as possible. Through the construction of surface ditches, installation of drainage tile, and increased transportation use between lakes, shallow lakes such as Goose Prairie Marsh have much greater connectivity than in pre-settlement times, allowing fish to enter basins never occupied historically. Numerous lakes are managed by the MN DNR Section of Wildlife to reduce undesirable fish populations. Some strategies often used to reduce fish populations include drawdowns to induce winterkill, piscicide treatments such as Rotenone, fish barriers, and predator fish stocking can be used to control benthivorous and planktivorous fish. These management options can be combined with each other or used alone based on existing and expected habitat conditions.

According to the Ecological Classification System the project lies in the Prairie Parkland province, the Red River Valley section, and the Red River Prairie subsection. Native plant communities in the project area include northern mesic prairie, central mesic hardwood forest, and prairie mixed cattail marsh. Key habitats in the subsection include prairie, forest-lowland deciduous, wetland-non-forest, river-headwater to large and river-very large. Goose Prairie WMA is rated a moderate biodiversity significance rating by the Minnesota Biological Survey meaning that the site contains occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery and the Korell WPA is rated below, meaning that the site is below minimum biodiversity threshold for statewide significance, but might include areas of conservation value at the local level (Attachment N).

Minnesota's Comprehensive Wildlife Conservation Strategy (CWCS), Tomorrow's Habitat for the Wild and Rare (2006) defines Species in Greatest Conservation Need (SGCN) as animals whose populations are rare, declining, or vulnerable to decline and is below levels desirable to ensure their long-term health and stability. There are 83 SGCN that are known or predicted to occur in the Red River Prairie subsection. Four of those 83 SGCN are unique to the Red River Prairie. Shallow lakes and wetlands in the Red River Prairie might provide habitat for 37 SGCN including those listed in Table 5.

Table 5. SGCN found in the Red River Prairie subsection that use shallow lakes or wetlands.

Common Name	Scientific Name	State Legal Status	Lake-Shallow Habitat	Wetland Non-forest Habitat
A Tiger Beetle*	<i>Cicindela fulgida westbournei</i>	THR		x
American Avocet	<i>Recurvirostra americana</i>	NL		x
American Bittern	<i>Botaurus lentiginosus</i>	NL		x
American Golden-plover	<i>Pluvialis dominica</i>	NL		x
Black Tern	<i>Chlidonias niger</i>	NL	x	x
Bobolink	<i>Dolichonyx oryzivorus</i>	NL		x
Common Snapping Turtle	<i>Chelydra serpentina</i>	SPC	x	x
Dunlin	<i>Calidris alpina</i>	NL		x
Eared Grebe	<i>Podiceps nigricollis</i>	NL	x	
Forster's Tern	<i>Sterna forsteri</i>	SPC	x	x
Franklin's Ground Squirrel	<i>Spermophilus franklinii</i>	NL		x
Greater Prairie-chicken	<i>Tympanuchus cupido</i>	SPC		x
Greater Yellowlegs	<i>Tringa melanoleuca</i>	NL		x
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END		x
Hudsonian Godwit	<i>Limosa haemastica</i>	NL		x
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	NL		x
Least Weasel	<i>Mustela nivalis</i>	SPC		x
Lesser Scaup	<i>Aythya affinis</i>	NL	x	x
Marbled Godwit	<i>Limosa fedoa</i>	SPC		x
Marsh Wren	<i>Cistothorus palustris</i>	NL	x	x
Nelson's Sharp-tailed Sparrow	<i>Ammodramus nelsoni</i>	SPC		x
Northern Harrier	<i>Circus cyaneus</i>	NL		x
Northern Pintail	<i>Anas acuta</i>	NL	x	x
Red-necked Grebe	<i>Podiceps grisegena</i>	NL	x	x
Ruddy Turnstone	<i>Arenaria interpres</i>	NL		x
Sedge Wren	<i>Cistothorus platensis</i>	NL		x
Semipalmated Sandpiper	<i>Calidris pusilla</i>	NL		x
Short-billed Dowitcher	<i>Limnodromus griseus</i>	NL		x
Short-eared Owl	<i>Asio flammeus</i>	SPC		x
Swamp Sparrow	<i>Melospiza georgiana</i>	NL		x
Trumpeter Swan	<i>Cygnus buccinator</i>	THR	x	x
Upland Sandpiper	<i>Bartramia longicauda</i>	NL		x
Virginia Rail	<i>Rallus limicola</i>	NL	x	x
White-rumped Sandpiper	<i>Calidris fuscicollis</i>	NL		x
Willow Flycatcher	<i>Empidonax traillii</i>	NL		x
Wilson's Phalarope	<i>Phalaropus tricolor</i>	THR	x	x
Yellow Rail	<i>Coturnicops noveboracensis</i>	SPC		x

END = Endangered, THR = Threatened, SPC = Special Concern, NL = Not Listed

* = Unique to the Red River Prairie subsection.

Other species that likely use the wildlife habitat in and around Goose Prairie Marsh include white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), muskrat (*Ondatra zibethicus*),

beaver (*Castor canadensis*), mink (*Neovison vison*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), ruddy duck (*Oxyura jamaicensis*), painted turtle (*Chrysemys picta*), red-winged blackbird (*Agelaius phoeniceus*), great blue heron (*Ardea herodias*), American white pelican (*Pelecanus erythrorhynchos*), double-crested cormorant (*Phalacrocorax auritus*) and numerous other rodents, reptiles, amphibians, and invertebrates.

- b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-____) and/or correspondence number (ERDB 20150340) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

The MN DNR Natural Heritage Information System (NHIS) lists a 1990 sighting of a red-necked grebe nesting colony on Goose Prairie Marsh and a 2006 observation of a bald eagle nest on Goose Prairie WMA. The database also indicates trumpeter swan and greater prairie chicken observations within 1 mile of the project area and a mesic prairie on the USFWS WPA located ½ mile to the west. No additional grebe sightings have been noted since the 1990 observation and none were reported during the 2009 or 2012 wildlife lake surveys. An eagle nest with 2 young was reported in the 2009 shallow lake survey.

The USFWS administers the Endangered Species Act to protect and recover imperiled species and the ecosystems upon which they depend. The following species are thought to occur in Clay County, though none are known to occur in the project area or in close proximity. The poweshiek skipperling (*Oarisma poweshiek*) is a federally endangered species, meaning that it is in danger of extinction throughout all or a significant portion of its range. Federally threatened species include the northern long-eared bat (*Myotis septentrionalis*), western prairie fringed orchid (*Platanthera praecalaria*) and the Dakota skipper (*Hesperia dacotae*), meaning they are likely to become endangered within the foreseeable future. The Sprague's pipit (*Anthus spragueii*) is a candidate for listing, meaning that the FWS has enough information to warrant proposing them for listing but is precluded from doing so by higher listing priorities.

- c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. 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.

Goose Prairie Marsh and the unnamed wetland DOW # 14008400 might be drawn down to the elevation 1203.6 for the construction of the project and then periodically afterward as specified in an approved water level management plan. Permanent flowage easements would be obtained from all affected riparian landowners. Drawdowns of Goose Prairie Marsh would only proceed if downstream conditions could handle the additional water without causing flooding or damage. The goal of the drawdowns would be to facilitate a winter fish kill of the existing rough fish community and encourage aquatic vegetation growth. Drawdowns would be temporary and could not last longer than two years as specified in Minnesota Rule (6115.0271, part C, item 4).

Temporary drawdowns on shallow lake basins enhance the abundance and diversity of aquatic vegetation. A temporary drawdown might also reduce or eliminate the existing fish community, which can have negative impacts on aquatic vegetation and water clarity. Increased abundance of submerged aquatic plants and a reduction in fish abundance should also increase aquatic

invertebrate abundance. An abundant and diverse aquatic plant community and increased numbers of invertebrates would provide quality habitat for migrating and breeding waterfowl and other wetland wildlife. Temporary drawdowns would be used to reduce populations of fish and no fish would be stocked in the system. This could be detrimental to piscivorous wildlife such as red-necked grebes, American white pelicans, and double-crested cormorants. Even with significant efforts by DNR to remove fish from the system it is highly unlikely that they would be completely eliminated and piscivores might find foraging easier due to improved water clarity. Drawdowns can also be detrimental to some reptiles, amphibians, and invertebrates if they are exposed to harsh conditions over winter. The approved management plan and operational plan would address this adversity by recommending that drawdowns start in late summer or early fall, allowing these animals an opportunity to evacuate from the basin being drawn down. There are numerous other wetlands in the Goose Prairie Marsh area for these emigrants to move. Animals are expected to come back to the basin post-drawdown, with more favorable habitat conditions. It is common to see dramatic invertebrate population increases post-drawdown due to decreased predation by fish, increased water clarity and abundant food sources.

Native prairie exists in the area of the possible Branch 1 repair (Attachment N) so care would be taken to complete any work in this area during either dry or frozen conditions when impacts to the native prairie would be minimal. It is predicted that one trip in and out with construction equipment would be needed. Native prairie vegetation could be crushed by construction equipment but back-and-forth traffic would be minimized and the vegetation is expected to fully recover during the subsequent growing season.

Red-necked grebes might not use the basin while fish abundance is low but might benefit from increased water clarity and increased invertebrate populations, an important part of their summer diet. Trumpeter swans might temporarily move out of the area during construction and drawdowns but are expected to return quickly as habitat conditions improve. Prairie chickens are not likely to be affected by the project.

Bald eagles are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The channel realignment might be disruptive to the bald eagles that could be nesting in the area. The USFWS provides a step-by-step guidance document that was used to determine that the project could result in a non-purposeful take since the outlet channel construction would be within 660 feet of the nest location. A USFWS permit for non-purposeful take of eagles would be pursued. Bald eagles might find foraging easier with lower water conditions and a potential fish kill could provide an abundance of food for a short period of time.

None of the land in the project area has been identified as critical habitat for the Dakota skipper or the poweshiek skipperling. Both of these species are associated with native prairie and this project would be unlikely to affect either species. The Sprague's pipit is associated with large patches of grassland, preferably native grassland, but also non-native planted grasslands. Besides the disturbance of having construction equipment on-site, the project is unlikely to affect the Sprague's pipit. The western prairie fringed orchid is associated with wet prairies and sedge meadows and could be disturbed by the construction of this project, though no individuals are known to exist within the project area. The northern long-eared bat is associated with caves and mines for hibernation and upland forests during spring and summer. Northern long-eared bats could be damaged by the removal of trees near the outlet construction site, though they are not known to reside there. The project is exempt for incidental take of northern long-eared bats by all activities, according to the USFWS 4(d) rule, since it is not in an area affected by white-nose syndrome and is outside of the white-nose syndrome buffer zone.

Invasive Species Control - MN DNR has documented invasive species such as plumeless thistle (*Carduus acanthoides*) and Canada thistle (*Cirsium arvense*) on the Goose Prairie WMA. Disturbance to the soil, such as project construction, could exacerbate invasive species control issues and so MN DNR requires active steps to prevent or limit the introduction, establishment, and spread of invasive species during contracted work. According to Operational Order 113, the contractor shall prevent invasive species from entering into or spreading within a project site by cleaning equipment prior to arriving at the project site.

If the equipment, vehicles, gear, or clothing arrives at the project site with soil, aggregate material, mulch, vegetation (including seeds) or animals, it shall be cleaned by a contractor furnished tool or equipment (brush/broom, compressed air or pressure washer) at the staging area. The contractor shall dispose of material cleaned from equipment and clothing at a location determined by the DNR contract administrator. If the material cannot be disposed of onsite, secure material prior to transport (sealed container, covered truck, or wrap with tarp) and legally dispose of offsite.

Since it has been determined that invasive species are within the project limits, the contractor shall meet the following requirements. The project supervisor shall identify the known infested sites to be avoided. The parking and staging areas and travel routes shall not be within the invasive species area, if possible. The Contractor shall clean equipment and clothing and dispose of material as noted above, prior to leaving the project limits.

Where there are multiple sites and at least one contains invasive species, the intent is to start work at the site with the fewest number of invasive plants, leaving the most heavily infested sites to last. The contractor shall make every effort to schedule operations and site visits to avoid the spread of invasive species.

If the project supervisor or contractor discovers additional invasive species infestation areas during construction, the contractor is to stop operations in the newly discovered infested area until a resolution can be accepted by the project supervisor.

The contractor shall ensure that all equipment and clothing used for work in infested waters has been adequately decontaminated for invasive species (ex. zebra mussels) prior to being used in non-infested waters. All equipment and clothing including but not limited to waders, tracked vehicles, barges, boats, turbidity curtain, sheet pile, and pumps that comes in contact with any infested waters must be thoroughly decontaminated.

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

The footprint of the project components would be as small as possible while still accomplishing the project purpose. Construction activities would be timed to reduce disturbance to grassland areas by working when the ground is either dry or frozen. Any upland grassland habitat that is disturbed would be reseeded upon project completion and monitored for complete re-establishment. All erosion control equipment would be biodegradable or similarly wildlife friendly.

The goal of this project is to improve the wetland habitat conditions in Goose Prairie Marsh by increasing wetland vegetation abundance and diversity, increasing water clarity, and improving water quality. It is realized that construction and drawdowns might negatively impact wildlife individuals. Any drawdowns during construction or after project completion would ideally be

initiated early enough in the fall that reptiles and amphibians would have time to find a more suitable overwintering habitat in one of the many nearby wetlands. Drawdowns would be initiated at the discretion of the area wildlife manager when parameters outlined in an approved management plan are met. The area wildlife manager would weigh benefits to the Goose Prairie Marsh system with negative effects a drawdown might have on individual wildlife or habitat conditions. While each shallow lake is different, a drawdown might be necessary approximately every 10 years. Although there would be impacts to wildlife during construction and occasionally during periodic drawdowns, the improvement and management of over 200 acres of shallow lake habitat would be an overall benefit.

CWCS identifies that the top two problems influencing the vulnerability or decline of SGCN in the Red River Prairie are habitat loss and habitat degradation in Minnesota. Some management options identified by the CWCS to support SGCN in non-forested wetlands include preventing loss or degradation of all types of non-forested wetlands, focusing on protecting wetlands larger than 25 acres and wetland complexes, managing the invasions of exotic species, and enforcing the Wetland Conservations Act. This project could advance the goals of the CWCS by enhancing the degraded habitat in Goose Prairie Marsh.

Bald eagles could be disturbed by construction activities since the nest is within 660 feet. To reduce the chance of disturbance, construction activities would occur outside of the eagle nesting period, from August through mid-January. One of the potential CD 18 realignment proposals would have directly impacted the tree where the bald eagle nest is located so the proposal has been rejected. It has been determined that the project could impact the bald eagles so a non-purposeful take permit would be sought from the USFWS and would be abided by throughout the construction of the project.

14. 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.

There are no known historic structures or archeological sites in the project area. A SHPO review has been completed and the letter is attached.

15. 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.

The project area currently consists of row crop agricultural fields, wetlands, and grasslands. Most visual impacts would occur during construction, which would be limited to one season. Construction equipment such as an excavator, truck-mounted crane, dump trucks, and skid loaders would be left on-site for as long as needed for the project. There would be no mitigation for visual impacts during construction. The only long-term visual effect of the project would be the addition of the water control structure, near 115th Ave N. Long-term, the completed water control structure might be

visible from 115th Ave N. The completed structure is not expected to decrease the scenic view of the area or obstruct visibility.

16. 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, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

There would be no stationary source air emissions during construction or operation of the proposed project.

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

There would be a localized, construction related increase in vehicle-related emissions from trucks hauling equipment to the site, as well as the equipment itself possibly including; front loading hydraulic excavator, off-road hauling trucks, truck-mounted cranes, low ground pressure bulldozers, scrapers, graders, and skid steers. This short term increase would have a negligible effect on air quality and carbon monoxide levels in this rural landscape.

- 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 16a). 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.

There would be a increase of dust from trucks hauling equipment to the project site on a gravel road (115th Ave N). The project site is ½ mile from a major tar road (MN Trunk Highway 32) so travel along gravel 115th Avenue would be minimal. Excavation would mostly be done in moist soil and would not create much airborne dust. If local residents report problems with dust, standard practices would be implemented to reduce dust, such as application of water.

17. Noise

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

Some noise would be generated from heavy machinery used during the construction of the project. There are two residences located on 115th Ave N that would be closest to the most sustained construction activity. They are approximately 350 and 600 feet from the construction locations. State noise standards for residential housing during the daytime are L₁₀ of 65 dBA and L₅₀ of 60 dBA. Construction would only occur from 7:00 a.m. to 7:00 p.m. and should not interfere with quality of

life for local residences. Agricultural equipment, of similar noise characteristics, is commonly used in this area.

18. 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.

There would be a temporary closure of 115th Ave N to allow for construction activity. Traffic would be diverted 0.5 mile to the north to 120th Ave N. This might be an inconvenience for the five local residents that live along 115th Ave N. The only increase in traffic would be during construction with the mobilization and demobilization of construction equipment and the daily commute of the construction crew to and from the site. This is a rural area with very light traffic. There would be no impacts to parking spaces.

Modeling indicates that completion of the project would reduce the occurrence of over-topping of 115th Ave to 100-year rain events, whereas with the existing conditions the road is over-topped during 50 and 100-year rain events.

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

The project would not cause increased traffic congestion and no traffic improvements would be necessary. The project would not impact the regional transportation system.

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

During the closure of 115th Ave N, traffic would be diverted to the shortest possible route, 0.5 mile to the north, along 120th Ave N. It would be a priority to construct the road raise as fast as possible, to minimize traffic related inconveniences for local residents.

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

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

The geographic scale of the environmental effects would be within the upper portions of the CD 18 watershed. The majority of environmental effects would be limited to Goose Prairie Marsh and the immediately surrounding wetlands. Potential environmental effects to surface water would include Goose Prairie Marsh and an unnamed public body of water (DOW # 14008400) which are basins in Branch 1 of CD 18. The impacts from controlling the water levels would also

affect bodies of water upstream and downstream of the control structure. CD 18 flows approximately 5 miles north before discharging into Stiner Creek which then discharges into the South Branch of the Wild Rice River after approximately 3 miles.

The timeframe for the proposed project construction would be limited to one construction season or three to five months for some effects (temporary) and for the life of the project for others (long-term).

Potential environmental effects during construction:

Construction of the control structure and road raise would have long term environmental effects in Goose Prairie Marsh, surrounding wetlands, and nearby unnamed lake DOW # 14031400. Approximately one acre of permanent wetland impacts would occur due to the road raise, including filling part of the wetland for a base prior to construction. Creation of the outlet channel would require approximately 31,000 cubic yards of excavation. Debris and sediment would be removed from the channel and placed in spoil banks in non-wetland areas. An additional .1 acre of impervious surface is anticipated as a result of the road reconstruction and gravel surfacing. Selective repair including excavation on CD 18 downstream of the proposed control structure might result in a change to some of the wetland types. Temporary effects to water and wetlands from construction would include any runoff from construction that could flow north via CD 18 to Stiner Creek and then to the Wild Rice River. It is anticipated that the downstream water bodies would receive negligible increase in sediment during construction.

Additional temporary environmental effects include, disturbance to fish, wildlife, and vegetation within approximately .5 acres during construction. Native prairie vegetation could be temporarily disturbed by construction equipment, however efforts would be made to complete work in the area during dry or frozen conditions to minimize impacts. Wildlife including, but not limited to, red-necked grebes, trumpeter swans, Sprague's pipit and bald eagles might avoid the area during construction due to noise and other disturbance to their habitat. Visual, air, noise, and transportation effects would be temporary and limited to the construction phase of the project, one construction season. Two residences located on 115th Ave N are approximately 350 and 600 feet from the construction locations. A temporary closure of 115th Ave N would occur to allow for construction activity. Traffic could be diverted 0.5 mile to the north, which would mainly effect five local residents that live along 115th Ave N. Construction equipment including, excavator, truck-mounted crane, dump trucks, and skid loaders would be left on-site which would contribute to visual impacts and create some dust and additional emissions.

Potential environmental effects during drawdowns:

Goose Prairie Marsh would experience lower water levels with the new management regime allowing for drawdowns when necessary, likely approximately every 10 years depending on the conditions of this shallow lake. Wetlands between Goose Prairie Marsh and 115th Ave. N. would sustain a similar water level as Goose Prairie Marsh during drawdowns. Permanent, long-term potential environmental effects within the project footprint would include improved habitat conditions in the water bodies with newly established submerged aquatic plants necessary for clear-water states. Immediate potential environmental effects to wildlife, fish and plant communities would be loss of habitat resulting in some fish and plant communities being eliminated or relocating elsewhere. Temporary drawdowns would reduce populations of fish which would also affect piscivorous wildlife. However, foraging might become easier overtime with improved water clarity.

Potential environmental effects during flood storage:

Goose Prairie Marsh would also allow for high water level fluctuations during flood events. Allowing water storage within the project area could result in shoreland erosion, destruction of wildlife nests and burrows and disturbed vegetation due to increased inundation. Higher levels of water could negatively impact water quality, turbidity and flow of nutrients. The operation of the control structure would attempt to reduce these potential environmental effects by using the wetlands for flood storage only outside of growing season and during critical wildlife nesting season, only allowing water to be stored until May 1.

- 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.

Only one foreseeable future project that might interact with environmental effects of this project is known at this time. Landowners upstream of the Goose Prairie Marsh that are part of the CD18 system could petition the watershed district for a repair of the ditch to original dimensions under provisions of M.S 103E. This potential project would be similar to the selective repair of CD18 components of the current project but would occur upstream of the marsh. No cumulative environmental effects are expected if this project was implemented at a future time.

No other foreseeable future projects are expected in this area based on direct contact with local township and county officials. The watershed district has no other projects in mind within this area given that this project has a small drainage area and would adequately provide flow reduction to meet their objectives for this small watershed area.

- 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.

Cumulative potential effects are limited to those environmental effects caused by the proposed project. The project is a continuation of habitat improvements and reduction of flood damages within this watershed district. The project along with potential future CD 18 repairs are intended to complement each other to improve habitat and water quality and reduce flood damage.

Mitigation measures and best management practices identified in this document will be implemented to minimize negative impacts. While some immediate environmental effects would disrupt wildlife in the area the effects would be temporary and a net gain would be realized by providing long term environmental benefits for the habitat quality in Goose Prairie Marsh.

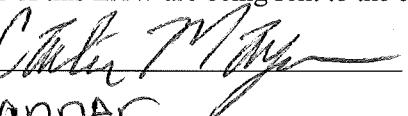
20. **Other potential environmental effects:** If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

None.

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  Date 11-6-2015
Title Planner

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