Environmental Assessment Worksheet

West Vadnais Lake Outlet Project

Prepared for
Ramsey-Washington Metro Watershed District

August 2019

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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

West Vadnais Lake Outlet Project

2. Proposer

Ramsey-Washington Metro Watershed District
Contact person: Tina Carstens
Title: Administrator
Address: 2665 Noel Drive
City, State, ZIP: Little Canada, MN 55117
Phone: 651-792-7950
Email: tina.carstens@rwmwd.org

3. RGU

Vadnais Lake Area Water Management Organization
Contact person: Stephanie McNamara
Title: Administrator
Address: 800 County Road East
City, State, ZIP: Vadnais Heights, MN 55127
Phone: 651-204-6073
Email: stephanie.o.mcnamara@vlawmo.org

4. Reason for EAW Preparation

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

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

Minnesota Rules, part 4410.4300, subpart 27A – Wetlands and public waters

5. Project Location

- County: Ramsey
- City/Township: Vadnais Heights
- PLS Location (¼, ¼, Section, Township, Range): W ½ of Section 30, T30N, R22W, and SE¼ NE¼ of Section 30, T30N, R22W
- Watershed (81 major watershed scale): 20 – Mississippi River-Twin Cities
- GPS Coordinates: 45.023480°N, -93.060541°W (outlet location); 45.052355°N, -93.101865°W (center of lake) (NAD 1983 UTM Zone 15N)
- Tax Parcel Numbers: 313022230010, 313022320006, 303022230004, 313022240001, 123-313022130011, 313022240002, 303022210002, 313022230005, 313022220015, 303022120001, 313022340001

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

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

Grass Lake

East Vadnais

West Vadnais

Twin Lake

Rustic Pl

Sucker Lake Rd

Saint Marie St

Rice St

County Road E

Vadnais Blvd Spur

Vadnais Blvd

Cottage Pl

Soo St

Janice St

Grand Ave

Owasso Blvd N

Twin Lake Blvd

Hamel Ct

Lake Rd

Jerrold Ave

Spruce St

Rice St N

99

136

49

16

18

694

West Vadnais Outlet

West Vadnais Outlet Pipe

24-Inch Localized Drainage Pipe

Project Area

Public Land Survey Sections

Figure 1

PROJECT LOCATION MAP
Ramsey-Washington Metro Watershed

N

Feet

0 500 1,000

1 inch = 500 feet

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

Barr Footer: ArcGIS 10.7.1 2019-08-19 15:04 File: I:\Client\Ramsey_Washington_Metro_WD\Work_Orders\2018_Feasibility_Studies\West_Vadnais_to_East_Vadnais\Maps\Reports\EAW_June2019\Figure 1 - Project Location Map.mxd User: irv

Grass Lake

T30R23S25

T30R22S30

East Vadnais

West Vadnais

T30R23S36

T30R22S31

Pumping

Flowing Wells

VADNAIS HEIGHTS

Trailer Park

BM 888

882

923

30

31

West Vadnais Outlet

West Vadnais Outlet Pipe

Project Area

Public Land Survey Sections

Figure 2

PROJECT LOCATION MAP
Ramsey-Washington Metro Watershed

N

Feet

0 500 1,000

1 inch = 500 feet

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

6. Project Description

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

Ramsey-Washington Metro Watershed District (RWMWD) is proposing to lower the existing outlet of West Vadnais Lake from 881.8 feet (ft) to 881.0 ft. In order to help alleviate flooding in the surrounding area and provide additional in-lake water storage volume. The responsible government unit is the Vadnais Lake Area Water Management Organization (VLAWMO).

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

Project Overview

The proposed West Vadnais Lake Outlet project (proposed Project) is located northeast of the intersection of Rice Street and Vadnais Boulevard in Vadnais Heights, Ramsey County (**Figure 1**). The Project area includes all of West Vadnais Lake, in addition to the wetland area south of Vadnais Boulevard and the wetland area directly north of West Vadnais Lake. The proposed outlet replacement is located in the southeast corner of a wetland area located southeast of West Vadnais Lake. Based on the 2018 VLAWMO West Vadnais Fact Sheet, West Vadnais Lake (the Lake) has a surface area of 213 acres (reference (1)). Based on bathymetric data collected in early summer 2019 as part of the proposed Project, the Lake has an average depth of about 8 feet and a maximum depth of 11 feet (**Figure 3**). Water levels within the Lake have steadily increased over the years and have led to the flooding of the surrounding areas including Grass Lake located on the west side of Rice Street, as well as overtopping Rice Street itself.

Grass Lake

West Vadnais

East Vadnais

West Vadnais Outlet

West Vadnais Outlet Pipe

Project Area

Interpolated Bathymetry (Feet)

<1

1-2

2-3

3-4

4-5

5-6

6-7

7-8

8-9

9-10

>10

Figure 3

WEST VADNAIS BATHYMETRY
Ramsey-Washington Metro Watershed

N

Feet

0 500 1,000

1 inch = 500 feet

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

Barr Footer: ArcGIS 10.6.1 2019-07-15 09:57 File: I:\Client\Ramsey_Washington_Metro_WD\Work_Orders\2018_Feasibility_Studies\West_Vadnais_to_East_Vadnais\Maps\Reports\EAW_June2019\Figure 4 - West Vadnais Bathymetry.mxd User: jrv

The ordinary high water level (OHWL) of West Vadnais Lake is 882.6 feet[1]; on May 31, 2019, the water level was at 884.37 feet, approximately 1.77 feet above the OHWL. Flooding has resulted in the closure of Rice Street and required sandbagging around Gramsie Road. Additional flooding poses a threat to the neighborhoods located north of the adjacent Grass Lake. Currently, water is drained from the Lake through a 15-inch outlet pipe located at an elevation 881.8 feet; discharge from this outlet eventually flows through the Phalen Chain of Lakes to the Mississippi River. A secondary (and unintentional) outlet from the Lake has been flowing since April 2019. This outlet consists of 24-inch localized drainage pipe that connects a low-lying area on the east side of the Lake with Twin Lake, also located to the east (**Figure 1**). In the past, this 24-inch pipe has only flowed with local drainage from the low-lying area; however, the Lake has recently been high enough to leverage the pipe as a secondary outlet, exacerbating already high waters in Twin Lake, and threatening its lowest home. If water elevations continue to rise, homes in the low-lying area east of the Lake may also be at risk of flooding.

The proposed Project would lower the current 15-inch outlet pipe, shown at the southeast end of the project area on **Figure 1**, from its current elevation of 881.8 feet to 881.0 feet. Lowering the outlet of the Lake would lower the existing water levels up to 0.8 feet compared to current water levels during dry periods and would also help lessen peak water elevations during wetter periods. Effects of this would be realized in the Lake itself, as well as fringe areas around the lake, the south wetland where the outlet is located, and Grass Lake as all are hydrologically connected.

At these currently high water levels, Grass Lake and West Vadnais Lake are equilibrated. As such, lowering the outlet of West Vadnais Lake would also reduce the impact of flooding around Grass Lake. Once completed, the proposed project would increase the water storage capacity of the Lake and reduce the potential for local flooding and overflow to downstream Twin Lake in the future.

With this project, the West Vadnais Lake outlet will have an invert elevation of 881.0, approximately 0.8 feet lower than the lake's existing outlet. Flow through the new outlet would be controlled by a valve to limit flow rates up to 4 cubic feet per second (cfs) (pipe full flow) as the lake eventually and naturally recedes and lake outflows decrease. This flow rate matches the original MnDNR permit for the existing 15-inch outlet pipe, as well as the associated joint powers agreement between the Grass Lake Watershed Management Organization, the Board of Water Commissioners of the City of St. Paul, Ramsey County and RWMWD. When the lake level

[1] Given elevations are in NAVD88 datum.

drops below 881.8, the outflow rate would be a function of outlet pipe capacity, and would be negotiated with the MnDNR, taking downstream capacity into account. It is anticipated that it could take several months, possibly years, for the lake to recede to an elevation of 881.0 with this passive approach.

Once the lake drops to an elevation of 881.0 (or below, via seepage to groundwater and evaporation), the lake would bounce and discharge as it did before, though at an elevation 0.8 feet lower than before the project. At any time, if downstream conditions are considered at an increased risk of flooding, the outlet valve could be closed to restrict or stop flow. This is consistent with the original agreement for the operation of the original 15-inch outlet pipe.

Proposed Construction Methods and Sequencing

Construction of the proposed Project is planned to commence during the 2020 construction season. The proposed Project would require the construction of a temporary dam around the existing outlet. The existing outlet would then be either excavated and removed or simply plugged, followed by installation of the new 15-inch concrete drainage pipe an elevation of 881.0 feet. Once installed the excavated area would be backfilled and graded to its original contours. The drainage channel located within the wetland south of Vadnais Boulevard would then be cleared of accumulated sediment and vegetation and excavated to an elevation of 879.0 to allow less restricted flow to the new outlet.

Upon completion the area would be reseeded with the approved seed mix. Best management practices (BMPs) would be used to minimize the potential for erosion and sedimentation during construction. The proposed project would be completed in 2020.

c. Project magnitude:

Table 1 provides a summary of the proposed Project's magnitude.

Table 1 Project Magnitude Summary

Component	Size
Total project acreage	238.3
Linear project length	N/A
Number and type of residential units	N/A
Commercial building area (in square feet)	N/A
Industrial building area (in square feet)	N/A
Institutional building area (in square feet)	N/A
Other uses—specify (in square feet)	N/A
Structure height(s)	N/A

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

The purpose of the proposed Project is to reduce current water levels in West Vadnais Lake and associated waterbodies to provide additional live storage capacity. The need for the project is driven by increasing water levels in the project vicinity, leading to flooding of local roadways (primarily Rice Street), overflows to downstream Twin Lake, and potential flooding of nearby homes adjacent to Grass Lake. Beneficiaries of the proposed Project include residents adjacent to Grass Lake, Snail Lake Regional Park trail users, Rice Street users, users accessing the south entrance of the Vadnais-Sucker Lake Regional Park, and residents in low-lying areas between West Vadnais Lake and downstream Twin Lake.

e. Are future stages of this development including development on any other property planned or likely to happen? ☐ Yes **X** No

If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

f. Is this project a subsequent stage of an earlier project? ☐ Yes **X** No

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: An assessment of land cover types was estimated using geographic information systems (GIS); the results are summarized in **Table 2**.

Table 2 Summary of Cover Types (in acres)

Cover Type	Before	After
Wetlands	19.8	19.8
Deep water/streams	216.1	216.1
Wooded/forest	2.0	2.0
Brush/grassland	0.4	0.4
Cropland	0	0
Lawn/landscaping	0	0
Impervious Surface	0	0
Stormwater Pond	0	0
Other – Vacant lot/sparse vegetation	0	0
Total Area	**238.3**	**238.3**

Source: U.S Geological Survey National Land Cover Dataset.

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.*

Table 3 lists permits and approvals required.

Table 3 Permits and Approvals Required

Unit of Government	Type of Application	Status
U.S. Army Corps of Engineers	• Section 404 Permit	• To be obtained
Minnesota Pollution Control Agency	• NPDES/SDS Construction Stormwater Permit	• To be obtained
Minnesota Department of Natural Resources	• Work in Public Waters Permit • Water Appropriations Permit	• To be obtained • To be obtained
Minnesota Department of Transportation	• Miscellaneous work permit	To be obtained
St. Paul Regional Water	• Access permission	• To be obtained
Vadnais Heights	• Interim Use Permit • Excavation Permit	• To be obtained • To be obtained
VLAWMO	• Wetland Conservation Act	• To be obtained

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

All potential cumulative impacts are discussed in EAW Item 19, Cumulative Potential Effects.

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.

The proposed Project encompasses 238.3 acres of land including West Vadnais Lake and an area to the south of the lake where the outlet is located.

The surrounding land use includes a mixed-use urban setting with residential, commercial, and institutional land uses, including a mobile home park, a church, and a school. The proposed Project boundary is bordered on the north by railroad tracks, on the west by Rice Street and several commercial properties, on the south by Twin Lake Boulevard and Interstate 694, and on the east by Vadnais Snail Lakes Park Trail/Sucker Lake Road and a residential area (**Figure 1**).

There are no prime or unique farmlands located inside or directly adjacent to the proposed Project boundary. The Project area is located within Vadnais-Sucker Lake Regional Park. The

park includes a pedestrian trail (Vadnais Snail Lakes Park Trail/Sucker Lake Road) which intersects with the Project boundary on its northeastern side; the trail is located atop a berm/causeway that bisects West Vadnais Lake and East Vadnais Lake. There are two access points for this section of the park and trail, one is located at the north end of West Vadnais Lake and one in the southern end near the existing mobile home park.

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

The City of Vadnais Heights falls within two watershed districts. One is the Ramsey-Washington Metro Watershed District (RWMWD), and the second is the Vadnais Lake Area Water Management Organization (VLAWMO). The VLAWMO spans approximately 25 square miles and includes West and East Vadnais Lakes and Sucker Lake. Comprehensive land use planning applications to the proposed Project are discussed below.

City of Vadnais Heights 2040 Comprehensive Plan addresses a long-term strategy for the growth of the City, as well as short-term decisions, relating to land use, housing, parks and trails, economic competitiveness, transportation, and water resources (reference (2)). This plan identifies West Vadnais Lake's aquatic recreation designated use as affected by nutrient and eutrophication biological indicators. Surface Water Management Goals and Policies of this plan aim to provide for future development and redevelopment while minimizing surface water issues and enhancing the natural environment by maintaining and improving water quantity and quality, erosion and sediment control, wetlands, maintenance and inspection, and recreation, fish, and wildlife.

VLAWMO Comprehensive Watershed Management Plan 2017-2026 outlines priority issues that detract from watershed functionality and the activities which will be implemented to protect and enhance water and natural resources within the watershed (reference (3)). West Vadnais Lake is a considered an impaired waterbody with high levels of phosphorous and eutrophication, and the Sucker-Vadnais Sub-watershed's intended management plans include monitoring and restoration, in addition to completing an internal loading study on West Vadnais Lake. The 2019 plan amendment includes objectives relating to assessing wetland health, especially in native vegetation areas and implementing restoration when feasible; conducting research on indicator species in the watershed; and conducting or partnering on invasive species management, including rough fish for West Vadnais Lake.

RWMWD 2017-2026 Watershed Management Plan outlines six main goals: achieve surface water quality, achieve a healthy ecosystem, manage risk of flooding, support sustainable groundwater,

inform and empower communities, and manage organization effectively (reference (4)). As part of the I-694/I-35E "Unweave the Weave" project, the 15-inch outlet proposed for replacement as part of this project was constructed from West Vadnais Lake to Owasso Basin. The construction of this outlet adds potential tributary area to the Gervais Creek watershed; however, outflows from West Vadnais Lake to Owasso Basin are not expected to occur except in extreme hydrologic conditions such as those experienced the past few years. The RWMWD owns and operates the system; the RWMWD, Ramsey County, and St. Paul Regional Water Services have entered into an agreement for the operation and maintenance of the pipe.

In addition, water levels in West Vadnais Lake have recently been high enough that the 24-inch localized drainage pipe (**Figure 1**) conveyed water from West Vadnais Lake to Twin Lake. Until recently, West Vadnais Lake has been hydrologically separate from Twin Lake throughout the 44 year history of the RWMWD. The original purpose of this pipe was to convey water from St. Paul Regional Water Services land to Twin Lake; not to convey overflow from West Vadnais Lake to Twin Lake

Ramsey County 2030 Comprehensive Plan update presents information related to Ramsey County's role in addressing land and public infrastructure issues within the County in accordance with Minnesota Statute 473.851 – 473.871 under the Metropolitan Land Planning Act for approval by the Metropolitan Council (reference (5)). This plan addresses proposed development and natural resource management for the Vadnais Lake segment of the Vadnais-Snail Lakes Regional Park.

Ramsey County 2018 Parks and Recreation System Plan includes appropriate information from recreation development plans, natural resource management plans, and applicable approved master plans for individual parks or sites (reference (6)). Recreation, flood management, and natural resource management goals for the Vadnais Lake segment of the Vadnais-Snail Lakes Regional Park are discussed. Ramsey County is currently working on clearing culverts to help address flooded wetlands in Vadnais-Snail Lakes Regional Park.

Specifically to manage flood risks, the RWMWD has installed monitoring wells and surface water level gauges at key points around Grass, Snail, and West Vadnais Lakes, in addition to checking inlet/outlet pipes for functionality. Long-term solutions to be implemented by the RWMWD include replacing/adding outlet pipes to increase drainage of these area lakes.

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

The proposed Project is primarily zoned for open water and waterworks district (WW). Surrounding zoning includes residential one district (R1), commercial two district (C2), residence four district (R4), and un-zoned parcels (-9999) along the railway in the north.

The proposed Project would be compatible with the nearby land uses, zoning, and plans previously described in EAW Item 9aii, especially those sections that focus on reducing flood risk.

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

The proposed Project would be compatible with current land uses; as such, land use mitigation measures are not planned.

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.

Bedrock in the proposed Project area is the Prairie Du Chien formation (reference (7)). The Prairie Du Chien formation consists of dolostone that varies greatly in thickness because its top is highly erodible. The Prairie Du Chien is karsted and may be rubbly where remnants less than 50 feet thick are covered by the St. Peter Sandstone. Depth to bedrock in the proposed Project area is up to 350 feet below ground surface. Surficial geology consists of sandy lake sediment, which is primarily fine to medium sand, silt and clay, and scattered dropstones.

No karst features or other geologically sensitive features are known to occur in the vicinity of the proposed Project area.

b. Soils and topography – Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after

project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.

Topography along the West Vadnais Lake shoreline is generally steeply sloping. Soil in the proposed Project area is mapped as water (Map Unit Water [reference (8)]) (U.S. Department of Agriculture – Natural Resources Conservation Service 2014).

11. Water Resources

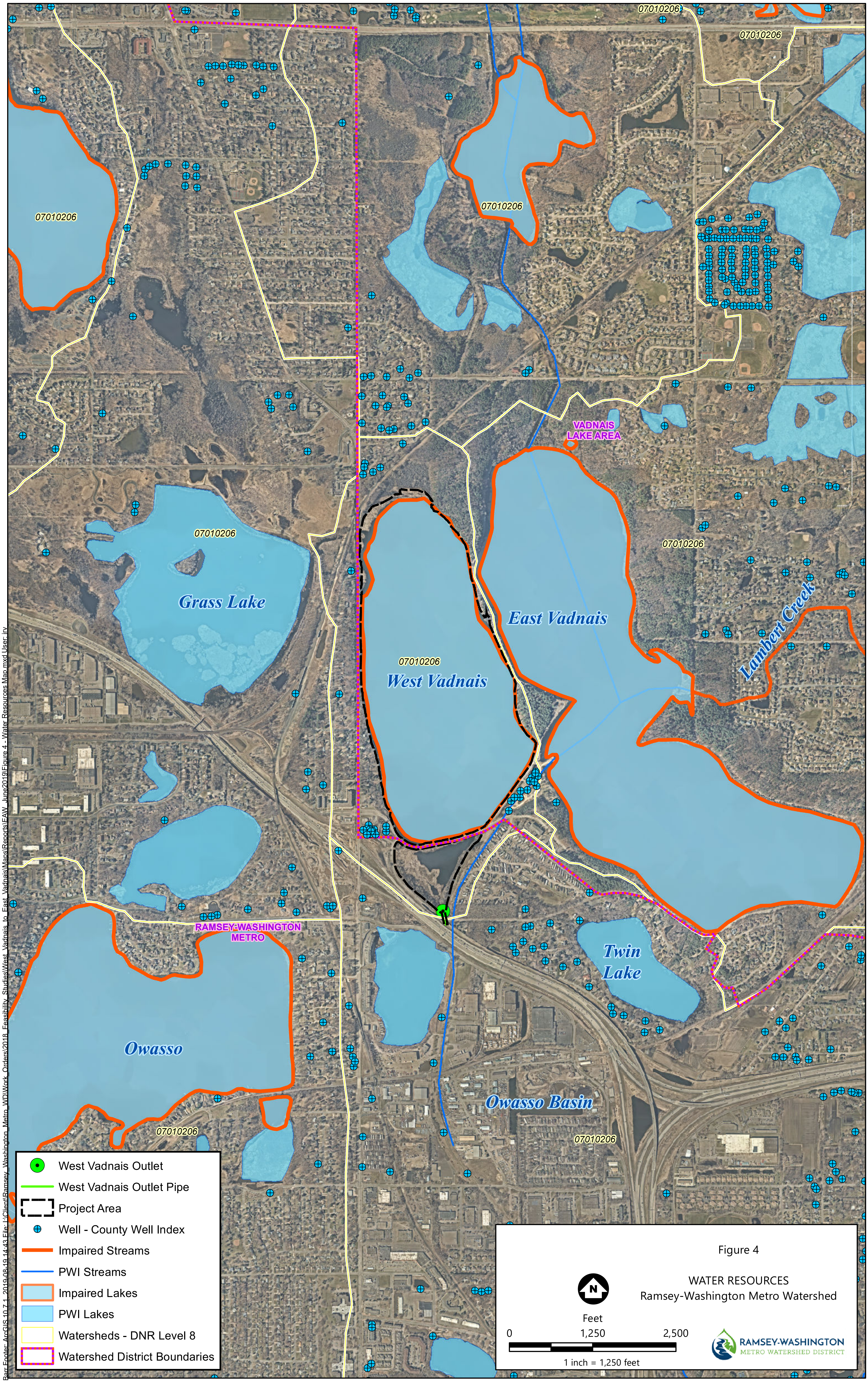
a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

   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 proposed Project is located within an urban setting in the Mississippi River- Twin Cities watershed (**Figure 4**); surface water resources within this area have been altered by human development. The proposed Project area is centered on West Vadnais Lake and includes the fringe wetlands located to the north and south of the lake, as well as hydrologically connected Grass Lake.

West Vadnais Lake is separated from East Vadnais Lake by a constructed berm/causeway, and the lakes are hydrologically independent. Water levels in West Vadnais Lake are currently high enough that a secondary outlet (which typically carries only local drainage from a portion of St. Paul Regional Water Service property) is now conveying flow from the lake to nearby Twin Lake, which has historically been hydrologically independent from West Vadnais Lake. No other surface water resources are located within the proposed Project vicinity.

A bathymetry study of West Vadnais Lake was completed in June 2019. According to Minnesota Department of Natural Resources (MDNR) Lake Finder, the max depth of the lake is 9 feet. However, water elevations have continued to rise since the Lake Finder data was populated and current bathymetry survey identified max depths of 11 feet (**Figure 3**).



Barr Footer: ArcGIS 10.7.1, 2019-08-19 14:43 File: I:\Client\Ramsey_Washington_Metro_WD\Work_Orders\2018_Feasibility_Studies\West_Vadnais_to_East_Vadnais\Maps\Reports\EAW_June2019\Figure 4 - Water Resources Map.mxd User: lrv

Several other lakes, streams, and wetlands are located within one-mile of the proposed Project area. **Table 4** identifies the DNR public Water Inventory (PWI) numbers, waterbody designations, and waterbody impairments for all waterbodies located within one-mile of the proposed Project area (reference (9)).

Table 4 Impaired Surface Water Resources within 1 Mile of the Proposed Project Area

Surface Water	Type	DNR PWI Number	Special Designation	Impairment	Affected Designated Use
East Vadnais	Lake	62003801	None	Mercury in fish tissue	Aquatic Consumption
Owasso	Lake	62005600	None	Mercury in fish tissue	Aquatic Consumption
Sucker	Lake	62002800	None	Mercury in fish tissue	Aquatic Consumption
Unnamed (Lambert Creek)	Creek	N/A	None	Fecal Coliform	Aquatic Recreation
West Vadnais	Lake	62003802	None	Nutrient/euthrophication biological indicators	Aquatic Recreation

Source: reference (9)

Depending on water levels, water flows either from West Vadnais Lake to Grass Lake or vice-versa. **Figure 5** shows the variability of Grass Lake and West Vadnais Lake water levels over the past 20 years. When both lakes are above the control elevation between the two lakes (dashed line), water flows from the higher lake to the lower lake. For example, when the West Vadnais Lake (blue dots) elevation is higher than the Grass Lake (orange dots) elevation, water flows from West Vadnais Lake to Grass Lake. When water levels in West Vadnais Lake are above its current 15-inch outlet elevation (881.8), water can also flow out of this outlet, in addition to flowing to Grass Lake at times.

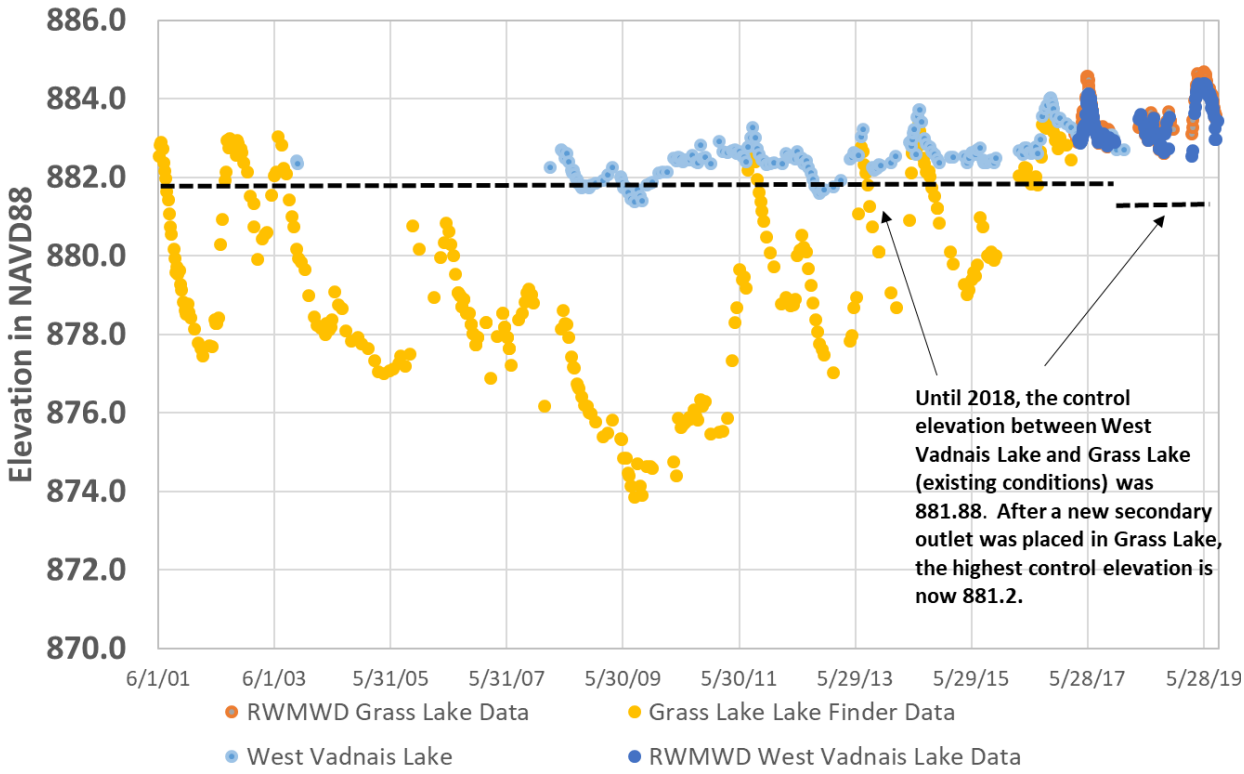


Figure 5 Lake Levels for Grass Lake and West Vadnais Lake, June 2001 through August 2019

Figure 6 shows that West Vadnais Lake has dropped to below its existing outlet level (881.8) a few times in the past, though it has rebounded to higher levels quickly. The last time the lake level was below the existing 15-inch outlet elevation was 2013. Lowering the lake outlet to 881.0 would mean that, at times, the lake would drop 0.8-feet lower than it would if the 15-inch outlet elevation was unchanged. The lake would, however, be expected to rebound quickly – in the past, the lake has risen back above the outlet elevation within 4 months, given the restricted flow from the 15-inch outlet.

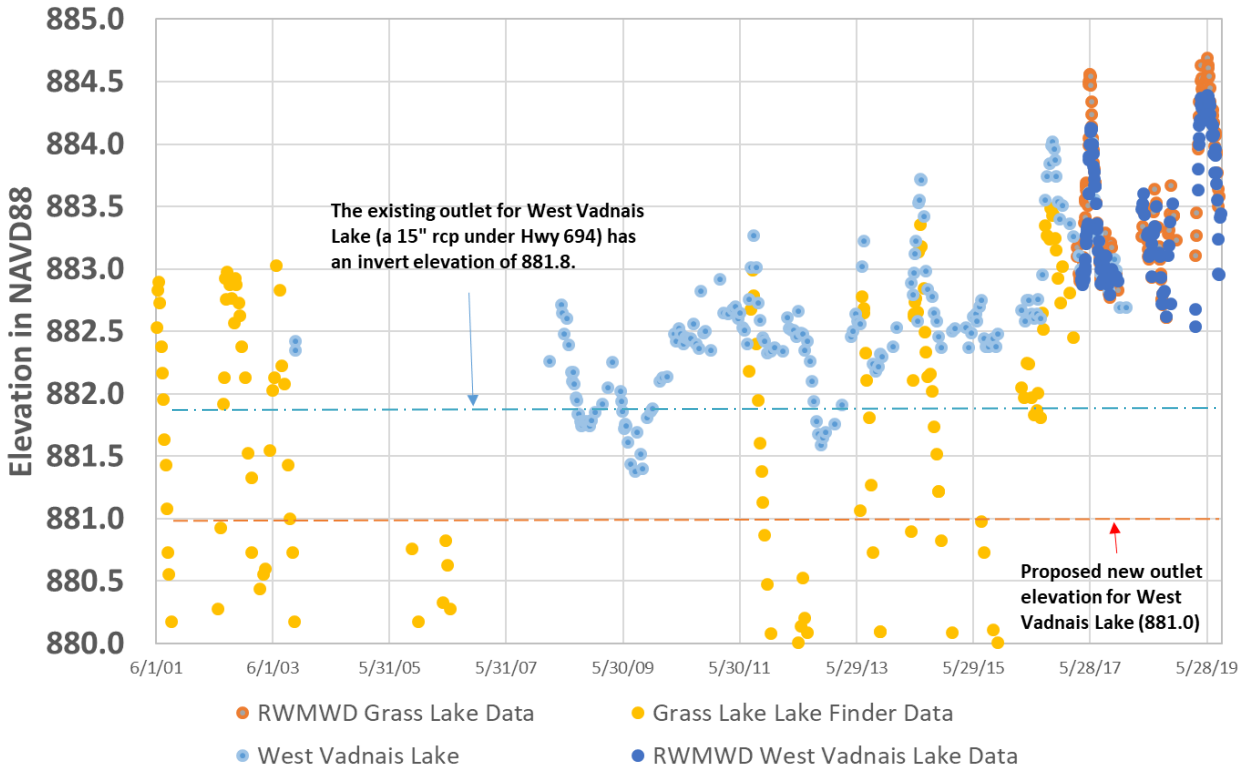


Figure 6 **West Vadnais Lake Levels (June 2001 through August 2019) with Existing and Proposed Outlet Levels**

Since 2017, Grass Lake and West Vadnais Lake have essentially been equilibrated, or nearly so. Water has likely been flowing both directions between Grass and West Vadnais Lakes during this time, depending on which waterbody was higher as the lakes equilibrated. For the most part, the direction of flow has been from Grass Lake (orange dots) to West Vadnais Lake (blue dots). During this period, seepage from Grass Lake and West Vadnais Lake has been highly limited, with the existing 15-inch outlet pipe serving as the primary route for water to leave these waterbodies, as shown in **Figure 7**.

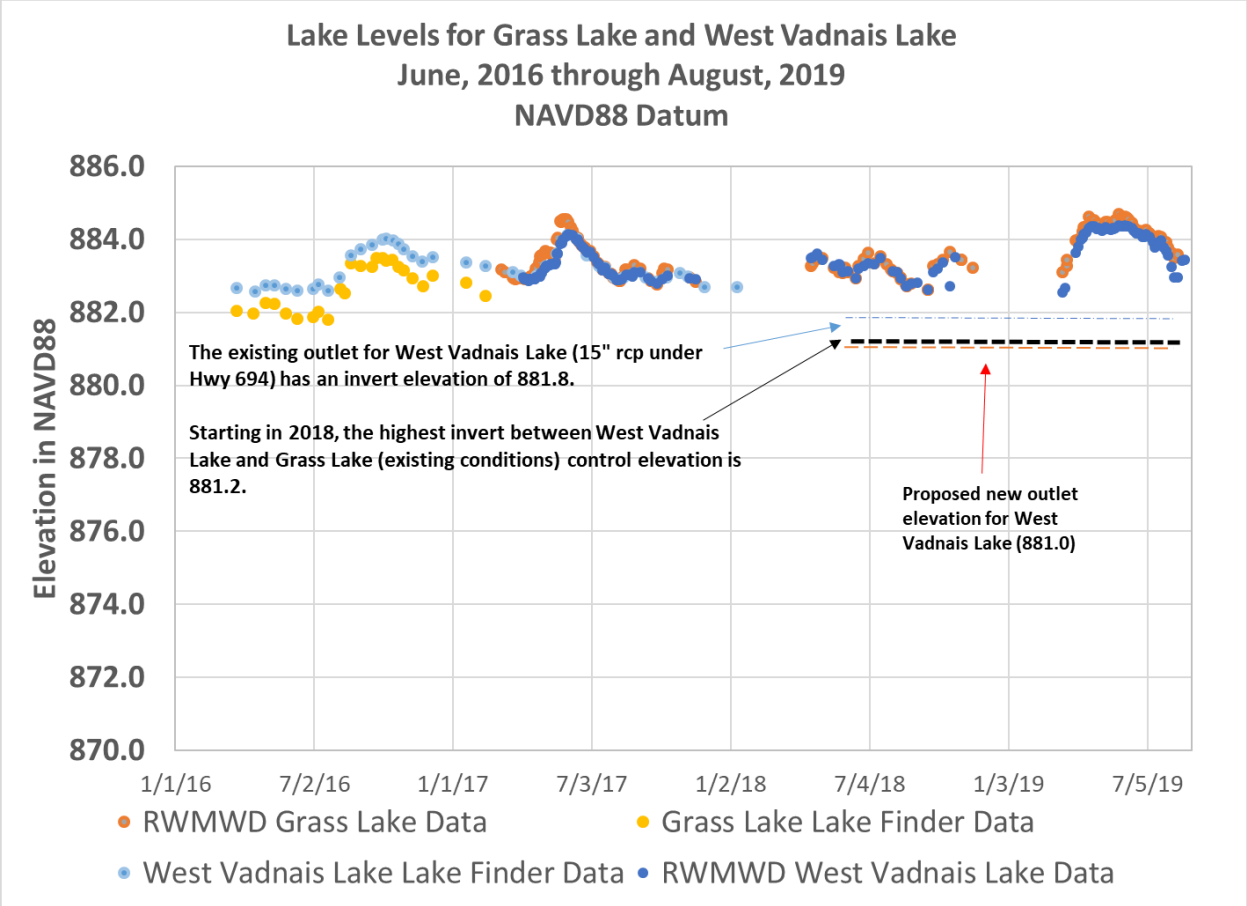


Figure 7 Recent Lake Levels for Grass Lake and West Vadnais Lake (June 2016 through August 2019 with Existing and Proposed Outlet Elevations

Recent water quality monitoring information in both lakes indicates that Grass Lake has better water quality (in terms of phosphorus concentrations) than West Vadnais Lake, which is impaired for excess nutrients, as shown in **Table 4**. For this reason, lowering the outlet of West Vadnais Lake is not expected to worsen West Vadnais Lake's water quality.

There are no trout lakes or streams, wild or scenic rivers, wild rice lakes, wildlife lakes, or outstanding resource value waters located within one-mile of the proposed Project area.

A field wetland delineation of the proposed Project area was conducted on June 17, 2019 and July 3, 2019. Two wetlands collectively totaling 28.9 acres were delineated within the proposed Project area. Wetland one, encompassing approximately 12.1 acres, was delineated on the north end of the proposed Project area (**Figure 8**). This wetland consists of two primary vegetation types, a scrub-shrub area dominated by glossy buck thorn (*Frangula alnus*; PSS1C) and shallow marsh area dominated by cattails (*Typha spp.;* PEMC).

Wetland 1

Grass Lake

East Vadnais

West Vadnais

Wetland 2

West Vadnais Outlet

West Vadnais Outlet Pipe

Project Area

Field Delineated Wetland

Scrub-Shrub

Shallow Marsh

Wet Meadow

Figure 8

DELINEATED WETLANDS
Ramsey-Washington Metro Watershed

N

Feet

0 500 1,000

1 inch = 500 feet

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

Bar Footer: ArcGIS 10.6.1, 2019-07-15 10:06 File: I:\Client\Ramsey_Washington_Metro_WD\Work_Orders\2018_Feasibility_Studies\West_Vadnais_to_East_Vadnais\Maps\Reports\EAW_June2019\Figure 5 - Delineated Wetlands.mxd User: jrv

Wetland two is located on the southern end of the proposed Project area and spans approximately 16.8 acres. This wetland also had two dominant plant communities: shallow marsh (PEMH) dominated by cattails and a wet meadow (PEMC) dominated by reed canary grass (*Phalaris arundinacaea*).

Based on the Minnesota Routine Assessment Method (MnRAM), both wetlands were classified as preserve wetlands. Shallow-water bathymetric data was also collected in June 2019 in where the littoral zone and wetland area on the north side of the Lake intersect (**Figure 3**). Surface water depths are primarily less than 0.5 feet, but do get as deep as 3 feet within the delineated wetland area. Bathymetric data collection across the entire delineated wetland area was impeded by accessibility; however, it does indicate the presence of standing water across the entire area.

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 depth to water table throughout the majority of the proposed Project area is zero as the proposed Project area is primarily composed of surface water. According to the Minnesota Department of Health (MDH) the proposed Project is located within the Saint Paul Wellhead Protection Area, and a number of wells are located in the project vicinity (**Figure 4**). Currently, The Saint Paul Regional Water Services pumps millions of gallons of water from the Mississippi River daily. This water travels through a chain of lakes into East Vadnais Lake, which is located directly adjacent to the proposed Project area. The Water is then pumped out of East Vadnais Lake and into a water treatment facility in St. Paul, which provides water to over 446,000 residents. A berm was constructed between East and West Vadnais Lake to separate the lakes.

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.

The proposed Project would not produce any sanitary, municipal/domestic, or industrial 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.

The proposed Project would not generate additional stormwater; instead, it would provide enhanced capacity to store stormwater runoff from surrounding areas and alleviate flooding.

A NPDES/SDS Construction Stormwater Permit will be obtained from the MPCA, and a Stormwater Pollution Prevention Plan (SPPP) will be developed for the Project. In addition, best management practices (BMPs), such as erosion control blankets, biologs, silt fencing, etc. will be implemented as appropriate during construction to minimize erosion and sedimentation into nearby surface waters.

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.

The proposed Project may require an appropriations permit for altering the outlet elevation. In addition, an appropriations permit may be required if a temporary bypass is used to convey water around the outlet during construction.

iv. Surface Waters

a) Wetlands – Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

The proposed Project would result in direct, temporary impacts to approximately 0.02 acres of wetland due to construction of the new outlet. Wetland area would temporarily be excavated and then backfilled to match existing grades once the new pipe is installed. No wetland type conversion is anticipated at this location. Since wetland impacts are expected to be temporary and wetland types would be unchanged, wetland mitigation is not anticipated. However, coordination would be required with regulatory agencies during the permitting process to confirm wetland mitigation requirements.

Once the proposed Project is complete, the existing water levels of West Vadnais Lake and hydrologically connected waters will be lowered 0.8 feet from current water levels. This reduction in water levels will have a minor impact on the delinated wetlands. As the wetlands are currently flooded and expanded byond their normal capacity, the reduction in water level would help to return the wetland areas to normal water levels. It is anticipated that the delineated wetlands will remain wetland areas upon completetion of the proposed Project and that some of the currently flooded areas may return to emergent wetland conditions as a result of reduced surface flooding. Wetland hydrology is anticipated to fluctuate between wet and dry years, which is typical and can help promote overall wetland health. However, at lower lake levels, wetlands may be drier for longer during periods of drought compared to current conditions. Potential wetland impacts will be further assessed during the permitting process with regulatory agencies. A Technical Evaluation Panel (TEP) will meet to discuss the delineated wetlands and potential impacts as a result of the proposed Project. Information from the TEP meeting will be included in the wetland permiting process and the EAW decision document.

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.

The proposed Project would include construction within the delineated wetland; no direct impacts to any additional surface waters during the construction phase of the outlet replacement. Once the construction of the proposed Project is complete, and the lake eventually and draws down to its new outlet elevation, the water levels within West Vadnais Lake would be permanently lowered 0.8 feet. The lake's water level would still bounce up and down as before, though in a range shifted downward 0.8 feet. Waterbodies hydrologically connected to West Vadnais Lake (such as Grass Lake) are expected to also see correspondingly lowered surface water levels. This reduction in water level is anticipated to have a minor impact on aquatic plants and the surrounding riparian area. However, the proposed Project would allow the lake to bounce to slightly lower water levels and minimize adjacent flooding. Since construction would not occur in the lake itself, the use of in-lake BMPs is not anticipated.

Though the surface water elevation would be lowered 0.8 feet, the lake would still maintain sufficient depth to sustain current recreational uses.

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's What's in My Neighborhood and Environmental Protection Agency's Cleanups in My Community databases were reviewed to determine if sites with regulatory listings for contamination such as dumps, landfills, storage tanks, or hazardous liquids are located within or adjacent to the proposed Project area. No potential contamination sites were identified within the proposed Project area. However, a 0.25 mile search area surround the site boundary identified 27 sites of potential contamination (**Figure 9**).

Minnoco
Gramsie
Corner Mart

Grass Lake

West Vadnais

East Vadnais

Infrastructure
Upgrades and
Improvements

Jackson
Steven B
Property

The McMillian

Eriks
Bike Shop

O'Reilly Auto
Parts 1810

Phillips
Petroleum Co
55 27526

Fuel Mart
Mobil

Grand Ave
Reconstruction
(From Soo St.
to 1,200' West)

SPRWS -
Vadnais

Five Star
Mobile
Estates

TH 694 / CSAH
49 Interchange
Reconstruction

Ramsey County
Road Salt
Surf Imp

Ramsey County
- Shoreview

Gpc
Contractors

Former Ramsey
County
Public Works

Former Ramsey
County
Public Works

Qwest

Qwest -
Rice St Co

Cardigan Ridge
Senior Living

MAACO Auto
Painting -
Little Canada

Marmon/Keystone

Vincent
Metals

McKesson
Drug Co

Frattalone
Companies Inc

Vincent Metals

Minnesota
Finishing
Trades

West Vadnais Outlet
West Vadnais Outlet Pipe
Project Area
Project Area Buffer (1/4 Mile)
What's in my Neighborhood (MPCA)
Hazardous Waste
Investigation and Cleanup
Tanks and Leaks
Water Quality
Multiple Activities

Figure 9

CONTAMINATION AND
HAZERDOUS MATERIALS
Ramsey-Washington Metro Watershed

N

Feet
0 650 1,300
1 inch = 650 feet

RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

Footer: ArcGIS 10.6.1, 2019-07-15 10:07 File: I:\Client\Ramsey_Washington_Metro_WD\Work_Orders\2018_Feasibility_Studies\West_Vadnais_to_East_Vadnais\Maps\Reports\EAW_June2019\Figure 6 - Contamination and Hazardous Materials.mxd User: jrv

These 27 sites consists of:

- 9 hazardous waste sites (7 active and 2 inactive)
- 8 active multiple program sites
- 4 active construction stormwater sites
- 3 underground storage tanks (1 active and 2 inactive)
- 2 active investigation and cleanup sites
- 1 active aboveground storage tank

None of the identified contamination sites would be impacted by the proposed Project. In addition none of the identified contamination sites are located within the proposed Project area. No avoidance or mitigation measures are anticipated.

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

Proper disposal of the generated materials would be the contractor's responsibility, in accordance with local and state requirements. During construction, the contractor would also collect remnant debris from the removal of the existing outlet pipe and other trash. The contractor would be responsible for removing these materials from the proposed Project area and disposing of them at an appropriate location.

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.

Fuels, oils, lubricants, and other materials typically used by construction equipment would be used during construction. Hazardous material storage would include secondary contaminant of fuels used during construction of the proposed Project. No other chemicals or hazardous materials would be needed for or generated by the proposed Project.

Refueling spills and equipment failures, such as a broken hydraulic line, could introduce contaminants into soil, resulting in potential adverse effects to on-site soil. However, the amounts of fuel and other lubricants and oils present would be limited to that need by the equipment on-site. Supplies and equipment to quickly limit any contamination (i.e. spill kits) would also be located on site.

To minimize the likelihood of potential spills and leaks of petroleum or hydraulic fluids during construction, equipment would be inspected daily for leaks and petroleum contamination, fuels for construction would be stored at appropriate staging areas, and equipment refueling and maintenance would be performed in locations away from surface waters. In addition, the contractor would be required to use double-walled tanks or secondary containment for single-walled tanks used to store petroleum products on-site. Any bulk lubricants would also be stored with secondary containment protection. All petroleum and lubricant storage containers would be inspected before entering the project site.

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.

Construction of the proposed Project is not anticipated to generate any hazardous wastes or introduce new hazardous materials to the proposed Project area. Any unexpected hazardous waste encountered during project construction would be removed from the site and transported to an appropriate disposal facility upon evaluation.

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.

The proposed Project area consists of aquatic lake habitat, with a shrub/shallow marsh wetland dominated by glossy buckthorn and cattails on the north end of the proposed Project area and a shallow marsh/wet meadow dominated by reed canary grass in the southern end of the proposed Project area (**Figure 5**).

An aquatic macrophyte survey was done in conjunction with the June 2019 bathymetry survey. The vegetation within West Vadnais Lake was dominated by submerged plant species such as muskgrass (*Chara spp.*) filamentous alga (*Spirogyra/Caldophora spp.),* curly leaf pondweed (*Potamogeton crispus*) and leafy pondweed (*Potamogeton foliosus*). Floating-leaf plants such as

white water lily (*Nymphaea odorata*) and yellow water lily (*Nuphar lutea*) were found the shallower portions of the Lake.

The landscape within and around the proposed Project area provides habitat for fish (bullhead species and crappie species), turtles, amphibians, such as frogs, toads, and salamanders, birds, such as bald eagles, hawks, blue heron, and wood ducks and perching birds, and mammals, such as fox, deer, squirrels, beaver, and muskrats. Recent frog and toad field surveys conducted by VLAWMO, identified the following six species in the wetland area on the north end of Vadnais Lake: spring peepers, boreal chorus frogs, gray tree frogs, Cope's gray tree frogs, American toads, and green frogs.

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 _____) 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.

Barr Engineering Co. (Barr) has a license agreement (LA-898) with the MDNR for access to the Natural Heritage Information System (NHIS) database, which was queried in June of 2019 to determine if any rare species could potentially be affected by the proposed Project. The NHIS database indicates that seven state-endangered, threatened, special concern, or watchlist species have been documented within one mile of the proposed Project area (**Table 5**).

Table 5 Rare Species Documented within One Mile of Proposed Project Area According to MDNR NHIS

Common Name	Scientific Name	Federal Status	State Status	Habitat[1]
Blanding's turtle	*Emydoidea blandingii*	None	Threatened	Wetland complexes adjacent to sandy uplands; calm shallow waters, including wetlands associated with rivers and streams.
Black huckleberry	*Gaylussacia baccata*	None	Threatened	Well drained sandy soil or dry sandstone outcrops in fire-dependent forest.
Swamp blackberry	*Rubus semisetosus*	None	Threatened	Savanna remnants and tamarack swamps.
Autumn fimbry	*Fimbristylis autumnalis*	None	Special Concern	Sedge meadows, where water table is at or very near the surface.
Red-shouldered hawk	*Buteo lineatus*	None	Special Concern	Large tracts of mature deciduous forest with scattered wetland openings.
Rusty patched bumble bee	*Bombus affinis*	Endangered	Watchlist	Open areas with abundant flowering plants and undisturbed soils for overwintering.
Western foxsnake	*Pantherophis ramspotti*	None	Watchlist	Agricultural fields, farms, grasslands, and riparian woodlands.

1: Habitat information obtained from MDNR Rare Species Guide: https://www.dnr.state.mn.us/rsg/index.html

Suitable habitat for Blanding's turtles may be present within and around the proposed Project area. Habitat suitable for the other state-threatened, special concern, and watchlist species is not present in the proposed Project area (**Table 5**).

The USFWS technical assistance website identifies several federally listed species as occurring in Ramsey County, including the Higgins' eye pearly mussel (*Lampsilis higginsii*; federally and state-endangered), snuffbox mussel (*Epioblasma triquetra*; federally and state-endangered), winged mapleleaf mussel (*Quadrula fragosa*; federally and state-endangered), the rusty patched bumble bee (*Bombus affinis*; federally endangered, state-watchlist), and the northern long-eared bat (*Myotis septentrionalis*; federally threatened, state-special concern) (reference (10)). The USFWS Information, Planning, and Conservation System website only lists the northern long-eared bat as potentially being present in the proposed Project area (**Appendix B**). According to the NHIS database, with the exception of the rusty patched bumble bee, none of these federally listed species have been documented within one mile of the proposed Project.

All three mussel species identified by the USFWS as occurring in Ramsey County inhabit large rivers and no suitable habitat for these species is available in the proposed Project area. In

addition, no suitable habitat (**Table 5**) for the rusty patched bumble bee is present in the proposed Project area.

The northern long-eared bat inhabits caves, mines, and forests (reference (11)). Suitable forest habitat is located adjacent to the proposed Project area. According to the MDNR, the nearest hibernacula is over 6 miles south of the proposed Project area and no maternity roost trees have been identified within the vicinity of the proposed Project area (reference (12)).

No Minnesota Biological Survey (MBS) native plant communities, Sites of Biodiversity Significance (SBS), or MDNR Scientific and Natural Areas (SNAs) are present within the proposed Project area.

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.

The proposed Project may have minor temporary adverse effects on terrestrial wildlife in the vicinity of the Project area. Temporary impacts to terrestrial wildlife may include increased noise and human activity during construction activities. Many species, even those accustomed to human proximity, could temporarily abandon habitats near the proposed Project area until the work is completed. These temporary impacts are not expected to irreparably harm terrestrial wildlife individuals or populations.

Fish and other aquatic organisms inhabiting the vicinity of the active construction area may be temporarily impacted during construction; however, it is anticipated that mobile aquatic organisms would generally relocate to adjacent aquatic habitats during construction activities.

Blanding's turtles may be present in the vicinity of West Vadnais Lake and could potentially be directly impacted by the proposed Project during construction should they be present in the immediate construction area (**Figure 1**). As mentioned above, the proposed Project will help to lower water levels in West Vadnais Lake; this will lessen flooding of adjacent habitat. Lowering water levels in the lake and nearby wetlands is not anticipated to have any direct impacts on turtles or other organisms inhabiting West Vadnais Lake or adjacent wetlands. The potential for impacts to wetlands on the north side of West Vadnais Lake, which could potentially provide Blanding's turtle habitat, is not anticipated. This area has been wetland since 2008; the 0.8-foot lower surface water elevation would still be higher than recorded 2008 water elevations in the immediate future and would be subject to bounce based on precipitation events and surface water runoff, as it has in the past, albeit at a slightly lower elevation. As such, potential impacts

to wetland habitat are anticipated to be minimal to none. Turtle habitat in this area may improve with the proposed Project as it would reduce local inundation, allowing for more wetland habitat and less areas of open water habitat.

With the exception of Blanding's turtles, habitat is not present within the proposed Project area for any of the federally or state-listed species discussed above. As such, impacts to these species are not anticipated from the proposed Project.

No MBS native plant communities, SBS, or MDNR SNAs are present within the proposed Project area, therefore impacts to these resources are not anticipated. Contractors will comply with Minnesota regulations regarding the spread of aquatic invasive species (reference (13)).

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

Potential impacts to aquatic organisms during construction will be minimized by implementing BMPs to avoid potential impacts to water quality.

Potential direct impacts to Blanding's turtles will be minimized by using exclusion fencing around the perimeter of the active construction area. Contractors would check the area for turtles each morning, prior to engaging in any construction activities. If turtles are found, they would be moved outside of the construction area. No impacts are anticipated to other federal or state-listed species or rare communities; as such, no additional avoidance or minimization measures are proposed specific to these natural resources.

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.

The Minnesota State Historic Preservation Office (SHPO) was contacted on June 13, 2019 to request a summary of all archeological sites and historic structures located within one mile of the proposed Project. The Office of the State Archaeologist (OSA) WebPortal was also reviewed. According to the data provided, there are no archaeological sites or historic structures are located within the proposed Project area; however, four recorded archaeological sites and 28 recorded historic structures are located within one mile of West Vadnais Lake.

Nearby historic resources primarily consist of transportation-related properties and domestic residences, with the closest historic resource located approximately 245 feet from the proposed Project area. Of the 28 historic properties, two are considered eligible for the National Register of Historic Places (NRHP) and the rest are unevaluated. The NRHP eligible resources are located approximately 0.4 miles from the proposed Project.

None of the archaeological sites within one mile of the proposed Project have been evaluated for NRHP eligibility. The nearest archaeological site is located approximately 75 feet from the proposed Project area; however no archaeological sites are located within 0.6 miles of the proposed Project's construction area. Due to distance of cultural resources from the proposed Project area, in addition to the design of the proposed Project, the proposed Project is not expected to adversely affect known archaeological sites or historic properties.

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 proposed Project would occur within West Vadnais Lake, which can be seen from residences, trails, and roadways located adjacent to the lake. Construction equipment at the south end of the lake would be visible for up to 45 days until construction is complete. This visual impact would be minor and temporary in nature and would not affect the permanent viewshed of the lake.

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.

The proposed Project would not result in any significant air emissions; therefore no mitigation for air emissions would be required.

b. Vehicle emissions – Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g.

traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

The proposed Project would result in short-term, localized air quality impacts due to emissions from construction vehicles and increased daily vehicle trips resulting from construction crews accessing the area. Emissions from large equipment such as bulldozers, skid steers, trucks, and other heave equipment would be limited to the early phase of construction. Emissions from the powered equipment would be minor and temporary in nature and are expected to have an overall negligible impact on air quality.

c. Construction traffic related to the delivery of project materials and the hauling off-site of excess soil would temporarily increase traffic during construction. To minimize vehicle emissions. 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.

After construction, the proposed Project is not expected to generate dust. However, during construction, the proposed Project would generate limited amounts of dust as a result of the construction of the temporary cofferdam and excavation and replacement of the existing outlet. No impacts to quality of life are anticipated as any fugitive dust emissions from construction activities would be minimized through the application of dust suppressants, such as water, to exposed soil surfaces.

The proposed Project is not anticipated to generate odors.

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.

Existing noise levels in the proposed Project area are typical of a mixed-use urban setting near major road systems. Noise is generated primarily by interstate and local roadway traffic.

Construction noise is expected to be minimal and limited to the noise generated by equipment and workers accessing the proposed Project area. The equipment associated with the proposed Project is expected to be limited to general earthmoving equipment (dozers, loaders, excavators,

etc.) and trucks used to haul materials (i.e., pipe other materials) to and from the proposed Project area.

No change in long-term noise level is expected after completion of project activities.

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.

Currently, there is no parking present with the proposed Project area, and the addition of parking is not planned.

Roadways immediately adjacent to the proposed Project area convey local traffic, and significant traffic congestion is not anticipated. Vadnais Lake Boulevard/County Road 16 runs north of the outlet construction area and has a functional classification of Other Arterial (Functional Class Code 220) (reference (14)). The roadway adjacent to the outlet construction area, Twin Lake Boulevard, is classified as a local roadway. Construction vehicles would likely access the outlet construction area from Twin Lake Boulevard via Vadnais Boulevard and the I-694/Rice Street exit.

The daily truck traffic would be dependent on contractor equipment availability and detailed work schedule. It is anticipated that construction material hauling needs and therefore trip generation will be minimal, within an estimate of up to 10 trips per day. Areas of disturbed ground related to outlet pipe replacement would be backfilled and graded to its original contours, reducing hauling needs.

The nearest accessible public transit stops are located west of the proposed Project on Rice Street. The proposed Project is not expected to impact public transit or alternative modes of transit such as walking and biking.

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,

Based on expected low traffic volumes, the proposed Project is not anticipated to impact local traffic flow and no roadway improvements are warranted to accommodate traffic generated by the proposed Project. Construction of the proposed Project is not anticipated to require any vehicular detours.

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

The proposed Project would generate small, temporary increases in traffic for the duration of construction activities. It is expected that the contractor would abide by local load restrictions and speed limits. The contractor would be responsible for ensuring the roadways are kept clean and are clear of construction-related debris. Measures to mitigate project-related transportation effects include locating staging areas outside of roadways as to not block regular traffic flow during construction. Additional measures to minimize or mitigate project-related transportation effects are not proposed due to the minimal level of impact.

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.

It is anticipated that construction of the proposed Project would take up to 45 days to complete. The proposed Project would allow peak lake levels to gradually shift downward (i.e. lake levels would be slightly lower during periods of high precipitation). Lake water levels are anticipated to decrease during extended periods with low precipitation, allowing more in-lake water storage to better accommodate wet periods. The geographic area with which cumulative effects were assessed for the proposed Project includes the immediate vicinity of the proposed Project and watercourses and waterbodies adjacent to West Vadnais Lake.

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.

Recent, current, or reasonably foreseeable future projects in the geographic assessment area are limited and include the Interstate 694 (I-694)/Rice Street Interchange and Grass and Snail Lake area drainage optimization.

I-694/Rice Street Interchange – This project involves reconstruction of the interchange at I-694 and Rice Street during 2019 and 2020 (reference (15)). Once complete the project will: improve traffic flow along Rice Street through the interchange area; prioritize pedestrians and bicyclists; and improve economic development opportunities in the area.

Grass and Snail Lake Area Drainage Optimization – Over the past few years, the RWMWD has completed a number of feasibility studies and localized projects that optimize drainage in the Grass and Snail Lake area in Shoreview, MN. Going forward, the RWMWD will continue to look for opportunities and partnerships to relieve flooding pressure in the area and to protect habitable structures at risk of flooding (reference (16)). One such project involves the potential routing of overflowing West Vadnais Lake water around Twin Lake rather than through it, in order to keep West Vadnais Lake water out of Twin Lake (because of both water quality and home flooding concerns) while still safely conveying it downstream.

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.

The cumulative effects analysis for the proposed Project assesses both negative and beneficial potential environmental effects.

Negative Effects

In general, the potential for negative effects from the proposed Project would be short-term, lasting only for the duration of proposed Project work activities. As such, these effects are discussed in detail in the resource-specific sections above. The I-694/Rice Street Interchange Project, identified above in EAW Item 19b (Cumulative Potential Effects), may interact with the proposed Project with regards to alteration of traffic patterns during construction; however given that the proposed Project is only anticipated to take up to 45 days, cumulative effects would be minor and temporary.

Beneficial Effects

As summarized above, the primary purpose of the proposed Project is to help alleviate flooding in the area surrounding West Vadnais Lake and Grass Lake to provide additional in-lake water storage volume. At the currently high water levels, Grass Lake and West Vadnais Lake are

equilibrated. Lowering the outlet of West Vadnais Lake would also reduce the impact of flooding around Grass Lake. The Grass and Snail Lake Area Drainage Optimization Project, identified above in EAW Item 19b (Cumulative Potential Effects), would interact with and complement the proposed Project with regards to alleviating flooding concerns in the area. In combination with the projects that the RWMWD has completed, and is currently pursuing, this proposed lowering of the West Vadnais Lake outlet adds an important layer to the flood protection efforts throughout the Grass Lake-West Vadnais Lake-Snail Lake area.

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.

The proposed Project is not anticipated to cause any additional environmental effects beyond those addressed above.

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

I hereby certify that:

- The information contained in this document is accurate and complete to the best of 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:** _____

Stephanie McNamara

Title: Administrator
Vadnais Lake Area Water Management Organization

Appendix A

Preliminary Schematic Drawings

Appendix B

IPAC Resource List

Appendix C

References

References

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