Surface Water Management Plan

2021-2030

City of White Bear Lake, Minnesota

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Executive Summary

The City of White Bear Lake Surface Water Management Plan (SWMP) provides the framework for a comprehensive program to protect and improve the quality of water resources within the City. The SWMP has been prepared in accordance with Minnesota Statutes and Rules and is consistent with the Ramsey Washington Metro Watershed District, Rice Creek Watershed District, Valley Branch Watershed District, and Vadnais Lake Area Water Management Organization plans.

The City's SWMP serves as a reference document with information on the physical environment and specific water resources within the City, regulatory requirements related to surface water management, recognition of current design standards, and highlights of past projects. The plan also identifies several issues that the City has encountered or is likely to encounter in the coming years. To address these issues, a set of goals and corresponding implementation items were identified and grouped by issue area to guide surface water management activities over the 10-year timeframe of the plan.

Issue Areas
Stormwater runoff management and flood control
Lake, stream, and wetland management
Natural resources and recreation
Groundwater management
Public education and participation
Regulatory permit and review
Pollution prevention, operations, and maintenance
Funding

The issues and objectives were used to direct the preparation of the implementation program described in the SWMP. The City's implementation program includes a range of capital improvement projects, programs, studies, and ongoing inspection and maintenance activities.

Chapter 1. Purpose and Scope

1.1 Purpose

This Surface Water Management Plan (SWMP) serves multiple purposes including statutory and rule compliance. This SWMP has been prepared in accordance with Minnesota Statutes 103B and Minnesota Rules 8410. Specifically, Minnesota Statutes 103B.201 defines the purpose of metropolitan water management programs:

- to protect, preserve and use natural surface and groundwater storage and retention systems;
- to minimize public capital expenditures needed to correct flooding and water quality problems;
- to identify and plan for means to effectively protect and improve surface and groundwater quality;
- to establish more uniform local policies and official controls for surface and groundwater management;
- to prevent erosion of soil into surface water systems;
- to promote groundwater recharge;
- to protect and enhance fish and wildlife habitat and water recreational facilities; and
- to secure the other benefits associated with the proper management of surface and groundwater.

This SWMP is consistent with the Ramsey Washington Metro Watershed District 2017-2026 Watershed Management Plan, Rice Creek Watershed District Watershed Management Plan 2020-2029, Valley Branch Watershed District 2015-2025 Watershed Management Plan, and Vadnais Lake Area Water Management Organization Comprehensive Watershed Management Plan 2017-2026, and addresses the expanded list of requirements of the Metropolitan Council Thrive MSP 2040 Water Resources Policy Plan.

Although not a requirement, this SWMP serves to further define the goals of the City's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4)Permit and associated Stormwater Pollution Prevention Program (SWPPP) by merging these similar yet separate programs into one document. This SWMP also serves to document the history of stormwater management in the City.

1.2 Scope

1.2.1 State Statutes and Rules

Minnesota Statutes, Sections 103B.201 to 103B.255 and Minnesota Rule Chapter 8410 comprise the State's Metropolitan Surface Water Management Program. These Statutes and Rules require the preparation of watershed plans by Watershed Management Organizations and the preparation of local (City) water management plans.

Minnesota Rule 7090, Parts 7090.1000 to 7090.1040 establishes the State's storm water permit program to regulate discharges of storm water from MS4's. While this Rule does not direct the preparation of this SWMP, the City intends to include the goals of its MS4 Permit and associated SWPPP in this SWMP.

Minnesota Statute 103B

Minnesota Statute 103B.235 defines the required content for local surface water management plans. According to the statute language, each local plan, to the degree of detail required in the watershed plan, shall;

1. Describe existing and proposed physical environment and land use;
2. Define drainage areas and the volumes, rates, and paths of storm water runoff;
3. Identify areas and elevations for storm water storage adequate to meet performance standards established in the watershed plan;
4. Define water quality and water quality protection methods adequate to meet performance standards established in the watershed plan;
5. Identify regulated areas; and
6. Set forth an implementation program, including a description of official controls and, as appropriate, a capital improvement program.

Minnesota Rule 8410

Minnesota Rule 8410 was developed by the Minnesota Board of Water and Soil Resources to define additional plan content requirements. According to Rule 8410.0160, each local plan, in the degree of detail required in the organization plan, must contain the following:

1. An executive summary that summarizes the highlights of the local water plan;
2. Appropriate water resource management-related agreements that have been entered into by the local community;
3. Description of the existing and proposed physical environment and land use. Drainage areas and the volumes, rates, and paths of storm water runoff must be defined (data may be incorporated by reference);
4. An assessment of existing or potential water resource-related problems;
5. A prioritized local implementation program through the year the local SWMP extends must describe the nonstructural, programmatic, and structural solutions to problems identified including:
   - areas and elevations for storm water storage adequate to meet performance standard or official controls established in the plan;
   - water quality protection methods adequate to meet performance standards or official controls in the plan and identify regulated areas;
   - clearly define the roles and responsibilities of the community from that of the WMO(s) for carrying out implementation components;
   - describe the official controls and any changes needed to official controls;
   - a table that briefly describes each component of the implementation program and clearly details the schedule, estimated cost, and funding sources for each component including annual budget totals; and
   - a table for a capital improvement program that sets forth, by year, details of each contemplated capital improvement that includes the schedule, estimated cost, and funding source.
6. A section on amendment procedures that defines the process by which amendments may be made. The amendment procedure must be consistent with the amendment procedures in the Watershed Management Organization(s) plans.

Minnesota Rule 7090, Parts 7090.1000 to 7090.1040 (MS4 Permit)

Minnesota Rule 7090, parts 7090.100 to 7090.1040, defines state requirements for MS4's under the U.S. Environmental Protection Agency (EPA) Clean Water Act. The EPA delegates MS4 permitting and enforcement authority to the Minnesota Pollution Control Agency.

According to Minnesota Rule 7090.1040, owners and operators of MS4's must have a Storm Water Pollution Prevention Program (SWPPP) in place to reduce the amount of pollutants that enters surface and groundwater from storm sewer systems to the maximum extent practicable. The program must address six minimum control measures:

A. Public education and outreach

B. Public participation/involvement

C. Illicit discharge detection and elimination

D. Construction site runoff

E. Post construction runoff control

F. Pollution prevention/good housekeeping

MS4 Permittees with assigned Waste Load Allocations (WLA) as part of a Total Maximum Daily Load (TMDL) project must include additional information in their SWPPP.

Although not a requirement, this SWMP serves to further define the goals of the City's 2020-2025 MS4 General Permit and associated SWPPP by merging these similar yet separate programs into one document.

1.2.2 Watershed Management Organizations

Government units having land use planning and regulatory responsibility within a Watershed Management Organization (WMO) are required to adopt a local SWMP that is consistent with the WMO plan and address priority issues as it pertains to the community. The requirements for each of the four WMOs having jurisdiction in the City are included in Appendix A.

1.2.3 Metropolitan Council

The White Bear Lake SWMP addresses the expanded list of requirements contained in the Metropolitan Council Thrive MSP 2040 Water Resources Policy Plan. These requirements build on those of Minn. Stat. 103B.235 and Rule 8410 and include many items required by WMOs. The expanded list of requirements are summarized below.

1. Assessment of existing or potential water resource-related problems should include:
   - A prioritized assessment of the problems related to water quality and quantity in the community.
   - A list of any impaired waters within the community's jurisdiction.
   - For communities with a completed Watershed Restoration and Protection Strategy (WRAPS) or TMDL study, include implementation strategies and funding mechanisms needed to carry out the recommendations and requirements from the WRAPS or TMDL.
     - Communities with designated trout streams should identify actions in their plan to address the thermal pollution effects from development.
     - Communities with special waters, such as outstanding resource value waters, need to meet

state requirements for development near these waters.

2. Local implementation program/plan should include:
   - Information on the types of best management practices to be used to improve stormwater quality and quantity. A five-year establishment period is recommended for native plantings and bioengineering practices.
   - The maintenance schedule for the best management practices consistent with BMP inspection and maintenance requirements of the MS4 Permit.
   - An erosion and sediment control ordinance consistent with NPDES Construction Stormwater permit requirements and other applicable state requirements.
   - Identify ways to control runoff rates so that land-altering activities do not increase peak stormwater flow from the site for a 24-hour precipitation event with a return frequency of 1 or 2 years. Communities with known flooding issues may want to require rate control for storms with other return frequencies (10-year, 25-year or 100-year)
   - Consider use of NOAA Atlas 14, Volume 8 (Precipitation Frequency Atlas of the United States) to calculate precipitation amounts and stormwater runoff rates.
   - Consider adoption of the MPCA Minimal Impact Design Standards (MIDS) performance goals and flexible treatment options.
   - For communities that do not adopt MIDS, the plan should use stormwater practices that promote infiltration/filtration and decrease impervious areas, such as with better site design and integrated stormwater management, where practical.

3. Local official controls must be enacted within six months of the approval of the local water plan.

Chapter 2. Physical Setting

This section of the Surface Water Management Plan (SWMP) describes the history and physical environment of the City of White Bear Lake. Minnesota Statute 103B.235 and Minnesota Rule 8410 require local governments to describe the existing and proposed physical environment and land use and define drainage areas and the volumes, rates, and paths of storm water runoff.

2.1 Location and History

The City of White Bear Lake (City) is located in the northeast part of the seven county metropolitan area in northeastern Ramsey County, with a small portion in Washington County. Surrounding communities include Vadnais Heights and Gem Lake to the west, Maplewood to the south, Birchwood and Mahtomedi to the east, and White Bear Township. White Bear Lake is generally bounded to the west by Interstate 35E, to the north by the Soo Line Railroad, to the south by Interstate 694, and to the east by East County Line Road. The City covers 5,500 acres (8.6 square miles). Figure 1 shows the location of the City within the seven county metro area.

The earliest inhabitants of the White Bear Lake area were the Dakota and the Ojibway Indians who used the area for their migratory hunting and harvesting grounds. The United States government designated the area as Dakota land in an 1825 treaty, but later purchased all Dakota Territory east of the Mississippi River to open it for European-American settlement.

Rich land, abundant game, and scenic lakes attracted the early pioneers to this area. In 1858, the year Minnesota became a state, these first European-American settlers established White Bear Township, which consisted of 36 square miles of land. As word of its scenic landscape spread, the town grew into a popular resort area, attracting visitors from all along the Mississippi River. People would travel up the Mississippi to St. Paul by steamboat and on to White Bear Lake by train. Soon resorts and hotels lined the shores of the lake while restaurants, theaters and stores set up shop in the downtown area to accommodate visitors.

The extension of the Lake Superior and Mississippi Railroad to White Bear Lake in 1868 turned what used to be a three hour horse and buggy ride from St. Paul into a twenty minute trip. Rail service provided new and exciting opportunities for business and industry in the area, eventually connecting to Duluth in 1871.

As the resort era faded shortly after the turn of the century, other industries, including farming and lumbering, continued to prosper. In keeping pace with this steady growth and development, leaders of the community officially incorporated the City of White Bear Lake in 1921.

When incorporated in 1921, the city was 2¼ square miles with a population of just over 2,000. The 1950s and 1960s were times of rapid residential expansion. By 1960, the city's area had grown to 7 square miles with a population of about 13,000 people. During the 1970s and 1980s, large parcels of land were opened for development through the city's effort to extend roads and utilities. The city's aggressive economic development program led to extensive growth in both residential and industrial uses. White Bear Lake is currently the fourth largest City in Ramsey County, with a population of approximately 25,000 residents. As a developed community, the City will most likely experience limited growth in the future. Table 1 shows the growth in population and households from 1970 to 2040.

Table 1. Population Growth Forecasts

Year	Population	Households
1970	23,313	5,859
1980	22,538	7,124
1990	24,642	9,070
2000	24,325	9,618
2010	23,797	9,945
2017	25,512	10,473
2020	24,300	10,500
2030	25,000	11,200
2040	25,800	11,700

Source: City of White Bear Lake 2030 Comprehensive Plan, City of White Bear Lake Draft 2040 Comprehensive Plan, Metropolitan Council 2018

2.2 Land Use

The City of White Bear Lake is considered a fully developed community. The predominant land use is single family residential, which occupies approximately 40% of the total land area. Commercial, industrial, and higher density housing generally occur along the major transportation corridors near Interstate 35E, Interstate 694, and Highway 61. Areas for potential development are few and scattered, with most opportunities involving redevelopment. Figure 2 and Figure 3 show the current and planned future land use maps, which guide zoning and development of properties. Future land use is described in the land use section of the City's Comprehensive Plan, which serves as the City's official guide for all future land use decisions.

2.3 Topography and Drainage

2.3.1 General Topography

The City's topography and surface water features were shaped by the last glacial period, which ended approximately 10,000 years ago. Topography in the City of White Bear Lake consists of gently rolling hills interspersed with several depressions occupied by wetlands and lakes. Ground elevations vary from 1,070 feet (NAVD88) near Century Ave (MN-120) and Woodland Dr. to a low of 890 feet (NAVD88) south of I-694 and the Bruce Vento Trail. Two-foot contours for the City of White Bear Lake are available on the Minnesota Geospatial Information Office website. The contours were generated from LiDAR data collected throughout the Twin Cities Metropolitan area in 2011. A hillshaded topographic map of the City based on LiDAR data is shown in Figure 4.

2.3.2 Major Subwatersheds

The City is located at the top of four major drainage divides defined by the topography of the area. Each of the four topographic boundaries roughly coincide with the boundaries of the four Watershed Management Organizations (WMOs) that have jurisdiction in the City: Ramsey Washington Metro

Watershed District, Rice Creek Watershed District, Valley Branch Watershed District, and Vadnais Lake Area Water Management Organization. Figure 5 shows the jurisdictional boundaries of the four WMOs.

Willow Creek Subwatershed

Jurisdiction: Ramsey Washington Metro Watershed District (RWMWD)
Approximately 2,075 acres in the southern portion of the City forms the headwaters of Willow Creek. Land use within this area is predominantly residential with commercial properties located along Buerkle Road. Parks and open space include Lakewood Hills Park and Manitou Ridge Golf Course.

Surface water flows through storm sewers and wetlands on its way to Willow Creek, an intermittent stream that was previously classified as County Ditch 18. The creek continues west and exits the City before flowing under Highway 61 in Vadnais Heights. The RWMWD divided the Willow Creek subwatershed into smaller drainage areas for hydrologic modeling and management purposes. Figure 6 shows the Willow Creek drainage areas and flow patterns within the City. The 100-year flood elevations based on RWMWD modeling efforts are also included in Figure 6.

Willow Creek exits the City and continues west and south under Highway 694 where it merges with Kohlman Creek and eventually discharges to Kohlman Lake in Maplewood. Outflow from Kohlman Lake continues downstream through Gervais Lake, Keller Lake and Lake Phalen (the Phalen Chain of Lakes) to the City of St. Paul storm sewer system known as the Beltline Interceptor, where it discharges to the Mississippi River east of the St. Paul Downtown Airport (Holman Field).

Silver Lake Subwatershed

Jurisdiction: Valley Branch Watershed District (VBWD)
Approximately 235 acres in the southeast corner of the City drains south under Interstate Highway 694 to Silver Lake, located in the Cities of North St. Paul and Maplewood. Land use in this part of the City includes the west campus of Century College and East County Line Road. Single-family residential and multi-unit dwellings occupy the southwest corner of this subwatershed. Valley Branch Watershed District divided the Silver Lake subwatershed into smaller drainage areas for hydrologic modeling and management purposes. Figure 7 shows the Silver Lake drainage areas and flow patterns within the City. The 100-year flood elevations based on VBWD modeling efforts are also included in Figure 7.

Outflow from Silver Lake continues southeast through Lake Olson, Eagle Point Lake, Lake Elmo in the City of Lake Elmo, and Horseshoe Lake in West Lakeland Township, then crosses under I-694 to Lake Edith and Valley Creek before discharging to the St. Croix River in Afton.

Bald Eagle Lake Subwatershed

Jurisdiction: Rice Creek Watershed District (RCWD)
Approximately 1,134 acres in the eastern portion of the City is divided into two areas that both ultimately drain to Ramsey County Ditch 11 (RCD-11), then to Bald Eagle Lake in White Bear Township:

1) Land along Highway 61 and Highway 96 (labeled JD3BEL_007 & JD3BEL_008 in Figure 8) flows directly to RCD-11. About 1.5 miles of Hwy 61 passes north-south through these drainage areas, dividing the areas into an eastern half, which includes a large wetland and residential areas, and a western half, which is mostly residential. Land along the Highway 61 corridor is commercial and industrial. Most of this area drains to RCD-11 with a small portion draining directly to Bald Eagle Lake through various outfalls.

2) The remaining land within the Bald Eagle Lake subwatershed flows to White Bear Lake. White Bear Lake outlets at Ramsey County Beach and flows north under Highway 96 to RCD-11. Land use in this area is predominantly single family residential. Commercial areas include the downtown area businesses at 4th and Highway 61, and Boatworks Commons and Kowalski's south of downtown and east of Highway 61.

Beyond the City boundary, RCD-11 flows northwest to Bald Eagle Lake in White Bear Township. Bald Eagle Lake outlets to Clearwater Creek, then joins Rice Creek at Peltier Lake. Rice Creek continues through the Chain of Lakes in Lino Lakes and ultimately discharges to the Mississippi River at Manomin County Park in Fridley.

Vadnais Lake Subwatershed

Jurisdiction: Vadnais Lake Area Water Management Organization

Approximately 2,400 acres in the northwestern portion of the City is divided into three subwatershed drainage areas that ultimately drain to East Vadnais Lake in Vadnais Heights. East Vadnais Lake serves as the drinking water reservoir for the City of Saint Paul and neighboring communities.

1) Drainage area VL-1 in Figure 9 is the direct drainage to Birch Lake. Birch Lake outlets to the north through Rotary Park stream. The stream exits the City boundary, flows under I-35E, and continues through the North Oaks Chain of Lakes, eventually discharging to East Vadnais Lake. Land within this subwatershed is a mix of residential and commercial properties and includes portions of I-35E and Highway 96.

2) Runoff from drainage area VL-2 in Figure 9 drains south through County Ditch 13 storm sewer to Whitaker Pond in White Bear Township. Whitaker pond outflows to Sobota Slough, the first in a series of wetlands along Lambert Creek (County Ditch 14). Lambert Creek continues to flow southwest through various wetlands before discharging into East Vadnais Lake. Land use in this subwatershed includes residential neighborhoods and commercial properties on the west side of Highway 61. White Bear Lake City Hall is located within this drainage area.

3) Runoff from drainage area VL-3 in Figure 9 flows through storm sewers and wetlands to East and West Goose Lake. West Goose Lake outflows to the northwest under Hoffman Road to Sobota Slough where it merges with drainage from subwatershed VL-2 and continues to Lambert Creek. Land use within this area is predominantly residential with commercial properties along Highway 61 and Hoffman Road. The City of White Bear Lake Public Works Building and old Public Works site are located in this drainage area.

2.3.3 Drainage System

Stormwater Infrastructure

The majority of the City's stormwater conveyance system was converted to storm sewer during the time of rapid residential expansion, starting in the 1950s through the 1980s. At the time, the City's storm sewer system was designed solely to expedite the flow of runoff from upland properties into lakes and wetlands. Because this rapid expansion occurred prior to the passage of the Wetland Conservation Act of 1991, some of the smaller wetlands and lakes were partically filled or regraded as part of development and used as components of the stormwater system.

Since then, stormwater management has become more sophisticated and comprehensive in scope. Management now focuses on many other characteristics of the system, such as runoff reduction,

volume control, pollutant removal, and groundwater recharge. Starting in the mid 1990s the City of White Bear Lake began incorporating stormwater ponds, infiltration pipes, raingardens, and other stormwater treatment and volume control practices into the City's stormwater system. Generally, these practices are installed as part of the City's street reconstruction program.

Today, the City's stormwater infrastructure is almost fully constructed and includes approximately 50 miles of pipe, 2300 catch basins, 825 manholes, 160 outfalls, one storm-sewer lift station, 78 underground infiltration pipe systems, 9 raingardens, and 2 stormwater reuse systems. In addition to the City's infrastructure, 40 private curb cut raingardens were constructed as part of the City's street reconstruction program. The citywide storm sewer map (Figure 10) shows the location of storm sewer and stormwater treatment and volume control practices throughout the City. Private raingardens and other stormwater practices installed as part of WMO grant programs are not included in Figure 10.

Public Ditches

County ditches are public drainage systems established under Chapter 103E of Minnesota Statutes. There are three county ditches within the City of White Bear Lake. Most of the ditches were constructed in the late 1800's and early 1900s primarily to drain land for agricultural purposes. Today, these ditches no longer serve agricultural land and function as the outlet for stormwater runoff. Watershed Management Organizations are the drainage authorities for these public drainage systems within the City.

County Ditch 11. County Ditch 11 (RCD 11) is located in the north portion of the City of White Bear Lake in the Bald Eagle Lake subwatershed of Rice Creek Watershed District. RCD 11 starts on the south side of Highway 96 and generally flows north through a culvert under Highway 96, then northwest into Bald Eagle Lake in White Bear Township. The location of RCD 11 is shown in Figure 8.

County Ditch 13. County Ditch 13 was originally constructed by Ramsey County in 1916 as one of the tributaries to County Ditch 14 located in White Bear Township and Vadnais Heights. County Ditch 13 was buried sometime in the late 1970s or early 1980s as a 96" RCP to accommodate residential development. The pipe runs south from 5th Street in the City of White Bear Lake to Whitaker Pond on Whitaker Street in White Bear Township, at a length of just under ¾ of a mile. County Ditch 13 is part of the Lake Vadnais subwatershed of Vadnais Lake Area Water Management Organization (Figure 9).

County Ditch 18. County Ditch 18 is an intermittent stream that was renamed Willow Creek. The creek is located in the southern portion of White Bear Lake in the Willow Creek subwatershed of Ramsey Washington Metro Watershed District. The location of County Ditch 18 is shown in Figure 6.

2.3.4 Intercommunity Flows

There are five points of discharge from the City of White Bear Lake to other municipalities. Rice Creek Watershed District, Ramsey Washington Metro Watershed District, and Valley Branch Watershed District has identified existing intercommunity flow rates leaving the City of White Bear Lake. Table 2 summarizes the existing peak flow rates to neighboring communities for the 2-year, 10-year, and 100-year 24-hour storm events. The City will ensure these rates do not increase through the implementation of its policies and ordinances and reliance on Watershed District rules.

Table 2. Discharge Rates to Neighboring Communities

Subwatershed	Receiving City	Outlet	Peak Flow (cfs)		
			2-yr, 24 hr	10-yr, 24 hr	100-yr, 24 hr
Willow Creek (Figure 6)	Vadnais Heights	48" RCP	45	66	86
Silver Lake (Figure 7)	Maplewood	2, 24" RCP	30	40	56
Bald Eagle Lake (Figure 8)	White Bear Township	RCD 11 main trunk	2	13	35
Vadnais Lake (Figure 9)	White Bear Township	30" RCP (Rotary Stream)	NA	NA	27[(1)]
Vadnais Lake (Figure 9)	White Bear Township	96" RCP (Ditch 13)	NA	NA	131[(1)]
Vadnais Lake (Figure 9)	White Bear Township	Sobota Slough ditch	NA	NA	NA

[(1)] Source: 1997 City of White Bear Lake Water Management Plan

2.3.5 Floodplains

Areas of the City prone to larger regional flooding near surface water sources have been identified and mapped by the Federal Emergency Management Agency (FEMA) through the National Flood Insurance Program (NFIP). Flood Insurance Rate Maps (FIRMs) for the City of White Bear Lake were published on February 3rd, 2010 (Washington County) and June 4th, 2010 (Ramsey County). Figure 11 displays the special flood hazard areas mapped by FEMA. FIRMs are available on the FEMA Flood Map Service Center website: msc.fema.gov/portal/home.

While the 1 percent chance flood hazard areas are mapped in Figure 11, areas designated as Zone X (the remaining portions of the City) may still have potential for flooding.

Valley Branch Watershed District has evaluated flood risk and estimated 100-year water surface elevations within the Silver Lake watershed.

2.4 Soils

Surficial soils consist of unconsolidated glacial sediments deposited during the Quaternary geologic period of two glacial ice lobes: the Superior Lobe and the Grantsburg Sublobe of the Des Moines Lobe. The glacial deposits found in Ramsey County are primarily in the form of outwash, till, and stream and lake sediments ranging in thickness from 10 to 400 feet.

The City of White Bear Lake intersects three geomorphic regions formed from glacial and glacially associated processes (Patterson, 1992): the Anoka Sand Plain, the North Ramsey Mounds, and the Saint Paul Sand Flats.

The Anoka Sand Plain was formed by the development and retreat of Glacial Lake Anoka and includes primarily fine sand surficial sediments and smaller adjacent areas of lake silt and clay and recent organic deposits (Meyer and Patterson, 1999). This region includes some areas of gently undulating islands of glacial till that protrude through the sandy deposits. Most of the area to the west of White Bear Lake within the City is included in the Anoka Sand Plain.

The North Ramsey Mounds geomorphic region occurs where the Grantsburg sublobe of the Des Moines Lobe ice sheet overrode the St. Croix moraine (formed by the earlier Superior Lobe). This region includes much of the area to the north and south of White Bear Lake where surficial deposits are composed of till and complexes of stratified ice-contact sediments.

Bald Eagle Lake and White Bear Lake mark a broad northwest to southeast trending trough interpreted to reflect a tunnel valley(s) that drained the Superior Lobe and Grantsburg Sublobe (Patterson, 1992).

The Saint Paul Sand Flats marks an outwash plain formed on primarily coarse grained sediments deposited by streams that drained meltwater from the Grantsburg Sublobe (Patterson, 1992). A finger of this outwash plain cuts through the uplands to the south of White Bear Lake. The area to the east of White Bear Lake is similar in geomorphology to the sand flats where outwash of the Superior provenance overlies tunnel valley deposits and Superior Lobe till.

Surficial soils information for the City is shown in Figure 12 and can be found in the Ramsey County Soil Survey and Washington County Soil Survey prepared by the Soil Conservation Service, now called the Natural Resources Conservation Service (NRCS). The NRCS also classifies soils by the Hydrologic Soil Group (HSG) based on the soils runoff potential from precipitation. Soils are assigned to one of four groups according to the rate of water infiltration. Infiltration capacity of a soil affects the amount of runoff resulting from a rainfall. Soils with low infiltration rates result in higher runoff volumes and rates.

- Hydrologic Soil Group A – High infiltration rate (low runoff potential)
- Hydrologic Soil Group B – Moderate infiltration rate
- Hydrologic Soil Group C – Slow infiltration rate
- Hydrologic Soil Group D – Very slow infiltration rate (high runoff potential)

Dual hydrologic soil groups (e.g. A/D, B/D, and C/D) are given to soils that can be adequately drained. The first letter applies to the drained condition and the second letter applies to the undrained condition.

Figure 13 shows the soils in the City of White Bear Lake by hydrologic soil group. Much of the City falls within the Not Rated/Not Available category. This classification is typically assigned to areas where development has altered the existing soil or data was unavailable prior to development.

2.5 Groundwater

2.5.1 Geology

Groundwater is the water present beneath the earth's surface in the surficial soils and underlying bedrock formations. Surficial soils or bedrock is called an aquifer when it can yield a usable quantity of water.

The uppermost aquifers in the City are in surficial deposits. Surficial groundwater supplies are replenished by precipitation that is infiltrated into the soil. The hydrologic characteristics of the soils affect the rate, volume, and distribution of recharge depending on its hydrologic soil group (HSG) classification. Much of the recharge returns to the atmosphere from plants, discharges to surface waters, or helps to recharge deeper bedrock aquifers.

Below the unconsolidated glacial sediment are much older layers of consolidated sedimentary bedrock formed in shallow seas during the early Paleozoic era around 570 to 245 million years ago. These layers are divided into groups or formations based on similarities in age or rock type. Bedrock groupings or formations from youngest to oldest in the White Bear Lake area are Platteville formation (limestone), Glenwood Formation (shale), St. Peter Sandstone, Prairie Du Chien Group (dolostone), Jordan Sandstone, St Lawrence Formation, Tunnel City Group (formerly the Franconia Formation), Wonewoc Sandstone (formerly Ironton-Galesville Sandstones), Eau Claire Formation, and Mt. Simon Sandstone. The Plattville formation is the youngest laterally extensive bedrock unit remaining in the White Bear Lake area. Remnants of the younger overlaying Decorah shale are present in a few locations south of Interstate 694. The bedrock in the White Bear Lake area is dissected by a network of former stream valleys. These valleys are filled with glacially associated unconsolidated sediments of Pleistocene age. The physical properties of the bedrock and unconsolidated sediments form a complex architecture of variable connected aquifers.

2.5.2 Drinking Water Supply

The City of White Bear Lake obtains its entire drinking water supply from groundwater in the deep bedrock aquifers. The Public Works Department supplies potable water for 26,000 residents and businesses in White Bear Lake, Birchwood and portions of Mahtomedi and White Bear Township. The water is pumped from four supply wells: two wells drawing from the Prairie du Chien-Jordan aquifer (Well 3 & 4), one drawing from the Jordan aquifer (Well 1), and one well open from the Ironton-Galesville aquifer and the Mt. Simon-Hinckley aquifer (Well 2). Well 2 is used for peak service during high demand periods. A fifth well (Well 5) completed in the Jordan aquifer, is reserved for emergency backup.

The depth and composition of surficial soils and bedrock groups affect groundwater availability and potential for contamination. Section 4.4 of this SWMP describes issues, goals, and policies related to groundwater quantity and quality.

2.6 Climate and Precipitation

Climate and precipitation data is published by the National Weather Service (NWS). The NWS is part of the National Oceanic and Atmospheric Administration (NOAA) Branch of the U.S. Department of Commerce and is tasked with providing weather forecasts, weather warnings, and other weather related products. Weather observations are collected on a daily basis at stations throughout the United States to assist the NWS with its tasks and to build a nationwide historical climate record.

Climate data for the City of White Bear Lake is taken from the NWS station at the Minneapolis St. Paul International Airport (station 215435). Table 3 summarizes the average monthly temperature, precipitation, and snowfall for a 30-year period from 1988 through 2017. Average temperatures vary from 16.1°F in January to 74.1° in July. The average total annual precipitation is 30.5 inches and average total annual snowfall is 49.9 inches.

Table 3. Average Monthly Temperature, Precipitation, and Snowfall, 1988 – 2017 Minneapolis/St. Paul International Airport (NWS Station 215435)

Average Monthly Temperature, 1988 – 2017 (Degrees Fahrenheit)													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual Ave**
Mean	16.1	20.3	33.0	47.2	59.2	69.4	74.1	71.5	63.2	49.5	34.6	20.9	46.6
High (year)	28.6 (2006)	31.9 (1998)	48.3 (2012)	54.9 (2010)	65.4 (1988)	74.4 (1988)	80.2 (2012)	77.0 (2010)	67.9 (2015)	55.3 (2011)	46.3 (2001)	30.2 (2015)	50.78 (2012)
Low (year)	4.3 (1994)	8.6 (2014)	24.9 (2002)	41.0 (2013)	53.4 (1997)	64.5 (1993)	65.8 (1992)	65.9 (1992)	55.0 (1993)	41.8 (2002)	24.5 (1991)	7.6 (2000)	42.36 (1996)
Average Monthly Precipitation, 1988 – 2017 (Inches)													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual Total**
Mean	0.85	0.79	1.73	2.91	3.70	4.59	3.91	4.19	2.83	2.33	1.60	1.10	30.53
High (year)	1.87 (1996)	1.71 (2012)	4.56 (1998)	7.00 (2001)	9.34 (2012)	11.36 (2014)	12.60 (1997)	9.32 (2007)	6.04 (2007)	5.57 (2009)	5.29 (1991)	2.79 (2010)	40.32 (2016)
Low (year)	0.10 (1990)	0.24 (1996)	0.32 (1994)	0.76 (1996)	0.53 (2009)	0.22 (1988)	1.17 (1988)	1.12 (2003)	0.30 (2012)	0.41 (2006)	0.09 (2007, 2002)	0.22 (2002)	19.08 (1988)
Average Monthly Snowfall, 1988 – 2017 (Inches)													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual Total**
Mean	10.3	8.9	9.0	2.5	0.0	0.0	0.0	0.0	0.0	0.5	7.0	11.7	49.9
High (year)	24.3 (1994)	19.7 (2004)	22.7 (1989)	20.2 (2002)	0.5 (2013)	0.0	0.0	0.0	0.0	8.2 (1991)	46.9 (1991)	33.6 (2010)	88.7 (1991)
Low (year)	1.1 (1990)	0.3 (2017)	0.0 (2010)	0.0 (2010)	0.0	0.0	0.0	0.0	0.0	0.0	Trace (2009)	1.8 (2004)	21.0 (2017)

Source: DNR, Climate Data https://www.dnr.state.mn.us/climate/historical/acis_stn_meta.html

The depth, duration, and frequency of rainfall events are important parameters for determining runoff rates and volumes for stormwater infrastructure design and flood risk mitigation. A key document historically used for design and flood analysis was Technical Paper 40 (TP-40), originally developed by NOAA in 1961. TP-40 provided rainfall depths for storms of various durations and frequencies using historical rainfall data collected from NWS stations across the United States. In 2013, NOAA released Atlas 14, Volume 8, which serves as an update to Technical Paper 40 (TP-40). The updated Atlas 14 rainfall frequency estimates use denser climate station networks with a greater period of record, and use state-of-the-art statistical methods to estimate precipitation depth. Estimates for the precipitation depth of a 24-hour duration event for various return frequencies from Atlas 14 and the historic NWS TP-40 publication are presented in Table 4. The City's regulatory program uses Atlas 14 as the basis for project review.

Table 4. Precipitation Event Frequency in the White Bear Lake Area

Return Frequency	Percent Probability	Historic Precipitation Depth (inches)[1]	Updated Precipitation Depth (inches)[2]
1-year	100%	2.3	2.43
2-year	50%	2.8	2.79
5-year	20%	3.6	3.49
10-year	10%	4.2	4.17
25-year	4%	4.8	5.25
50-year	2%	5.3	6.20
100-year	1%	5.9	7.26

Sources:

(1) U.S. Weather Bureau's *Technical Publication No. 40* (Hershfield, 1961)

(2) NOAA Atlas 14, Volume 8 (2013)

2.7 Surface Water Resources

2.7.1 Lakes and wetlands

The City has numerous lakes and wetlands that are an integral part of the City's drainage system and provide recreational and aesthetic value to the community. Figure 14 shows the public waters within the City. Public waters are those water resources that meet the criteria for public waters set in Minnesota Statutes, Section 103G.005, subd. 15, over which the Minnesota Department of Natural Resources (DNR) has regulatory jurisdiction. The statutory definition of public waters include public waters and public waters wetlands. Public waters are identified by a number followed by a "P" and include lakes and generally deeper open water basins. Public waters wetlands are identified by a number followed by a "W" and are type 3, type 4, and type 5 wetlands as defined in the U.S. Fish and Wildlife Service Circular No. 39, 1971 edition that are 10 or more acres in size in unincorporated areas and 2.5 or more acres in size in incorporated areas (Minnesota Statutes Section 103G.005, subd. 17b, Wetland Type). This grouping of public waters and public waters wetlands are referred to as the Public Waters Inventory (PWI).

The Ordinary High Water Level (OHWL) is used to delineate the DNR regulatory boundary of a public water, and is defined by Minnesota State Statutes as "an elevation delineating the highest water level that has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial".

Figure 15 shows wetlands based on the National Wetlands Inventory (NWI) program. The program was established by the U.S. Fish and Wildlife Service for the purpose of gathering information on the distribution and types of wetlands in the U.S. to support conservation efforts. To complete the inventory, the NWI program developed the Cowardin wetland classification system (Cowardin et al. 1979). The NWI data for Minnesota was updated in 2013 through a multi-agency collaborative effort under leadership of the DNR.

The City's Shoreland Overlay District Zoning Code classifies six PWI waters as 'lakes'. Each of these lakes is described in more detail on the following pages.

White Bear Lake

WMO Jurisdiction: Rice Creek Watershed District

White Bear Lake is located on the northeastern boundary of the City and is shared by White Bear Township and the Cities of White Bear Lake, Dellwood, Mahtomedi, and Birchwood Village. The watershed to lake area ratio is very low at about 3:1. The lake is approximately 2,410 acres in size (surface area) with a watershed area of 7,744 acres. White Bear Lake is considered a deep lake, with a mean depth of 22.6 feet and maximum depth of 83 feet.

The land use within the City's jurisdiction of the lake's watershed is a mix of residential, commercial, and parks. The current outlet for White Bear Lake consists of 2-24" RCP pipes located on the north end of the lake at Ramsey County Beach. The pipes discharge to a stormwater pond adjacent to the Ramsey County beach parking lot, which flows through a drainage channel and into the RCD 11 system. The outlet elevation was lowered in 1944 from an elevation of 926.3 to an elevation of 925.4 in response to flooding concerns. In 1983 the outlet was lowered again to its current elevation of 924.5 to accommodate the new parking lot at Ramsey County Beach. Ramsey County currently maintains the outlet.

The Minnesota Department of Natural Resources established the ordinary high water level (OHWL) for White Bear Lake at 924.89' (MSL 1912 datum). There is no historic record as to when the OHWL for White Bear Lake was established.

The water level in White Bear Lake, as with other lakes, naturally fluctuates. Lake level has been tracked by the DNR since 1924. The lowest recorded lake level of 918.84 was observed on January 10, 2013, but with increasing precipitation, the lake has rebounded up to the outlet elevation of 924.5 on March 27, 2019. As of August 31, 2020, the lake level reads at 924.7.

Figure 16 is a plot of historic lake levels vs. local rainfall from 1924 through 2020. The historic outlet elevations, OHWL, and average lake elevation are included in the figure for reference. A local climatologist, Frank Watson, has been recording precipitation in the City of White Bear Lake since 2008. This local rainfall data was used in Figure 16. Rainfall data was compiled from gridded data from 1920 - 1958, and the closest station from 1958 – present.

Birch Lake

WMO Jurisdiction: Vadnais Lake Area Water Management Organization

Birch Lake is located in the northwestern part of the City. The lake is 125 acres in size (surface area), with a watershed area of 647 acres. The lake has a relatively small watershed to lake area of around 4:1. Birch Lake is a shallow lake with an average depth of 3 feet and a maximum depth of 7.4 feet. The land use within the lake's watershed is a mix of residential and commercial. A portion of Interstate 35E and Highway 96 also drain to Birch Lake. Birch Lake has excellent water quality as well as abundant aquatic vegetation and wildlife in and around the lake. The lake outlets to the north through the Rotary Park stream.

Goose Lake

WMO Jurisdiction: Vadnais Lake Area Water Management Organization

Goose Lake is located in the south central part of the City near the southwest corner of White Bear Lake. Goose Lake was originally one large basin, but the construction of Highway 61 in 1953 divided the lake into an east and west basin. The basins are connected by two culverts that run under Highway 61. East Goose Lake is 120 acres in size (surface area) with a watershed area of 578 acres. West Goose Lake is

classified as a DNR Public Waters Wetland and is 25 acres in size (surface area) with a watershed area of 239 acres. Goose Lake is a shallow lake with a maximum depth of 6 feet. The land use in the Goose Lake watershed is predominantly residential with commercial areas along Highway 61 and Hoffman Road. Goose Lake is considered the headwaters to Lambert Creek, with the outlet located in the northwest corner of West Goose. A wastewater treatment plant discharged to the lake from 1927 until it was decommissioned circa 1961.

Goose Lake, 1940 Source: MapRamsey

The 1940 aerial photo on the left shows Goose Lake prior to the rerouting of Highway 61. Hoffman Road borders the lake on the northwest and White Bear Avenue on the east. The wastewater treatment plant can be seen in the top middle of the photo. Discharge from this plant is considered a contributing factor to the poor water quality of the lake today.

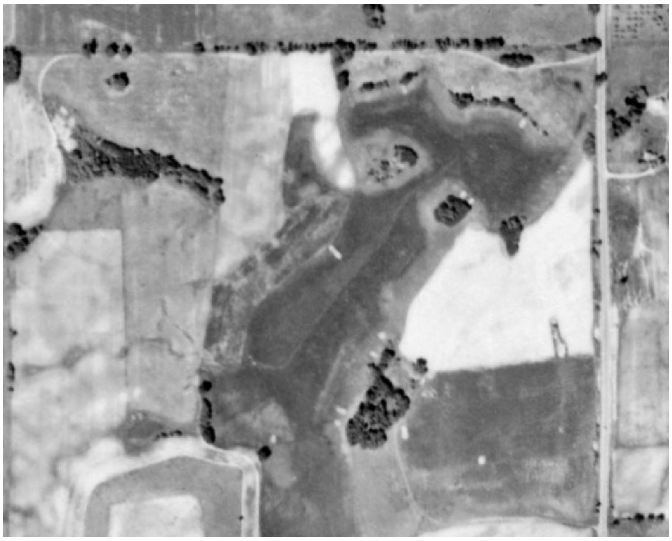
Goose Lake, 2015 Source: MapRamsey

The aerial photo on the left shows Goose Lake in 2015. By 1953, Highway 61 and residential properties on the south end of the lake were in place. Commercial and residential properties around the lake were fully built out by 1985.

Priebe Lake

WMO Jurisdiction: Rice Creek Watershed District

Priebe Lake is 5 acres in size and is located on the eastern boundary of the City at the intersection of Cedar Avenue and E County Line Road. The photo in the upper right shows Priebe Lake in 1940. Agriculture was the predominant land use surrounding the lake. By 1974, land use in the Priebe Lake watershed was converted from agriculture to primarily residential. As part of development, Priebe Lake was reshaped for use as a stormwater pond. At the time of development, Priebe Lake lacked a controlled outlet. During extended periods of heavy rain, the lake level raised significantly and caused flood damage to some of the homes adjacent to the lake. In October of 1976, the City of White Bear Lake and the Birchwood Village petitioned the Rice Creek Watershed District (RCWD) to investigate solutions. RCWD ultimately built an outlet structure in the northeast corner of the lake and outlet piping under Riviera Drive to Hall's Marsh in Birchwood Village. Halls Marsh outlets to White Bear Lake. The photo in the lower right shows Priebe Lake in 2015.



Priebe Lake, 1940 Source: MapRamsey

Priebe Lake, 2015 Source: MapRamsey

Varney Lake

WMO Jurisdiction: Ramsey Washington Metro Watershed District

Varney Lake is located in the southern portion of the City near the intersection of White Bear Avenue and Interstate 694. Varney Lake is classified by the DNR as a Public Water Wetland. Varney Lake outlets to the south and discharges into Handlos Pond. Outflow from this system makes it way south and west under White Bear Avenue to Willow Creek.

The photo at the top of the next page shows Varney Lake in 1940. Land use surrounding Varney Lake in 1940 was predominantly agriculture. Between 1953 and 1974, agricultural land was being converted to residential, with school property to the north of Varney Lake and Lakewood Hills Park to the south. In the late 1970s, Varney Lake was regraded to its current open water configuration to accommodate

outfalls from storm sewer installed in the residential areas to the north of the Lake. The photo at the bottom of this page shows Varney Lake in 2015.

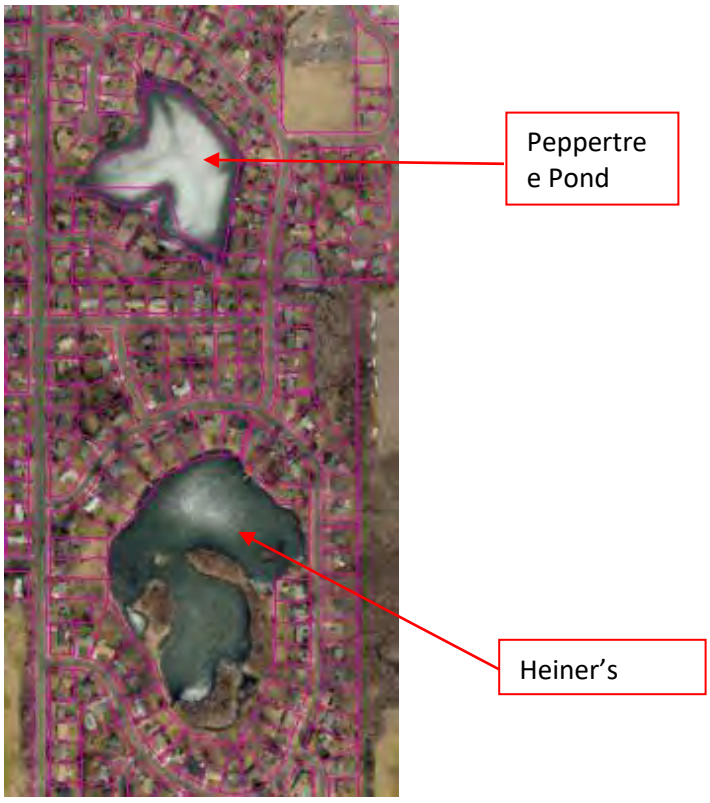
Varney Lake, 1940 Source: MapRamsey

Varney Lake, 2015 Source: MapRamsey

Heiner's Pond

Heiner's Pond is located south of County Road E and east of Bellaire Avenue in the southern portion of the City. The outlet, located on the south end of the pond, discharges into the City's storm sewer system to Varney Lake. The photo below left shows Heiner's Pond (south basin) and Peppertree Pond (north basin) in 1940. Between 1953 and 1974, agricultural land was converted to residential, and Heiner's Pond was transformed to its current open water configuration. The photo below right shows Heiner's Pond in 2015.

Heiner's Pond, 1940 MapRamsey



Heiner's Pond, 2015 MapRamsey

Data for the City's lakes is summarized in Table 5.

Table 5. Lake Data Summary

Lake Name	DNR Identification Number	Watershed Area[5] (Acres)	Surface Area (Acres)	Maximum Depth (Feet)	Ordinary High Water
White Bear	82-167 P	7744[2]	2410	83	924.89[3]
Birch	62-24 P	647[1]	125[1]	7.4[1]	920.53[3]
East Goose	62-34 P	578[1]	120[1]	6[1]	925.3[4]
West Goose	62-126 W	239[1]	25[1]		
Priebe	62-36 P	NA	5	NA	NA
Varney	62-41 W	NA	NA	NA	NA
Heiner's	62-42 P	NA	NA	NA	NA

Source: DNR LakeFinder unless otherwise noted, [1]VLAWMO, [2]RCWD

Notes: [3]MSL 1912 datum, [4]NGVD 29, [5]excludes lake surface area, NA = no data available

2.7.2 Lake Water Quality

Water quality is often directly related to the water clarity (transparency) and level of available nutrients in a water body. The Trophic State Index (TSI) is a classification system that rates a lake's overall nutrient richness. Nutrient richness ranges from clear lakes that are low in nutrients, to green lakes with very high nutrient levels. Overall TSI is rated using three individual parameters that contribute to nutrient richness: transparency, Chlorophyll –a (a pigment produced by algae), and total phosphorus. The overall TSI rating is as follows:

- TSI: <40, clear with excellent water quality (Oligotrophic)
- TSI: 40-50, moderately clear with good water quality (Mesotrophic)
- TSI: 50-70, "green" with algae blooms and fair water quality (Eutrophic)
- TSI: 70-100+, very "green" with severe algae blooms and poor water quality (Hypereutrophic)

The DNR provides the TSI for four lakes within the City of White Bear Lake. The overall TSI rating for these lakes is summarized in Table 6.

Table 6. Trophic State Index (TSI)

Lake Name	DNR Identification Number	Overall TSI
White Bear	82-167 P	45
Birch	62-24 P	49
Goose –East basin	62-34 P	75
Goose –West basin	62-126 W	
Priebe	62-36 P	78

Source: DNR LakeFinder

Section 4.2 of this SWMP identifies issues, goals, and policies related to lake water quality.

2.8 Natural Resources and Recreation

The City's lakes, wetlands, and associated upland natural areas serve as important fish and wildlife habitat and provide access to recreational opportunities.

2.8.1 Native Habitat

A public land survey was completed between 1847 and 1907 prior to opening Minnesota to land sale and to European settlement. Surveyors recorded the size and species of larger trees and the physical geology of the landscape. Although not a detailed vegetation survey, the records provide a valuable account of what Minnesota looked like at the time of European settlement. In 1930, Francis J. Marschner used the Public Land Survey to create the Map of the Original Vegetation of Minnesota, which details the different types of vegetation that existed in Minnesota before it was settled by Euro-Americans. Figure 17 shows the presettlement vegetation in the City of White Bear Lake based on the Marschner Map.

The natural communities that remain in the City today are largely located in parks and around lake and wetland edges. The City has roughly 430 acres of city-owned parks, which includes an estimated 192 acres of wetland and 238 acres of parkland.

2.8.2 Rare Plants and Animals

Some of the plant and animal species seen by early explorers no longer exist in the state, or they survive only in small, fragmented populations. In an effort to prevent further loss, the State Legislature passed Minnesota's Endangered and Threatened Species law in 1971.The law directs the DNR to identify those species that are at greatest risk of disappearing from the state. By alerting resource managers and the public to species in jeopardy, actions can be taken to help preserve the diversity of Minnesota's flora and fauna. The DNR Natural Heritage Program and Nongame Research Program maintains a statewide Natural Heritage Information System (NHIS) database of rare plant and animal species and significant natural features. Table 7 lists the plants, animals and ecosystems within the City of White Bear Lake identified as part of the NHIS.

Table 7. Rare Plants and Animals and Significant Natural Communities

Common Name	Scientific Name	State Status	Preferred Habitat
Animals			
Blanding's Turtle	Emydoidea blandingii	Threatened[1]	Wetland complexes and adjacent sandy uplands; calm, shallow waters, including wetlands associated with rivers and streams with rich aquatic vegetation.
Western Foxsnake	Pantherophis ramspotti	Watchlist	Forest edge habitats. Often found along forested edges of larger rivers.
Rusty-patched Bumble Bee	Bombus affinis	Watchlist	Grasslands with diverse plant species that flower from spring through fall. Nesting sites in underground abandoned rodent cavities or clumps of grasses above ground. Queens prefer undisturbed soil for hibernating over winter.
Species of northern caddisfly	Limnephilus secludens	Endangered[3]	Riparian stream habitat
Mussels	Lampsilis siliquoidea	Additional species of concern reported in the City with no status information available from the DNR	Lakes, rivers, streams and quiet water
	Pyganodon grandis		Large rivers
	Pyganodon lacustris		Lakes, (seldom rivers); substrates with mud bottoms
Plants			
White Wild Indigo	Baptisia lacteal var. lactea	Special concern[2]	Mesic tallgrass prairies, dry sandy prairies, savannas, and open upland woods. Can also be found in old fields, pastures, lake and river shores, and road sides
Jointed Rush	Juncus articulatus	Endangered[3]	Sandy lakeshores and around marshes or other wetlands that experience seasonal water level fluctuations (high springtime levels and lower summer levels).

Natural Communities			
Dry Sand-Gravel Prairie (Southern)	NA	Significant natural community	NA

Source: DNR Natural Heritage Information System (NHIS) database for White Bear Lake, unless noted. [a]VLAWMO

[1] Likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota.

[2] Not endangered or threatened, but is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements.

[3] Threatened with extinction throughout all or a significant portion of its range within Minnesota.

The DNR website provides a detailed description of many of these rare plant and animal species, including information on the basis for their status and conservation/management recommendations.

2.8.3 Recreation

Several parks in the City are located on or near public waters and provide a variety of water-based recreational activities. Existing public landings and trails provide the necessary infrastructure to help support these recreational activities. Figure 18 shows the parks and trails located in the City and Table 8 summarizes the water-based recreational facilities at these parks.

Table 8. Water-based Recreational Facilities

Waterbody	Public Area	Amenity						
		Boat launch	Canoe Rack / launch	Beach	Fishing Dock	Trails	Picnic Areas	Wildlife viewing
White Bear Lake	Ramsey County Beach	X		X	X	X	X	
	West Park/ Memorial Beach			X		X	X	
	Matoska Park	X	X	X	X	X	X	X
	Veteran's Memorial Park	X			X	X	X	
	Boatworks Park					X	X	
	Lion's Park		X		X	X	X	X
	Cottage Park Preserve							X
	Lakeview Park		X		X			
Birch Lake	North shoreline		X			X		X
Goose Lake-East	North shoreline					X		X
Rotary Wetland	Rotary Nature Preserve					X	X	X
Varney Lake	Varney Lake Park					X		X
Handlos Pond	Lakewood Hills Park		X		X	X	X	X
Willow Marsh	Willow Marsh Reserve					X		

Section 4.3 of this SWMP identifies issues, goals, and policies related to natural resource management and recreation.

2.9 Pollution Sources

Information on potentially contaminated sites and environmental permits and registrations throughout Minnesota is available from the MPCA's What's In My Neighborhood (WIMN) online tool, at www.pca.state.mn.us/data/whats-my-neighborhood. The WIMN map identifies pollutant sources such as suspected contaminated sites, formally contaminated sites that have been remediated, leaking storage tank sites, and Voluntary Investigation and Cleanup (VIC) sites. The WIMN map also identifies environmental permits and registrations issued by the MPCA including registered above and underground storage tanks, permitted waste water dischargers, permitted hazardous waste generators, and construction stormwater permits.

Chapter 3. Regulatory Setting

There are numerous agencies with jurisdiction in the City. A brief description of each agency and their role in surface water management is provided in this Chapter.

3.1 City of White Bear Lake

The City of White Bear Lake regulates land use and development through plans, policies and ordinances put in place by City Council. The City's Comprehensive Plan outlines the City's future land use vision and is supported by infrastructure plans that details sanitary sewer, water, and surface water systems. One of the primary means for the City to manage surface water is through this Surface Water Management Plan (SWMP) which is legally enforceable through city ordinances and standards such as regulations of the shoreland, floodplain, and wetland overlay districts in the City Zoning Code.

City staff is supported by citizens operating through commissions. Each of the commissions below consists of seven members appointed by the Mayor.

- *Planning Commission.* The Planning Commission is an advisory body of the City Council and makes recommendations to the Council in areas including, but not limited to, adoption of and amendments to the City's Comprehensive Plan, amendments to the Zoning Code, issuance of conditional use permits, and consideration of variance requests and proposed subdivisions. The Planning Commission is closely involved in the City's long-range planning, capital improvement plans, transportation plans and Strategic Plan.
- *Park Advisory Commission.* The Park Advisory Commission advises the City Council on matters relating to planning, development, design, use and maintenance of parks, open space and natural areas in the City of White Bear Lake. The Park Advisory Commission helps prepare a proposed annual budget for park development, planning, and improvements for consideration by the Council and also recommends means to enhance the use and protection of the community's parks.
- *Environmental Advisory Commission.* The Environmental Advisory Commission (EAC) advises the City Council on policies and actions related to the protection and best management of the natural environment in the City of White Bear Lake. The EAC encourages the implementation of responsible waste, water and energy management practices that are both economically and environmentally sound, and also sponsors environmental awareness events for White Bear Lake residents.

3.2 Watershed Management Organizations

In 1955, the Minnesota State Legislature established the Watershed Act. This act provided the means to create watershed districts, which are special purpose units of local government with broad authority to regulate flood control and conservation projects. In 1982, the legislature approved the Metropolitan Surface Water Management Act, which requires all metro-area local governments to address surface water management through participation in a Watershed Management Organization (WMO). A WMO can be organized as a watershed district, as a Joint Powers Agreement (JPA) among municipalities, or as a function of county government. The City of White Bear Lake is divided among the four WMO's listed below. These WMO's each have authority for review and approval of this SWMP.

3.2.1 Ramsey Washington Metro Watershed District (RWMWD)

RWMWD was formed in 1975 and covers approximately 65 square miles in eastern Ramsey County and western Washington County. The RWMWD includes all or part of 12 communities: Gem Lake, Landfall, Little Canada, Maplewood, North St. Paul, Oakdale, Roseville, St. Paul, Shoreview, Vadnais Heights, White Bear Lake, and Woodbury. RWMWD has permitting authority over projects within their watershed and is the Wetland Conservation Act (WCA) local government unit (LGU) and drainage authority for MS 103E public drainage systems. They also offer Stewardship Grants which help fund voluntary public and private improvements that benefit water quality and natural resources.

3.2.2 Rice Creek Watershed District (RCWD)

RCWD was formed in 1972 and covers approximately 186 square miles in Anoka, Hennepin, Ramsey, and Washington Counties. The RCWD boundary includes all or part of 28 Cities and Townships: Arden Hills, Birchwood Village, Blaine, Centerville, Circle Pines, Columbia Heights, Columbus, Dellwood, Falcon Heights, Forest Lake, Fridley, Grant, Hugo, Lauderdale, Lexington, Lino Lakes, Mahtomedi, May Township, Mounds View, New Brighton, Roseville, Saint Anthony, Scandia, Shoreview, Spring Lake Park, White Bear Lake, White Bear Township, and Willernie. RCWD has permitting authority over projects within their watershed and is the WCA LGU and drainage authority for MS 103E public drainage systems. They also offer cost share grants which help fund voluntary public and private improvements that benefit water quality and natural resources.

3.2.3 Valley Branch Watershed District (VBWD)

VBWD was formed in 1968 to address flooding problems. Located primarily within Washington County with a small portion in Ramsey County, VBWD includes 15 communities: Afton, Baytown Township, Grant, Lake Elmo, Lake St. Croix Beach, Mahtomedi, Maplewood, North St. Paul, Oak Park Heights, Oakdale, Pine Springs, St. Mary's Point, West Lakeland Township, White Bear Lake, and Woodbury. VBWD has review and permitting authority over projects within their watershed and is the WCA LGU . They also offer best management practices grants which help fund public and private improvements that benefit water quality and natural resources.

3.2.4 Vadnais Lake Area Water Management Organization (VLAWMO)

VLAWMO formed in 1983 through a joint power's agreement ratified by six local units of government: Gem Lake, Lino Lakes, North Oaks, Vadnais Heights, White Bear Township, and White Bear Lake. VLAWMO is the WCA LGU and drainage authority for MS 103E public drainage systems, but does not have stormwater management review and permitting authority. VLAWMO partners with its municipalities to conduct improvement projects and maintain ditches. They also offer cost share grants which help fund voluntary public and private improvements that benefit water quality and natural resources.

3.3 County, State, and Federal Agencies

There are a number of County, State, and Federal agencies that play a role in managing water resources within the City.

3.3.1 Ramsey County

Ramsey County was established in 1849, and is one of the original counties of the Minnesota Territory. Predominantly urban, Ramsey County is the second most populous county in Minnesota. Ramsey County provides a variety of programs and services, including transportation and health services. The Soil & Water Conservation Division (SWCD) conserves and enhances natural resources in Ramsey County by providing technical, financial and educational support to residents, property owners, and local, state,

and federal governmental agencies and environmental organizations. The SWCD implements Ramsey County's aquatic invasive species (AIS) prevention program by providing educational outreach, planning efforts, AIS monitoring and watercraft inspections. The SWCD is responsible for inspections of compliance with the Minnesota buffer law. The SWCD also provides free technical assistance and cost share funds for water quality and habitat restoration projects in the County, and in partnership with RCWD and RWMWD assists with the implementation of the Districts' cost share programs.

3.3.2 Washington County

Washington County was created in 1849 and is one of Minnesota's original nine counties. The County provides many services, including transportation and health services. The County Department of Public Health and Environment coordinates the County's groundwater efforts through the 2014-2024 Washington County Groundwater Plan, and operates a number of programs to support protection of groundwater. In addition to various licensing programs which aim to protect groundwater (septic systems and hazardous waste management), the department provides well water testing services, administers an abandoned well sealing program, and coordinates the Washington County Water Consortium.

The Department of Public Health and Environment convenes the Washington County Water Consortium to work on surface and groundwater issues that cross local governmental boundaries. The consortium has been active since the year 2000, and is a partnership of watersheds, communities, state and local agencies and citizens that collaborate to more efficiently work to preserve and improve the quality of the County's water resources.

3.3.3 Metropolitan Council

Established by the Minnesota Legislature in 1967, the Metropolitan Council is the regional planning organization for the Twin Cities metropolitan region. The 17 member board guides the strategic growth of the metro area. The Council manages public transit, housing programs, wastewater collection and treatment, regional parks, and regional water resources. The Metropolitan Council reviews municipal comprehensive plans, including this SWMP. The Council adopted the 2040 Water Resources Management Policy Plan in 2015, establishing local plan requirements.

3.3.4 Minnesota Board of Water and Soil Resources (BWSR)

BWSR works with local government agencies to implement Minnesota's water and soil conservation policies. BWSR is the administrative agency for soil and water conservation districts, watershed districts, watershed management organizations, and county water managers. BWSR is responsible for implementation of the Metropolitan Surface Water Management Act and the Wetland Conservation Act (WCA). BWSR adopted rules establishing the required content for local water management plans in 1992.

3.3.5 Minnesota Department of Health (MDH)

The MDH manages programs to protect public health, and is responsible for operating the state's drinking water protection program and implementing the federal Safe Drinking Water Act in Minnesota. The MDH has regulatory authority for monitoring water supply facilities such as water wells, surface water intakes, water treatment, and water distribution systems. The MDH produces source water assessments and drinking water supply management areas as well as aids in the development of local wellhead protection plans.

3.3.6 Minnesota Department of Natural Resources (DNR)

Originally created in 1931 as the Department of Conservation, the DNR has regulatory authority over natural resources in the state. DNR divisions specialize in ecology and waters, forestry, fish and wildlife, parks and trails, and land and minerals. The Ecological and Water Resources Division administers programs in lake management, shoreland management, dam safety, floodplain management, wild and scenic rivers, the Public Waters Inventory (PWI), and permitting of development activity within public waters. The DNR has jurisdiction over public waters and public waters wetlands appearing on the state's inventory of protected waters. The DNR is the primary state agency responsible for management and control of aquatic invasive plants and animals, and also regulates the appropriation of groundwater and has an extensive network of groundwater observation wells.

3.3.7 Minnesota Pollution Control Agency (MPCA)

The MPCA is the state's primary environmental protection agency. Created by the State Legislature in 1967, the MPCA is responsible for monitoring environmental quality and enforcing environmental regulations to protect land, air and water resources. The MPCA is charged with administering the federal Clean Water Act in Minnesota, which includes regulating stormwater through the National Pollutant Discharge Elimination System (NPDES) permits (MS4, Industrial, and Construction), monitoring and assessing water quality, listing impaired waters, and conducting total maximum daily load studies/reports (TMDLs).

3.3.8 United States Environmental Protection Agency (EPA)

The EPA, founded in 1970, develops and enforces the regulations that implement environmental laws enacted by Congress. Public awareness and concern for controlling water pollution led to amendments in 1972 to the Federal Water Pollution Control Act of 1948. The significant reorganization and expansion of the act became commonly known as the Clean Water Act (CWA). The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The NPDES MS4 permit program and the impaired waters program are both the result of the CWA administered by the EPA. The MPCA is responsible for implementing many of the resulting programs within Minnesota.

3.3.9 United States Army Corps of Engineers

The U.S. Army Corps of Engineers permits all work in, over, or under navigable waters of the U.S. under Section 10 of the federal Rivers and Harbors Act. Under Section 404 of the federal Clean Water Act, a Corps permit is also required for the discharge of dredged or fill material into all navigable waters of the U.S. and structures or work in navigable waters of the U.S.

3.3.10 Federal Emergency Management Agency (FEMA)

Created in 1978, FEMA is an agency of the United States Department of Homeland Security. FEMA manages federal disaster mitigation and relief programs, including the National Flood Insurance Program (NFIP). This program includes floodplain management and flood hazard mapping. To participate in the NFIP and receive federally backed flood insurance, communities must adopt and enforce floodplain management ordinances to reduce future flood damage.

3.4 Cooperative Organizations

3.4.1 Adjacent Communities

The City of White Bear Lake is bordered by Birchwood Village, Gem Lake, Mahtomedi, Maplewood, Vadnais Heights, and White Bear Township. The City will continue to collaborate with these communities on surface water management issues.

3.4.2 White Bear Lake Conservation District (WBLCD)

The State of Minnesota created the WBLCD in 1971. WBLCD regulates the types, number, and speed of boats on the lake, construction of docks/marinas/related facilities, use of mechanical and chemical means of deicing the lake, and removal of weeds/algae. The WBLCD partners with other agencies to conduct research and programs that treat and prevent pollution to the lake, with a current emphasis on the management of issues caused by invasive species.

3.4.3 Birch Lake Improvement District (BLID)

The BLID was formed by the White Bear Lake City Council in 2006. BLID is a tax district with a public board that governs lake improvement projects. BLID controls excessive aquatic plant growth, conducts winter aeration to prevent winter fish kills, and partners with VLAWMO on lake restoration projects.

3.4.4 Mahtomedi Area Green Initiative (MAGI)

MAGI is a grassroots volunteer organization made up of residents of Mahtomedi and surrounding communities concerned the environment. MAGI is working to reduce the use of nonrenewable resources, produce renewable energy and encourage and educate the community on sustainability. In 2017, coalitions were formed to create safe biking and walking paths around White Bear Lake.

3.4.5 Washington Conservation District (WCD)

In the 1930s, Soil and Water Conservation Districts were created in response to national concern over erosion and floods. These districts were organized along county boundaries for the purpose of managing and directing conservation programs and assisting landowners in conserving soil and water resources. The Washington Soil and Water Conservation District was established in 1942 through State Statute 103C. In 2002, the district changed its name to Washington Conservation District (WCD). WCD enhances, protects, and preserves the natural resources of Washington County through conservation projects, technical guidance, and educational services. WCD assists with implementation of natural resource management plans, the Wetland Conservation Act, and natural resource education. The WCD monitoring program provides lake and stream and lake water quality monitoring. The WCD formed the East Metro Water Resource Education Program (EMWREP) in 2006 as a way for partners to implement a comprehensive water education and outreach program for the east metro area. The WCD also provides technical assistance and cost share funds for projects that protect land and water in the County, and in partnership with RCWD, RWMWD, and VBWD assists with the implementation of the Districts' cost share programs.

3.4.6 Minnesota Department of Transportation (MnDOT)

The MnDOT Metro District is responsible for stormwater pollution prevention within MnDOT right-of-way which includes implementing erosion and sediment controls on construction sites, street sweeping practices, and analyzing low environmental impact de-icing measures. MnDOT also publishes standard specifications for construction related to erosion prevention and sediment control which many entities utilize. Within the City, MnDOT is responsible for three state highway systems, Interstate 35E, Highway

61, and Highway 96. MnDOT approval is required for any construction activity within the state right-of-way.

3.5 Water Governance Flowchart

A summary of water governance in Minnesota is included on the following page. The MPCA contracted with the East Metro Water Resource Education Program to create this flowchart for their MS4 toolkit.

Water Governance in Minnesota

Federal

Clean Water Act 1972
Set a goal to restore and maintain the chemical, physical and biological integrity of the nation's waters.

Safe Drinking Water Act 1974
Authorizes EPA to establish and enforce health-based standards for drinking water.

U.S. Army Corps of Engineers
Oversees flood prevention and construction activities within U.S. waters, including wetlands

Anishinaabe & Dakota Tribes
Tribes have their own natural resource management programs and strive to maintain healthy ecosystems that allow their members to practice traditional hunting, fishing, and gathering.

Environmental Protection Agency (EPA)
Oversees Clean Water Act and Drinking Water Act

U.S. Fish and Wildlife Service
Administers Endangered Species Act for freshwater and terrestrial species

Natural Resources Conservation Service (NRCS)
A division of the U.S. Department of Agriculture that provides farmers and ranchers with assistance for voluntary conservation projects

State

Minnesota Governor's Office
Oversees state agencies responsible for water management and the Environmental Quality Board

Pollution Control Agency (MPCA)
Implements Clean Water Act in MN; oversees industrial, construction, and municipal separate storm sewer system (MS4) stormwater permits; establishes water quality standards for lakes, rivers, streams & wetlands; maintains list of impaired waters.

Department of Natural Resources (DNR)
Manages public waters. Responsible for ordinary high water levels; groundwater appropriations; shoreland and floodplain management; aquatic invasive species; fisheries.

Board of Water and Soil Resources (BWSR)
Oversees soil and water conservation programs conducted by local government; MN Wetland Conservation Act; local water plans.

Department of Health
Protects drinking water quality; establishes health-based standards for groundwater contaminants; issues fish consumption advisories

Department of Agriculture
Regulates the use of pesticides and fertilizers to protect water resources

Local

Cities & Towns
Cities establish local policies, ordinances, and zoning. Towns may do planning and zoning. Many cities and towns manage stormwater through MS4 programs.

Metropolitan Council
Operates within the 7-county metropolitan area. Responsible for wastewater treatment; lake and river water quality monitoring; water supply planning; regional parks and trails; future growth planning.

Watershed Districts
Independent units of government with taxing and rule-making authority. Conduct flood prevention and water quality protection. Established by petition from citizens or local officials. 46 districts in MN. Only exist in some parts of the state.

Watershed Management Organizations
Created and funded through joint-powers agreements among cities in a watershed. Conduct flood prevention and water quality protection. Required in the 7-county metro area (if no watershed district exists).

Counties
Do local water planning outside the metro area.

Soil and Water Conservation Districts (SWCDs)
Provide support for voluntary conservation projects. Exist statewide.

Chapter 4. Issues, Goals, and Objectives

Minnesota Rule Part 8410.0160, subp. 3 requires local governments to identify and assess existing and potential water resource-related problems for those areas within the corporate limits of the local government unit, and to establish nonstructural, programmatic, and structural solutions to the identified problems. This chapter of the Surface Water Management Plan (SWMP) identifies issues (problems), and corresponding solutions in the form of policies, goals and objectives related to water resource and natural resource management in the City of White Bear Lake. The policies, goals and objectives established in this Section will guide the City's implementation programs described in Chapter 5 of this SWMP to help ensure the long-term health of the community's lakes, wetlands, groundwater, natural areas, fish, and wildlife.

Issues and goals Identification

Issues and corresponding goals and objectives were identified through a review of studies and plans prepared by the City and other agencies, the City's Stormwater Pollution Prevention Program (SWPPP), interviews with City staff and commissions, and input from the public. Starting in late 2016, staff began soliciting input from the public through open houses, an online public survey, and a community water meeting. Input was received from residents, businesses, lake associations, community organizations, and City commissions.

Open houses: To kick off the Comprehensive Plan update, the City hosted four open house events at City Hall in early 2017 to gather input from the public. Each open house focused on a specific topic. Relevant feedback regarding surface water and stormwater management was considered for this SWMP.

Online survey: City staff created a twelve question online survey to gather public input about local water resource concerns and management priorities. The online survey was advertised in the White Bear Press and posted on the City's website and Facebook page. A link to the survey was also emailed to Downtown White Bear Lake businesses, White Bear Lake Rotary and Lions Clubs, the White Bear Lake Conservation District, individual residents, the City of White Bear Lake Mayor and City Council, and the City's Environmental Advisory Commission, Park Advisory Commission, and Planning Commissions. Two hundred and fifty individuals responded to the survey over a two-month period from November 21, 2016 through January 12, 2017. Survey responses are included in Appendix B.

25x25 community water meeting: Conservation Minnesota, along with the cities of White Bear Lake and Mahtomedi, hosted a community water meeting on September 17, 2017 at White Bear Lake City Hall to provide an opportunity for area residents to engage on local water quality concerns and work together to create solutions. This meeting was inspired by Governor Dayton's town hall meetings that were conducted across the state in 2017 to gather feedback on how to achieve a statewide goal of improving water quality 25% by 2025. Thirty-nine area residents attended the meeting and shared ideas on how to improve water quality at a local level. The ideas and comments generated at the meeting were shared with Governor Dayton to contribute to the statewide initiative. Relevant feedback was also used to help identify issues and corresponding goals in this SWMP. A summary of the 25x25 community water meeting responses are included in Appendix C.

Chapter Organization

The identified issues were organized into eight major categories:

1. Stormwater Runoff Management
2. Lake, Stream, and Wetland Management
3. Natural Resources Management and Recreation
4. Groundwater Management
5. Public Education and Participation
6. Regulatory Program
7. Pollution Prevention, Operations, and Maintenance
8. Funding

The sections in this chapter correspond to each of the eight major categories. Within each category, issues are identified and described in detail. Since policies, goals, and objectives naturally follow issue identification, a table is included after the issue statements that identifies corresponding policies, goals, and objectives that relate to each issue.

4.1 Stormwater Runoff Management

4.1.1 Stormwater Runoff Management Issues

Stormwater runoff rate and volume

As rapid urbanization occurred in the City starting in the 1950s, much of the existing soil was covered with impervious surfaces or was significantly disturbed and altered. Impervious surfaces and soil compaction reduce infiltration capacity of otherwise permeable soils, resulting in significantly greater rates and volume of stormwater runoff. Managing increased runoff rates and volumes is important to reduce the risk of flooding in the downstream system and to control the potential effects of erosive flows. Since most of the City developed prior to the adoption of rate and volume control standards, redevelopment will provide opportunities to construct stormwater management practices that mitigate the effects of increased stormwater rates and volumes.

Rainwater harvesting and reuse is a practice used to manage runoff volumes and conserve groundwater. These stormwater reuse projects harvest and reuse stormwater for irrigating public parks, turf grass, and landscaping. Funding availability and an uncertain regulatory environment are hurdles for pursuing stormwater reuse projects.

Stormwater runoff quality

Stormwater runoff is a leading source of pollution in lakes, rivers, streams and wetlands. Urbanized areas are associated with land management practices and activities that contribute pollutants to stormwater runoff, such as connection of impervious surfaces to waterbodies, soil disturbance, landscaping and lawn maintenance, application of deicing compounds, vehicle fueling, spills, trash, and application of pesticides and fertilizers. Increased rates and volumes of stormwater runoff can also impact water quality due to an increase in soil erosion leading to the transport of sediment into surface waters. Proper management of stormwater runoff is important for restoring or protecting surface water quality. Most areas of the City were developed prior to adoption of the City's stormwater management standards and represent stormwater retrofit opportunities as redevelopment occurs.

Localized flooding

The City's storm sewer infrastructure and road right-of-way is effective at conveying stormwater, although localized street flooding can occur due to flat grades, lack of storm sewer infrastructure, plugged storm sewer inlets, undersized storm sewer or inlets, and street settling. Many known localized flooding issues have been addressed by infrastructure improvements over the past 20 years; however, minor street flooding still occurs in some areas.

Record snowfall in February of 2019, combined with snowmelt and rain in early March, resulted in localized street flooding in some areas. Storm sewer inlets, culverts, and street low point overland overflows were blocked with snow and ice, which caused streets to flood on Garden Lane, Gisella Avenue, and Lake Avenue South.

Climate adaptation

Changes in the characteristics of rainfall events are trending toward more intense rainfall and greater depth storms in the summer, and more snowfall and milder temperatures in the winter. Because of changing precipitation patterns, stormwater runoff rates and volumes may increase and can potentially result in localized and/or large scale flooding issues. To address these issues, the City's stormwater infrastructure should be analyzed to determine if changes to the City's stormwater infrastructure are needed to increase conveyance and storage capacity.

4.1.2 Stormwater Runoff Management Policies, Goals, and Objectives

The policies, goals, and objectives that correspond to the issues identified in subsection 4.1.1 are summarized in Table 9. The issue heading is first, followed by a related policy. The goals for that policy are identified in the first column of the table. The corresponding objectives for that goal are found in the third column. Each objective is assigned a unique number (second column) to assist with tracking the objectives in Table 24. Implementation Plan in Chapter 5.

Table 9. Stormwater Runoff Management Policies, Goals, and Objectives

Issue: Stormwater Runoff Rate and Volume		
Policy: Control the rate and volume of stormwater runoff to reduce impacts to receiving waters and to minimize flooding.		
Goal	**Objective**	
Rate Control - Ensure no net increase in runoff rate from development and redevelopment projects.	1.1	Install rate control and volume control practices in conjunction with municipal street and parking lot reconstruction projects.
	1.2	Convert alleys to pervious pavement in conjunction with municipal street reconstruction projects.
	-	Incorporate rate control practices as part of private development and redevelopment projects. *Addressed through implementation of the City's regulatory program (Subsection 4.6.2)*
Volume Control - Reduce the volume of stormwater runoff discharging to surface waters.	1.3	Expand the City owned stormwater reuse system at Lakewood Hills Park to irrigate soccer field turf.
	1.4	Promote Watershed Management Organization raingarden cost share programs to residents as part of

		the City's street reconstruction program. Provide a curb cut at no cost to residents.
	1.5	Participate in a future State Water Reuse Clean Water Fund expanded workgroup to stay informed on any proposed stormwater reuse regulation.
	-	Incorporate volume control practices as part of private development and redevelopment projects. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2).*
	-	Consider adopting stormwater reuse standards for development and redevelopment projects. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2).*
Issue: Stormwater Runoff Quality		
Policy: Reduce pollutants that discharge to surface waters from the City's storm sewer system.		
Goal	**Objective**	
Water Quality Control– Protect surface water quality by reducing total suspended solids, phosphorus, trash, and other pollutants in stormwater.	1.6	Identify existing erosion issues, prioritize, and implement corrective actions.
	1.7	Retrofit outfall manhole structures to White Bear Lake along Lake Avenue, and Gisella to capture trash and other floatables.
	1.8	Install water quality practices to treat runoff from City-owned parking lots at Matoska Park
	1.9	Retrofit volume control/water quality treatment practices on other City properties if feasible (1299 Birch Lake Blvd and others)
	-	Incorporate temporary and permanent erosion and sediment control practices as part of public and private development and redevelopment projects. *Addressed through implementation of the City's regulatory program (Subsection 4.6.2).*
	-	Incorporate stormwater quality treatment practices as part of private development and redevelopment projects. *Addressed through implementation of the City's regulatory program (Subsection 4.6.2).*
	-	Require a stormwater operations and maintenance agreement for private post construction stormwater management practices. *Addressed through implementation of the City's regulatory program (Subsection 4.6.2).*
	-	Maintain City owned buildings, parks, and streets to minimize pollutants entering the City's Stormwater System. *Addressed through implementation of the City's operations and maintenance program (Subsection 4.7.2).*

	-	Maintain City owned stormwater management practices. *Addressed through implementation of the City's operations and maintenance program (Subsection 4.7.2).*
Issue: Localized Flooding		
Policy: Minimize localized flooding		
Goal	**Objective**	
Localized Flooding – Identify localized flooding areas and implement solutions.	1.10	Address existing localized street flooding issues identified by staff and the public through the City's planned street reconstruction projects. Areas identified include an alley between Cook and Stewart and 6th and 7th Streets and Old White Bear Avenue at South Shore Boulevard.
	1.11	Develop a GIS database of snowmelt flood prone areas and document the location of all low point overland emergency overflows. This map will assist public works in locating high priority areas for snow removal.
	1.12	Install a controlled outlet for the City owned infiltration basin on Gisella Boulevard.
Issue: Climate Adaptation		
Policy: Recognize and understand the implications of a changing climate and use adaptive management when appropriate.		
Goal	**Objective**	
Future Flooding Risk - Identify and decrease the risk of future flooding risk that may result from changing precipitation patterns.	1.13	Work with Watershed Management Organizations to identify and evaluate potential future flooding risk.
	1.14	Assess the need to create a City-wide stormwater model. The model would be used to evaluate the City's stormwater infrastructure to determine capacity and the level of future flooding risk.
	-	Monitor changes in design guidance and review City design standards related to ponding and overflow areas. *Addressed through implementation of the City's regulatory program (Subsection 4.6.2).*

Section 5.2.1 of this SWMP describes implementation activities and programs related to stormwater runoff management.

4.1.3 Stormwater Runoff Management Past Projects

Banning Avenue Storm Sewer Improvements (project 95-03)

Receiving Water: White Bear Lake

Periodic street flooding has occurred at the intersection of 4th Street and Banning Avenue in Downtown White Bear Lake since the 1930s. The intersection would flood during intense, short duration storm events due to storm sewer capacity issues in the existing 24-inch pipe under Banning Avenue. In 1996, the Banning Avenue storm sewer improvement project was constructed to provide flood protection for businesses near the intersection. The project installed a 36-inch pipe under Banning Avenue, parallel to the existing 24-inch pipe, to provide additional capacity. In addition, a 36-inch perforated pipe was installed under City Parking Lot No. 1, between 4th Street and 3rd Street, for additional detention.

Washington Avenue, from 3rd Street to 4th Street, also experienced occasional flooding due to intense storm events.

An existing storm sewer under Washington Avenue that conveys runoff north to the T.H 61 storm sewer was undersized for the drainage area. As part of the Banning Avenue storm sewer improvements, a second storm sewer pipe was constructed to convey the additional drainage east down 3rd Street to the Banning Avenue storm sewer.

4th Street looking south down Washington Avenue, April 24, 1994

Banning Avenue looking west down 4th Street - April 24, 1994

Priebe Lake Outlet Project

In the spring of 1965, snowmelt caused Priebe Lake to rise to the point of flooding several homes adjacent to the lake. Since that time, extreme water level fluctuations were controlled by pumping overland to a small pond located to the west of Priebe Lake. However, overland pumping with portable pumps was not a satisfactory method of reducing flood damage. In October of 1976, the City of White Bear Lake and Birchwood Village petitioned Rice Creek Watershed District (RCWD) to investigate solutions. RCWD ultimately built an outlet structure in the northeast corner of the lake, outlet piping under Riviera Drive to Hall's Marsh in Birchwood Village, and an outlet structure from Hall's Marsh to White Bear Lake. The project was funded through special assessment to all properties that benefitted from the project over a period of approximately 20 years. Ramsey County loaned the funds to the RCWD up front and the County was paid back over that same time period. RCWD owns and maintains the Hall's Marsh outlet to White Bear Lake; however, records are unclear as to the ownership and maintenance obligations of the Priebe Lake outlet structure. With the outlet structure now in need of repair, the City and RCWD recently began discussions to define ownership and maintenance responsibilities.

Whitaker Pond Improvement Project

Receiving Water: Lambert Creek

Whitaker Pond was originally constructed in 1997 as part of the Ramsey County Highway 96 reconstruction project to treat stormwater runoff from approximately 11 acres of Highway 96 right-of-way. Whitaker Pond also receives stormwater from residential and commercial areas within the City of White Bear Lake and White Bear Township. In 2009, the Whitaker Pond Improvement Project was constructed as a joint effort between the City, Ramsey County, VLAWMO, and White Bear Township to restore the function of the pond. The project included removal of sediment, repair of the outlet berm and weir structure, excavation of an upstream forebay, construction of a maintenance access road, and enhancement of the outlet weir with an iron enhanced sand filter to remove dissolved phosphorus. The partners entered into an operations and maintenance agreement, which is found in Appendix D.

Public Works Building Green Roof (project 09-09)

Receiving Water: Goose Lake

The City's Public Works building is located along Highway 61 on Hoffman Road. The building was constructed in 2010 to the equivalent of a LEED silver rating. One of the many "green" components of the facility is the green roof, which received funding through a VLAMWO grant and a Capital Improvement Project (CIP) grant. The 850 square foot green roof was constructed using a modular tray system and planted with a drought-tolerant blend of Sedum, Allium, Rudbeckia, and Aster. The green roof accomplishes volume control and water quality goals. The rainfall that falls on a green roof is stored in the green roof media and is lost to evapotranspiration minimizing the amount of surface runoff from that section of the roof.

Lions Park Pervious Parking Lot (project 08-14)
Receiving Water: White Bear Lake
The Lions Park pervious parking lot was constructed as part of the 2008 Lake Avenue South reconstruction project. The 4,700 square foot porous asphalt parking lot provides filtration and storage in the aggregate base to accomplish volume control and water quality goals for the protection of White Bear Lake. A large raingarden to the south of the parking lot was also constructed as part of this project. Through its regulatory program, the Rice Creek Watershed District approved a water quality treatment volume of 5,130 cubic feet that the City can use as credit for a future project.

Lakewood Hills stormwater reuse system (project 09-12)
Receiving Water: Willow Creek
The Lakewood Hills stormwater reuse system was installed to meet RWMWD volume reduction and nutrient removal requirements for the City's 2008 street reconstruction project. The system retains stormwater in Handlos Pond behind two control structures that allow the level of Handlos Pond to rise an additional 6 inches above the normal water elevation of 930.1 before overflowing through the existing outlets. This additional retained water is pumped out of Handlos Pond and applied to four softball fields, one soccer field, and a picnic/general use area in Lakewood Hills Park through the existing irrigation system. Pumping is suspended when the level of Handlos Pond drops to 6 inches below the normal water elevation.

Boatworks Commons stormwater reuse system (private project, ties into City Project 12-12)
Receiving Water: White Bear Lake
The Boatworks Commons stormwater reuse system collects rainwater from the roof and sidewalks of the Boatworks Commons apartment and stores it in an underground storage tank under the courtyard on the east side of the building. Stormwater from the storage tank is used to irrigate the courtyard lawn. An underground infiltration system was installed to meet RCWD volume control rewuirements that collects runoff from the roof of the building. The underground system overflows to WBL. Additional storm water treatment is accomplished with a raingarden constructed under the bike trail.

2009 and 2012 Raingarden Projects (projects 09-01 & 12-01)
Receiving Waters: Goose Lake, White Bear Lake, Willow Creek
Thirty residential curb-cut raingardens were installed as part of the City's 2009 and 2012 street rehabilitation program. The raingardens provide additional volume control and water quality treatment beyond permitted requirements. The project was partially funded through cost share grants from Ramsey Washington Metro Watershed District, Rice Creek Watershed District, and Vadnais Lake Area Water Management Organization. This project won a Ramsey-Washington Metro Watershed District Landscape Ecology Award Program (LEAP) award in 2016.

2018 and 2019 Raingardens (projects 18-01 & 19-01)
Receiving Waters: Bald Eagle Lake and White Bear Lake
The City partnered with Rice Creek Watershed District, Ramsey County Soil and Water Conservation Division, and local residents to install a total of ten residential curb-cut raingardens as part of the 2018 and 2019 street reconstruction program. The City provided the curb cut, Ramsey County Soil and Water Conservation Division prepared the raingarden designs, and Rice Creek Watershed District funded the design and a portion of each raingarden. Residents were responsible for the remaining costs, and are committed to the ongoing maintenance of the raingardens for the length of the maintenance contract with RCWD.

4.2 Lake, Stream, and Wetland Management

4.2.1 Lake, Stream, and Wetland Management Issues

Impaired Waters

Section 303(d) of the federal Clean Water Act (CWA) requires states to designate beneficial uses for waters and to develop water quality standards to protect these uses. A waterbody is considered impaired if it fails to meet one or more water quality standards. The Minnesota Pollution Control Agency (MPCA) administers the requirements of the CWA and maintains a list of impaired waters that do not meet water quality standards. The list of impaired waters, also called the 303(d) list, is updated every two years.

Each impaired waterbody requires an assessment to determine the sources of the impairment. This process is known as a total maximum daily load (TMDL) analysis. A TMDL establishes the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards for that pollutant. Through the TMDL process, a waste load allocation (WLA) is developed that assigns allowable pollutant loadings from each contributor.

The City discharges to nine lakes, three creeks, and two rivers that are on the MPCA's 2020 impaired waters 303(d) list. Table 10 summarizes these impaired waters for which TMDL studies are required or have been completed. Unless noted otherwise in Table 10, the location of the impaired waters is shown in Figure 19. Waste load allocations that are assigned to the City of White Bear Lake in the approved TMDLs listed in Table 10 are summarized in Tables 11-14.

East Goose Lake

Source: VLAWMO

Table 10. Impaired Waters Summary

WMO	Name of Waterbody[2]	Year Listed as Impaired	Affected Designated Use	Pollutant or Stressor	Approved TMDL
VLAWMO	Goose Lake (East & West)	2010	Aquatic Recreation	Nutrients/Eutrophication	2014
	Wilkinson Lake[3]	2010	Aquatic Recreation	Nutrients/Eutrophication	2014
	Gem Lake[4, 11]	2010	Aquatic Recreation	Nutrients/Eutrophication	2014
	Lambert Creek	2008	Aquatic Recreation	Pathogens (E. coli)	2014
RCWD	Priebe Lake	2014	Aquatic Recreation	Nutrients/Eutrophication	Target Start Date – 2024
	White Bear Lake	1998	Aquatic Consumption	Mercury in Fish Tissue[1]	2007
	Bald Eagle Lake	2002	Aquatic Recreation	Nutrients/Eutrophication	2012
		1998	Aquatic Consumption	Mercury in Fish Tissue[1]	2008
	Peltier Lake[5]	2002	Aquatic Recreation	Nutrients/Eutrophication	2013
	South Long Lake[6]	2014	Aquatic Consumption	Chloride	2016
	Clearwater Creek[7]	2006	Aquatic Life	Benthic Macroinvertebrate Bioassessments	Target Start Date 2024
		2002	Aquatic Life	Fish Bioassessments	
		2020	Aquatic Life	Dissolved Oxygen	
	Rice Creek[8]	2014	Aquatic Recreation	Pathogens (E. coli)	2014, revised 2019
RWMWD	Kohlman Lake	2002	Aquatic Recreation	Nutrients/Eutrophication	2010
		2014	Aquatic Consumption	Chloride	2016
VBWD	Lake St. Croix[9]	2008	Aquatic Recreation	Nutrients/Eutrophication	2012, revised 2019
All	Mississippi River[10]	2014	Aquatic Life	Total Suspended Solids	2016

[1]Mercury in Minnesota fish comes almost entirely from atmospheric deposition, with approximately 90% originating outside of Minnesota (MPCA 2004). Because the main source of mercury comes from outside the state and the atmospheric deposition of mercury is relatively uniform across the state, the MPCA developed a statewide TMDL, approved by the EPA in 2008, to address this issue.

[2]Locations are shown in Figure 19, unless noted: [3]City of North Oaks. [4]City of Gem Lake. [5]City of Lino Lakes. [6]City of New Brighton. [7]Bald Eagle Lake to Peltier Lake. [8]Long Lake to Locke Lake. [9]Lower St. Croix River in Washington County. [10]Mississippi River-St Croix River to Chippewa River (WI).

[11]Delisted in 2018.

Table 11. Nutrient Waste Load Allocations

Waterbody	Annual TP Load			WLA Type
	WLA (lbs)	Load Reduction (lbs)	% Reduction	
East Goose Lake	64.7	111.9	63%	Individual
West Goose Lake	7.3	45.4	86%	Individual
Wilkinson Lake	35.1	109.8	76%	Individual
Gem Lake[1]	8.9	2.8	24%	Individual
Bald Eagle Lake	719	439	38%	Categorical
Peltier Lake[2]	583	951.2	62%	Categorical
Kohlman Lake[2]	129	42	25%	Individual
Lake St. Croix[3]	14,316	7,516	34%	Categorical

[1]Delisted in 2018.

[2]Waste load allocations based on growing season duration

Table 12. Bacteria Waste Load Allocations

	Flow Condition	Daily Bacteria Load (billions of org)			WLA Type
		WLA	Load Reduction	% Reduction	
Lambert Creek	Very High	3.74	5.92	61%	Individual
	High	1.16	1.37	54%	
	Mid	0.55	0.33	37%	
	Low	0.19	0.24	56%	
	Very Low	0.00	0.00	0%	
Rice Creek	Very High	396	0.00	0%	Categorical
	High	96.8	4.88	4.8%	
	Mid	23.6	18.5	44%	
	Low	4.93	Insufficient data	Insufficient data	
	Very Low	1.75	Insufficient data	Insufficient data	

Table 13. Chloride Waste Load Allocations

Waterbody	Annual Chloride Load			WLA Type
	WLA (lbs)	Load Reduction (lbs)	% Reduction	
South Long Lake	21,534,261	NA	NA	Categorical
Kohlman Lake	3,106733	NA	NA	Categorical

Table 14. Total Suspended Solids Waste Load Allocations

Waterbody	Annual TSS Load			WLA Type
	WLA (lbs/acre)	Load Reduction (lbs)	% Reduction	
Mississippi River	154	0	0%	Categorical

High Quality Lakes

Preventing pollutants from entering a waterbody is less expensive than restoring a waterbody once it is polluted. Birch Lake and White Bear Lake have a low Trophic State Index (TSI), indicating overall good water quality. Efforts should be made to protect Birch Lake and White Bear Lake from impacts that could decrease water quality, habitat, and recreational enjoyment of the lakes.

White Bear Lake at Vets Park

Wetlands

Wetlands are an integral part of the City's stormwater system and serve important functions such as floodwater storage, nutrient and sediment capture, and habitat. Many of the City's wetlands have been negatively affected by urbanization. As land use changed from agriculture to primarily residential, some wetlands were filled or regraded for use as stormwater ponds. Changes in runoff quantity due to an increase in impervious surfaces result in larger volumes of runoff to wetlands. In addition, urban runoff often has a high nutrient and sediment load resulting in a decrease in the quality of water reaching the wetland. Stormwater pollutants and greater frequency and duration of inundation can negatively affect native wetland plant communities. Changes to wetland plant communities often result in a less valuable ecosystem in terms of diversity, wildlife habitat, and aesthetic qualities. Invasive species have also established in many of the City's wetlands, further decreasing species diversity.

4.2.2 Lake, Stream, and Wetland Management Policies, Goals, and Objectives

The policies, goals, and objectives that correspond to the issues identified in subsection 4.2.1 are summarized in Table 15. The issue heading is first, followed by a related policy. The goals for that policy are identified in the first column of the table. The corresponding objectives for that goal are found in the third column. Each objective is assigned a unique number (second column) to assist with tracking the objectives in Table 24 Implementation Plan in Chapter 5.

Table 15. Lake, Stream, and Wetland Management Policies, Goals, and Objectives

Issue: Impaired Waters		
Policy: Collaborate with water management organizations and adjacent communities to meet waste load allocations assigned to the City of White Bear Lake.		
Goal	**Objective**	
<u>Goose Lake</u> - Meet the total nutrient WLA assigned to the City of 64.7 lbs/yr for East Goose and 7.3 lbs/yr for West Goose.	2.1	East Goose Lake Adaptive Lake Management planning and public engagement
	2.2	East Goose Lake adaptive lake management program and project implementation.
	2.3	Stormwater treatment opportunities as part of the Bruce Vento trail project.
	-	Collaborate with VLAWMO and Ramsey County on Goose Lake shoreline projects. *Refer lake and wetland buffer objectives in Table 15. Natural Resources Management and Recreation.*
	-	Consider additional street sweeping in the Goose Lake subwatershed. *Refer to street sweeping objectives in Table 19: Pollution Prevention, Operations and Maintenance.*
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and as part of the City's street reconstruction projects, Table 9, objective 1.3 and 1.8.*
	-	Inspect and maintain existing stormwater treatment practices A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*
<u>Wilkinson Lake</u> - Meet the total nutrient WLA assigned to the City of 35.1 lbs/yr for Wilkinson Lake, located in the City of North Oaks.	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2)* and as part of the City's street reconstruction projects*, Table 9, objective 1.3 and 1.8.*

	-	Inspect and maintain existing stormwater treatment practices A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*
Priebe Lake & Clearwater Creek- Cooperate with lead agency to develop a future TMDL study.	2.4	Participate in the TMDL process with the lead agency.
Bald Eagle Lake - Partner with RCWD, Counties, and adjacent communities to achieve a categorical nutrient WLA of 719 lbs/yr to Bald Eagle Lake, located in White Bear Township.	2.5	Assist RCWD in working with the White Bear Lake Area School District #624 and owners/managers of commercial properties along Hwy 61 that were identified as potential stormwater retrofit locations in the South Bald Eagle Lake Subwatershed: Urban Retrofit Analysis.
	-	Consider additional street sweeping in the Bald Eagle Lake subwatershed. *Refer to street sweeping goals and objectives in Table 6.7 Pollution Prevention, Operations and Maintenance.*
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and as part of the City's street reconstruction projects, Table 9, objective 1.3 and 1.8.*
	-	Inspect and maintain existing stormwater treatment practices A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*
Peltier Lake - Partner with RCWD, counties, and adjacent communities to achieve a categorical nutrient WLA of 583 lbs/yr of phosphorus to Peltier Lake, located in the City of Lino Lakes.	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and as part of the City's street reconstruction projects, Table 9, objective 1.3 and 1.8.*
	-	Inspect and maintain existing stormwater treatment practices. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*

Kohlman Lake - Meet the total phosphorus WLA assigned to the City of 129 lbs/yr for Kohlman Lake, located in the City of Maplewood.	2.6	Collaborate with RWMWD to evaluate opportunities for stormwater treatment practices to treat runoff from commercial properties on Buerkle Road.
	2.7	Collaborate with RWMWD to evaluate opportunities for stormwater treatment practices at Lakewood Hills Park.
	-	Consider additional street sweeping in the Kohlman Lake subwatershed. *Refer to street sweeping program objectives in Table 21 Pollution Prevention, Operations and Maintenance.*
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and as part of the City's street reconstruction projects, Table 9, objectives 1.2, 1.3 and 1.8.*
	-	Inspect and maintain existing stormwater treatment practices. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*
Lake St. Croix - Partner with watershed districts, Counties, and communities to achieve a categorical nutrient WLA of 14,316 lbs/yr to Lake St. Croix on the lower St. Croix River in Washington County.	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and as part of the City's street reconstruction projects, Table 9, objective 1.3 and 1.8.*
	-	Inspect and maintain existing stormwater treatment practices. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*
Lambert Creek - Meet the bacterial WLA assigned to the City for Lambert Creek.	2.8	Support VLAWMO projects along Lambert Creek.
	2.9	Partner with VLAWMO to investigate the feasibility of retrofitting the Whitaker Park wetland stormwater treatment facility.
	2.10	As per MS4 General Permit requirements, create and maintain: 1) a written or mapped inventory of potential areas and sources of bacteria, and 2) a written plan to prioritize reduction activities.

Rice Creek - Collaborate with RCWD to help meet the bacteria waste load allocation assigned to the segment of Rice Creek between Long Lake and Locke Lake in New Brighton and Fridley.	2.11	Continue to provide dog waste bags in public areas on White Bear Lake to encourage owners to properly dispose of pet waste. Locations include the dog beach at 7th and Lake, intersection of Clark and Lake, and other locations along the Sather Trail.
	2.12	As per MS4 General Permit requirements, create and maintain: 1) a written or mapped inventory of potential areas and sources of bacteria, and 2) a written plan to prioritize reduction activities.
South Long Lake - Partner with MPCA, RCWD, Counties, and adjacent communities to achieve a categorical chloride WLA of 21,534,261 lbs/yr to South Long Lake, located in New Brighton.	-	As per MS4 General Permit requirements, refine winter salt application procedures to minimize salt use without negatively impacting safety. *Addressed through implementation of the City's Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*
Kohlman Lake- Partner with MPCA, RWMWD, Counties, and adjacent communities to achieve a categorical chloride WLA of 3,106,733 lbs/yr to Kohlman Lake, located in Maplewood.	-	As per MS4 General Permit requirements, refine winter salt application procedures to minimize salt use without negatively impacting safety. *Addressed through implementation of the City's Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*
Mississippi River- Work with partners to achieve a categorical TSS WLA of 154 lb/acre to the Mississippi River.	-	Educate the public on specific actions individuals can take to reduce TSS such as turf management, private parking lot maintenance, reducing turf areas and planting native plants, and participating in the adopt-a-drain program. *Addressed through implementation of the City's Public Education and Participation program (Subsection 4.5.2)*
	-	Continue to sweep all streets at least twice per year. *Addressed through implementation of the City's Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and as part of the City's street reconstruction projects, Table 9, objective 1.3 and 1.8.*
	-	Inspect and maintain existing storm sewer system. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*

Tracking - Track the progress of WLA goals.	2.13	Track load reductions of BMPs constructed within watersheds of impaired waters as a condition of the MS4 NPDES permit and TMDLs. Collaborate with WMO's to evaluate loadings annually.
Issue: High Quality Lakes		
Policy: Protect high quality lakes.		
Goal	**Objective**	
White Bear Lake - Collaborate with Rice Creek Watershed District, White Bear Lake Conservation District, Downtown businesses, and adjacent communities to protect the water quality of White Bear Lake.	2.14	Additional stormwater treatment as part of the City owned parking lots 1, 2, and 4 reconstruction projects in the downtown area.
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and as part of the City's street reconstruction projects, Table 9, objectives 1.3, 1.6, 1.7 and 1.8.*
	-	Inspect and maintain existing stormwater treatment practices A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*
Birch Lake - Partner with Vadnais Lake Area Water Management Organization, Ramsey County, and the Birch Lake Improvement District (BLID) to protect the water quality of Birch Lake.	2.15	Birch Lake subwatershed retrofit projects
	-	Consider additional street sweeping in the Birch Lake subwatershed. *Refer to street sweeping objectives in Table 19 Pollution Prevention, Operations and Maintenance.*
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and as part of the City's street reconstruction projects, Table 9, objective 1.3 and 1.8.*
	-	Inspect and maintain existing stormwater treatment practices. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*
Issue: Wetlands		
Policy: Protect high quality wetlands and restore degraded wetlands within the City.		
Goal	**Objective**	

Wetland Functions and Values - Enhance the functions and values of wetlands within the City.	2.16	Create a wetland restoration and management plan.
	2.17	Collaborate with VLAWMO on a wetland restoration project at 4th and Otter.
	2.18	Explore opportunities with RCWD to enhance the Long Avenue wetland (located to the north of the Center for the Arts) and provide access via a trail/boardwalk.
	2.19	Explore opportunities to enhance Willow Marsh (public wetland 62-131W) and provide access via a trail/boardwalk.
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2).*
	-	Inspect and maintain existing stormwater treatment practices. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).*
	-	Increase the quality of wetland buffers and control invasive species. *Refer to lake and wetland buffer objectives and invasive species management objectives in Table 15 Natural Resources and Recreation.*
	-	Remove accumulated sediment in wetlands at storm sewer outfalls. *Refer to City-owned stormwater facilities objectives in Table 21 Pollution Prevention, Operations and Maintenance.*

Section 5.2.2 of this SWMP describes implementation activities and programs related to lake, stream, and wetland management.

4.2.3 Lake, Stream, and Wetland Management Past Projects

4th and Otter Sand Iron Filter

Receiving Water: Birch Lake

Stormwater grab sampling conducted by VLAWMO in 2008 indicated that high levels of phosphorus were entering Birch Lake from the wetland located in the northeast corner of 4th Street & Otter Lake Road. A portion of the County road and a 30-inch City storm sewer outfall that drains approximately 50 acres of residential area contributes stormwater to the wetland. VLAWMO completed a feasibility study in 2017 that identified iron enhanced sand as a feasible and cost-effective method to reduce the amount of phosphorus from stormwater runoff at this location. In 2017, VLAWMO was awarded a BWSR Clean Water Grant to construct a sand iron filter downstream of the City outfall. Construction of the iron and filter was completed in 2020. The City, VLAWMO, Ramsey County, and the Birch Lake Improvement District entered into an Operations & Maintenance Agreement for the IESF and associated native plantings, which is included in Appendix D.

In 2019, the City acquired an adjacent wooded property through tax forfeit to provide an access to the new iron sand filter. That same year VLAWMO was awarded a Minnesota Department of Natural Resources Conservation Partners Legacy Grant to purchase a native woodland seed mix for the newly acquired property. VLAWMO and volunteers seeded the site and removed buckthorn on the property in late fall of 2019. The City is partnering on the woodland restoration and will provide staff time to help establish the understory plants and remove invasive plants as needed.

Iron Sand Filter at City outfall, looking east towards 4th Street *Source: VLAWMO*

East and West Goose Lake Feasibility Study

Goose Lake is on the impaired waters list, and does not currently meet the State shallow lake water quality standard for phosphorus. A unique combination of factors is thought to contribute to the phosphorus load including stormwater runoff, a large rough fish population, and in-lake loading from historical discharge of treated wastewater. VLAWMO completed a TMDL study in 2013 that quantified the phosphorus load reductions needed to meet State water quality standards. The study identified a phosphorus reduction of 91% for East Goose Lake (corresponds to 88% from internal loading, 11% from watershed loading) and 70% for West Goose Lake (corresponds to 82% internal loading or from East Goose, 15% watershed loading). The East and West Goose Lake Feasibility Study completed in 2018 updated lake and watershed modeling and summarized potential improvement options.


Source: VLAWMO

As of the date of this SWMP, VLAWMO and the City are collaborating on an East Goose Lake Adaptive Management (ALM) program, using results from the feasibility study and public engagement to guide future program development. Starting in late 2020, the partners will begin a public engagement process as a first step in developing the ALM program.

To conduct lake monitoring and other partnership-based water quality management activities on East Goose Lake, VLAWMO constructed a limited access boat launch on City right-of-way at Highland Avenue in 2020. The memorandum of agreement for the boat launch is included in Appendix D.

4.3 Natural Resources Management and Recreation

4.3.1 Natural Resources Management and Recreation Issues

Native Habitat

In 1930, Francis J. Marschner created the Map of the Original Vegetation of Minnesota, which details the different types of vegetation that existed in Minnesota before it was settled by Euro-Americans. Today, nearly all of the natural vegetation communities in Minnesota have disappeared or have been substantially altered. In the City of White Bear Lake, the remaining natural communities exist only as small remnants in parks, and around wetlands and lakeshores.

Preserving and restoring native aquatic and upland habitat is recognized by local watershed management organizations as an important component for improving watershed health while also providing valuable fish and wildlife habitat. Some of these remaining natural areas support unique or rare plant and animal species that should be protected and enhanced. Table 7 in Chapter 2 lists rare plants, animals, and significant natural communities in White Bear Lake. Preserving and restoring riparian vegetation is of particular importance to the City. Healthy native riparian vegetation acts as a 'buffer' between upland areas and water and is critical to stabilizing shorelines and protecting water quality and aquatic life. An effective tool for shoreline restoration is through ordinance. The City adopted shoreland and wetland ordinances. These ordinances were updated ten years ago and should be reviewed and revised as necessary to ensure adequate protection of lake, stream, and wetland buffers.

Invasive species

An invasive species is a plant or animal that is not native to a specific location and that has a tendency to spread to a degree to cause damage to the environment, human economy, or human health. Aquatic and terrestrial invasive species continue to spread throughout the region and are a leading threat to the ecological integrity of the City's remaining natural resources. Invasive species cause harm by outcompeting native species, thereby destroying habitat and food sources for native insects, birds, and other wildlife.

Table 16 summarizes common aquatic invasive plants and animals found in the City that grow in water or near shorelines. Terrestrial invasive species are discussed in more detail in the City's Comprehensive Plan, with the exception of Giant Knotweed and Purple Loosestrife which are included in this SWMP due to their preferred habitat along shorelines and wetlands.

Table 16. Common Invasive Species Identified in the City of White Bear Lake

Species	Classification	Preferred Habitat	Location
Eurasian Watermilfoil *(Myriophyllum spicatum)*	Aquatic plant	In-lake	Birch Lake; White Bear Lake
Curly-Leaf Pondweed *(Potamogeton crispus)*	Aquatic plant	In-lake	Goose Lake
European Common Reed (*phragmites australis)*	Aquatic plant	Shorelines	White Bear Lake, south shore
Purple Loosestrife *Lythrum salicaria*	Aquatic plant (DNR) Terrestrial plant (MDA)	Shorelines	Heiners Pond; Rotary Wetland; White Bear Lake at Boatworks Marina and Lions Park; Goose Lake; Birch Lake
Knotweed *(Polygonum sp.)*	Terrestrial plant	Near shorelines	White Bear Lake at Lake Ave and Morehead Ave; Willow Creek Wetland south of Savannah Ave; east shoreline of Heiner's Pond.
Zebra Mussel *(Dreissena polymorpha)*	Aquatic animal	In-lake	White Bear Lake

Monitoring and early detection are important to control terrestrial and aquatic invasive species. More could be done to map and delineate infestations in the City through partnerships across agencies.

Recreation

The City's water resources and parks provide outdoor recreational opportunities for residents and visitors. Area residents identify biking, walking, wildlife viewing, visiting beaches, and boating as important recreational amenities in the City. Existing public landings and trails provide the necessary infrastructure to support outdoor recreation. Efforts are underway to link existing local trails into a more regional trail system, which will provide additional access to these areas. Improving water quality and enhancing wildlife habitat will increase the recreational value of the City's natural areas. Outdoor recreation will also help to foster the public's awareness and stewardship of these resources.

4.3.2 Natural Resources Management and Recreation - Policies, Goals, and Objectives

The policies, goals, and objectives that correspond to the issues identified in subsection 4.3.1 are summarized in Table 17. The issue heading is first, followed by a related policy. The goals for that policy are identified in the first column of the table. The corresponding objectives for that goal are found in the third column. Each objective is assigned a unique number (second column) to assist with tracking the objectives in Table 26. Implementation Plan in Chapter 5.

Table 17. Natural Resources Management and Recreation Policies, Goals, and Objectives

Issue: Native Habitat		
Policy: Seek opportunities to protect and enhance native habitat around lakes, wetlands and adjacent upland areas where feasible.		
Goal	**Objective**	
Lake and Wetland Buffers – Protect and restore lake and wetland buffers on City property and encourage natural buffers on private property to increase wildlife habitat and to protect water quality.	3.1	Develop a GIS database of public and private lake and wetland buffers in the City.
	3.2	Conduct vegetation surveys and create a restoration and management plan for City owned shoreline buffer areas.
	3.3	Goose Lake - Collaborate with VLAWMO, Ramsey County, and volunteer groups to enhance the shorelines of east and west Goose Lake where feasible.
	3.4	Enhance the shoreline vegetation on White Bear Lake at Lakeview Park, Matoska Park, and others.
	-	Encourage natural shoreline buffers on private property and educate homeowners on available cost share grants. A*ddressed through implementation of the City's Public Education and Participation program (Subsection 4.5.2).*
	-	Establish buffers on private property as part of development and redevelopment. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2).*
	-	Review the City's shoreland and wetland ordinances. Revise as necessary to provide adequate water resource protection and to be at least as stringent as WMO rules and DNR statutes. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2).*
Upland Habitat Establishment - Establish upland native plant communities on City property to increase wildlife habitat and protect water quality.	3.5	Conduct vegetation surveys and create a restoration and management plan for City owned upland areas. Identify locations for native plantings within existing landscaped areas, and consider converting little used turf areas to prairie or woodland habitats. Potential park sites for large restoration projects include Bossard, Matoska, Lakewood Hills, and Rotary Nature Preserve. Priority areas should include habitats used by rare species identified in the NHIS database (Table 8).
	-	Include policies that take wildlife and habitat into consideration in transportation and redevelopment

		projects. *Addressed through implementation of the City's regulatory program (Subsection 4.6.2, objective 6.4).*
Vegetation Maintenance - Actively manage restored buffers and other natural areas to maintain and enhance biodiversity.	3.6	Edgewater ROW Prairie Planting Agreement 16-03.
	3.7	Birch Lake Shoreline Restoration Agreement 12/2011.
	3.8	Lions Park, Boatworks Marina, and Vets Park - Continue to maintain the native shoreline restoration along White Bear Lake.
	3.9	Establish the newly planted Birch Lake shoreline at the Sports Center and continue long term maintenance.
	3.10	4.th and Otter - Continue to partner with VLAWMO to establish and maintain native vegetation on the City owned property at 4th and Otter.
	3.11	Vegetation maintenance for future restoration projects
	3.12	Varney Lake, Bossard Park, Rotary Nature Preserve - Conduct a vegetation survey and establish a maintenance plan for existing prairie plantings.
Issue: Invasive Species		
Policy: The City will take an active role in controlling invasive species through management projects and partnerships.		
Goal	**Objective**	
Invasive Species Management - Identify and manage aquatic and terrestrial invasive species on City Property.	3.13	Create a GIS database of invasive species on City property and create a management plan that identifies and prioritizes management of infested areas and emphasizes early detection and response.
	3.14	Boatworks Marina and Lions Park - continue to manage Purple Loosestrife along the shoreline of White Bear Lake.
	3.15	Heiner's Pond - continue to manage Purple Loosestrife and Knotweed on City property. Work with the contractor to assist homeowners with managing Purple Loosestrife on private property.
	3.16	Rotary Wetland – Additional management of Purple Loosestrife in Rotary Wetland.
	3.17	4th and Otter – Continue to partner with VLAWMO to manage invasive species
	3.18	Adopt a policy that directs staff to clean off public works equipment after use.

	-	Educate the public on invasive species identification and management. A*ddressed through implementation of the City's Public Education and Participation Program (Subsection 4.5.2).*
Invasive Species Management Partnerships - Support State, County, and watershed management organization aquatic invasive species public education initiatives and management projects.	3.19	Support the "New Infestation Response Plan" for aquatic invasive species. Consider committing staff time and equipment if a new infestation were to take place.
	3.20	Support the current Ramsey County Knotweed control project on White Bear Lake and Willow Pond, and other future County invasive species management projects within the City.
	3.21	Support DNR, Ramsey County, Rice Creek Watershed District, and White Bear Lake Conservation District efforts to conduct aquatic plant surveys and control aquatic invasive species in White Bear Lake.
	3.22	Collaborate with Ramsey County to install boat cleaning signage and a boat cleaning station at the Matoska Park boat landing.
	3.23	Continue to attend Ramsey County aquatic invasive species meetings in support of the County's watercraft inspection program.
Issue: Recreation		
Policy: Support access to parks and water resources for recreational activities.		
Goal	**Objective**	
Recreation – Provide the necessary infrastructure to support access to natural areas and encourage appropriate water-based recreation while balancing water quality and habitat protection.	3.24	Collaborate with VLAWMO to improve lake access on the north end of Birch Lake to reduce erosion caused by foot traffic.
	-	Continue to provide a public boat landing at Matoska Park. *Addressed in the City's CIP.*
	-	Continue to provide canoe and kayak racks at Matoska Park Lions Park, and Lakeview Park, boat skids and sailboat mooring at Boatworks on White Bear Lake, and fishing piers at Lions Park and VFW. *Addressed in the City's CIP.*
	-	Construct the trail segment on White Bear Parkway to connect Township Parkway and Rotary Park. *Addressed in the City's Comprehensive Plan and CIP.*
	-	Support the construction of the Lake Links Trail as part of the South Shore Blvd street reconstruction project. *Addressed in the City's Comprehensive Plan and CIP.*
	-	Support the construction of a County trail on the west side of Otter Lake Road from County 96 to Birch Lake Blvd North. *Addressed in the City's Comprehensive Plan and CIP.*

	-	Support the construction of the Bruce Vento Trail and connection to Willow Marsh. *Addressed in the City's Comprehensive Plan and CIP.*
	-	Consider installing a boardwalk as part of the Long Avenue wetland restoration project. *Wetland restoration costs addressed as part of objective 2.14 in Table 15. Boardwalk costs addressed in City's CIP.*
	-	Consider installing a boardwalk as part of the Willow Marsh wetland restoration project. *Wetland restoration costs addressed as part of objective 2.15 in Table 15. Boardwalk costs addressed in City's CIP.*

Section 5.2.3 of this Plan describes implementation activities and programs related to natural resources management and recreation.

4.3.3 Natural Resources Management and Recreation Past Projects

Edgewater ROW Prairie Planting (project 16-15)
Receiving Water: Willow Creek to Kohlman Lake

An unused City owned bituminous service road located south of Buerkle Road between Sam's Club and White Bear Marketplace was removed in 2015 in conjunction with the White Bear Marketplace project. The City's vison of the newly graded 0.6 acre road right-of-way was to blend the site with the adjacent White Bear Marketplace landscaping by establishing low maintenance native vegetation with a mixture of flowering species that would provide color and pollinator habitat throughout the growing season. The city hired a contractor to prepare and seed the site and provide three years of maintenance for initial establishment. The City was awarded a habitat restoration project grant from Ramsey Washington Metro Watershed District, which covered half of the installation and signage costs. The City entered into a 20-year maintenance agreement with RWMWD, which is included in Appendix D. After the 3-year establishment period, the city continues to hire a contractor for yearly maintenance. This project received a Ramsey-Washington Metro Watershed District Landscape Ecology Award Program (LEAP) award in 2019.

Sports Center Shoreline Restoration
Receiving Water: Birch Lake (South)

As part of the 2018 Sports Center building renovation (project 18-09), the eastern shoreline of South Birch Lake was cleared of invasive species, select trees, and dead plant material. The City hired a contractor to plant native forbs and grasses along the shoreline and to maintain the new planting for a three-year establishment period. Once established, the shoreline planting will provide needed slope stabilization and wildlife habitat.

Birch Lake Shoreline Restoration

Receiving Water: Birch Lake (North)

In 2010, VLAWMO partnered with the Birch Lake Improvement District and the City of White Bear Lake to restore 850 feet of shoreline on Birch Lake, adjacent to Birch Lake Blvd N. The purpose of the project was to fix erosion issues due to foot traffic, remove invasive weeds, and increase wildlife habitat. Diverse native plantings, an access path with large stones for fishing platforms, and a bench for viewing were installed as part of the restoration. This project received funding from the BWSR Native Buffer Grant program and a DNR Shoreland Habitat Restoration Program grant. The partners share in the cost of yearly maintenance.


Source: VLAWMO

Lions Park Lakeshore Restoration (project 08-14)

Receiving Water: White Bear Lake

This project restored approximately 300 feet of White Bear Lake shoreline in Lions Park. The work included removing rip-rap and turf, grading uneven slopes, planting native vegetation, and adding flat boulders along the shore for fishing. The project received funding from a DNR Aquatic Plant Restoration Program grant, Ramsey County Soil and Water Conservation Division (formerly Ramsey Conservation District) cost share program grant, and Rice Creek Watershed District cost share grant. The City entered into a five-year operation and maintenance agreement with RCWD. The agreement, which expired at the end of 2013, is included in Appendix D for reference. The City continues to contract for annual maintenance of the shoreline planting.

Priebe Lake Restoration Project (project 99-08)

Receiving Water: Priebe Lake

As part of the Priebe Lake sediment excavation described in Section 4.7.3, the Ramsey County Soil and Water Conservation Division (formerly Ramsey Conservation District) provided grant funding to hire a consultant to complete shoreline restoration design plans for property owners interested in restoring their shoreline with native plants. Of the 33 lakeshore homeowners, 18 had plans drawn. Homeowners were responsible for hiring a contractor to install the native plantings or completing the work themselves. There was a 10-year follow-up study to identify the success of the project.

Rotary Nature Preserve

Receiving Water: Rotary Wetland

The Rotary Nature Preserve property was acquired by the City in the 1980s with the construction of White Bear Parkway. The owner of the property was going to be assessed for the project, so the City acquired the land as a trade for the assessment. In the early 1990s, Rotary Club was looking for projects and chose to make a commitment to the park. Over the years, Rotary has planted numerous trees and prairie plants in the park and built a pavilion, restrooms, trails, and a boardwalk.

4.4 Groundwater Management

4.4.1 Groundwater Management Issues

Groundwater Quantity

Maintaining a sustainable groundwater supply is important to support natural ecosystems and human uses. The quantity of groundwater is controlled by long-term trends in precipitation, recharge, and withdrawal.

Precipitation. Precipitation is a principal driver for groundwater recharge. The water table elevation in surficial soils varies seasonally and annually and is correlated with precipitation cycles. In drought conditions, less water is available for recharge and may lead to a drop in the water table, which can reduce the quantity of water that is available for groundwater dependent natural resources and human consumption.

Groundwater recharge. Surficial (water table) aquifers are replenished by precipitation that is infiltrated into the soil and by those waterbodies that discharge to surficial soils. The hydrologic characteristics of soils at the land surface significantly affect the rate, volume, and distribution of surficial groundwater recharge. Roads, buildings, and other impervious surfaces reduce the amount of water that can naturally infiltrate and recharge groundwater. Development can also compact remaining pervious surfaces, decreasing the infiltration capacity of these soils. To offset impacts to infiltration due to development, volume control design standards are implemented that focus on mimicking the natural hydrology of a site, mainly through the design of infiltration practices. The City adopted volume control standards in 2015 that require a specific volume of runoff from impervious surfaces to be infiltrated into the soil as part of development and redevelopment. The standards should be revised to expand on allowable volume control methods.

Groundwater recharge from surficial aquifers to deeper bedrock aquifers occurs in areas of high bedrock permeability and where impermeable confining layers are absent. Groundwater recharge to regional bedrock aquifers likely occurs on a larger scale outside the City's boundary; therefore, identifying and protecting regional groundwater recharge areas require a coordinated effort by all stakeholders including cities, counties, watershed districts, and state agencies.

Groundwater withdrawal. Groundwater in surficial soils flow from recharge areas to surface waters, deeper bedrock aquifers, and private wells constructed in the surficial soils. Only 20 residential properties in the City are on private wells.

Groundwater in bedrock in the White Bear Lake area generally flows southwest and discharges to the Mississippi River. Bedrock aquifers also discharge to wells. All communities in Washington County and twelve communities in Ramsey County, including the City of White Bear Lake, obtain their drinking water supply from wells completed in bedrock aquifers. Continued population growth in the northeast metro area places an increased demand on groundwater supplies. As a fully built out City, large increases in groundwater use are not anticipated for the City of White Bear Lake.

Unnecessary water usage also places an increased demand on groundwater supplies. The City tracks the gallons of water pumped from each of its four supply wells each day. Groundwater pumping increases during summer months in large part due to outdoor water use, with irrigation being a major component. In 2018, the pumping in August (highest pumping month in 2018) was almost double the pumping in December (lowest pumping month in 2018). In extended drought periods, groundwater supplies are even more vulnerable due to the compounded effects of increased water use for irrigation and the decrease in the recharge of aquifers. Water conservation efforts by all water users are critical for managing groundwater supply. The City adopted ordinances and implemented various educational programs in an effort to reduce water use. While great strides have been made, continued water conservation efforts are critical to protect the drinking water supply for future generations. The City's Water Supply Plan contains a section on water conservation, which includes objectives for decreasing demand; however, because the plan follows the required standardized format, there is not much opportunity for customization. Consequently, additional water conservation goals and objectives are included in Table 18 of this SWMP.

Concerns from residents over low water levels in White Bear Lake led to increased focus on the sustainability of the area's groundwater supplies. A 2012 lawsuit by the White Bear Lake Restoration Association and White Bear Lake Homeowners Association charged that the Minnesota Department of Natural Resources (DNR) has permitted too much groundwater use by allowing 13 local communities to use groundwater for their public supply, leading to unacceptably low lake levels that harmed White Bear Lake and violated Minnesota's water sustainability standard. Among the remedies, the plaintiffs asked the judge to reduce local communities' groundwater use, and require the DNR to augment the lake with an additional water supply. The defendants maintain that the lake's historical pattern of extreme variations in depth are due to its sensitivity to precipitation patterns, as it has a uniquely small watershed. The City of White Bear Lake and White Bear Township intervened on behalf of the DNR to protect its interests in the community's water supply and related infrastructure. However, the Ramsey County District Court ultimately ruled in favor of the plaintiffs in August, 2017 and issued the following order:

- That the DNR prepare, enact and enforce a residential irrigation ban when the level of White Bear Lake is below 923.5 feet;
- That all existing permits include a plan to phase down per capita residential use;
- That all permittees within a 5-mile radius of the lake submit contingency plans for partial or total conversion to use of surface water;
- That all groundwater permittees report annually to the DNR on their collaborative efforts to identify a different source of municipal drinking water.

The DNR and City of White Bear Lake appealed the District Court's ruling, which was ultimately reversed by the Court of Appeals. The plaintiffs then filed an appeal to the Minnesota Supreme Court. In August, 2020 the Supreme Court issued its opinion, reversing the Court of Appeals' decision and rejecting the defendants' arguments related to the Court's interpretation of the Minnesota Environmental Rights Act (MERA). On the second of nine issues under review, the Court declined to extend application of the Public Trust Doctrine, as put forth by the plaintiffs. The Court then remanded the remaining seven (7) issues originally appealed back to the Court of Appeals for consideration, as the Court of Appeals had not yet rendered its opinion on these points. Meanwhile, the District Court's order dated September 10, 2018 granting a stay of the Court's original August, 2017 provisions were extended.

As of the date of this SWMP, the case remains under consideration at the Court of Appeals. Information regarding the ongoing court case and the DNR's modeling analysis can be found on the DNR's website at https://www.dnr.state.mn.us/gwmp/wbl/index.html.

Groundwater Quality

Land use and human activities have the potential to contaminate groundwater, which can adversely affect groundwater dependent natural resources and drinking water supplies. To protect public drinking water supplies from contamination, cities that pump groundwater to supply their residents with drinking water are required to prepare a Wellhead Protection Plan (WHPP). The City's WHPP delineates a wellhead protection area (WHPA) and documents the vulnerability assessments of the WHPA to contamination. In addition, the report identifies potential contamination sources and establishes wellhead protection management goals and objectives.

The wellhead protection area (WHPA) is the scientifically determined area surrounding wells that supply a public water system through which contamination is likely to move toward and reach the wells. A drinking water supply management area (DWSMA) is the regulatory boundary that fully contains the WHPA and is delineated by identifiable physical features, landmarks or political and administrative boundaries. White Bear Township and the Cities of Birchwood Village, Willernie, Mahtomedi, Maplewood, Pine Springs, North St. Paul, and Oakdale are within the City's DWSMA. The number of communities included in the DWSMA complicates effective implementation of management strategies. The WHPA and DWSMA for the City's public water supply wells are shown in Figure 20.

Based on the City's WHPP vulnerability assessment, Wells 1, 3, and 4 have been determined to be vulnerable to contamination from land surface activities. Well 2 is deemed not vulnerable due to the presence of overlying confining geological layers and Carbon-14 testing that indicates the water is "ancient". Figure 20 identifies areas of high vulnerability, which was determined based on the thickness and permeability of surficial soils and the depth and composition of bedrock layers. The risk of drinking water contamination from infiltrated pollutants (fertilizers, pesticides, chloride, etc.) increases in the high vulnerability areas. Alternative volume control practices should be considered in these areas.

The City's WHPP includes a potential contaminant source inventory identified within the DWSMA. The MPCA WIMN tool was used to create the inventory. Numerous potential contaminant sources were identified, including underground and above ground storage tanks, leaking storage tanks, Voluntary Instigation and Cleanup (VIC) sites, an unpermitted dump site, wastewater dischargers, a Department of Agriculture Old Emergencies site, and hazardous waste generators. It is important for the City and developers to be aware of the location of contaminated sites to avoid constructing infiltration practices if infiltration may mobilize the contaminants at these locations.

Private septic systems are identified in the City's WHPP as a minor potential risk to the source water aquifer due to aquifer depth. Only 20 private septic systems still exist in the City. Sanitary sewer is planned to be extended to service 13 of these parcels as part of the South Shore Blvd reconstruction project.

4.4.2 Groundwater Management Policies, Goals, and Objectives

The policies, goals, and objectives that correspond to the issues identified in subsection 4.4.1 are summarized in Table 18. The issue heading is first, followed by a related policy. The goals for that policy are identified in the first column of the table. The corresponding objectives for that goal are found in the third column. Each objective is assigned a unique number (second column) to assist with tracking the objectives in Table 26. Implementation Plan in Chapter 5.

Table 18. Groundwater Management Policies, Goals, and Objectives

Issue: Groundwater Quantity		
Policy: The City will collaborate with stakeholders to maintain a sustainable groundwater supply that balances groundwater recharge and withdrawal.		
Goal	**Objective**	
Groundwater Recharge – Preserve existing recharge areas and manage stormwater to increase groundwater recharge where appropriate.	4.1	Collaborate with state agencies, Ramsey County, Washington County and WMO's to identify and preserve regional recharge areas.
	-	Promote WMO cost share programs to encourage residents and businesses to install infiltration practices where appropriate. *Addressed through implementation of the City's education and outreach program (Subsection 4.5.2).*
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects (a*ddressed through implementation of the City's regulatory program (Subsection 4.6.2) and as part of the City's street reconstruction projects (Table 9, objectives 1.3 and 1.8).*
Groundwater Withdrawal – Continue to promote and implement water conservation programs and water reuse projects for all water users in an effort to reduce water demand.	4.2	Work with Washington County, Ramsey County and WMOs to develop a regional water conservation plan.
	4.3	Attend the North and East Metro Groundwater Management Area Plan Project Advisory Team meetings.
	4.4	In collaboration with Ramsey County, Washington County, and WMO's, develop a reuse incentive program.

	-	Educate landowners, public officials, and staff on wise use of water and promote indoor and outdoor water conservation practices. *Addressed through implementation of the City's Education and Outreach program (Subsection 4.5.2).*
	-	Consider installing new stormwater reuse systems and expanding existing systems to irrigate City property. A*ddressed in Table 9.*
Issue: Groundwater Quality		
Policy: Protect groundwater supplies by addressing and managing all potential sources of groundwater contamination.		
Goal	**Objective**	
Groundwater Pollutants – Prevent contamination of source water aquifers and manage these aquifers cooperatively with other agencies to assure sustainable drinking water supplies.	4.5	Collaborate with WMO's, Ramsey County, Washington County, and communities to address groundwater issues identified in the City's WHPP including developing management strategies and tools in areas of vulnerability.
	-	Include a review of the DWSMA and WIMN online map as part of the City's permit review process. *Addressed through implementation of the City's regulatory program (Subsection 4.6.2).*
	-	Develop and revise land-use regulations as necessary in the DWSMA to protect drinking water and public health. A*ddressed through implementation of the City's regulatory program (Subsection 4.6.2).*

Section 5.2.4 of this SWMP describes implementation activities and programs related to groundwater quality and quantity.

4.4.3 Groundwater Management Past Projects

Water Efficiency Rebate Program

The Metropolitan Council, through funding from the Clean Water Land and Legacy Amendment, awarded the City of White Bear Lake a water efficiency grant in 2016. The goal of the water efficiency grant program is to improve municipal water use in cities that are supplied with 100% groundwater and identified as having water supply issues. The City of White Bear Lake used the grant funding to provide rebates to residents for the replacement of existing toilets, clothes washers, and irrigation controllers with new models specified as water efficient. A total of 282 toilets, 120 clothes washers, and 6 irrigation controllers were replaced with this program, saving an estimated 5.9 million gallons of water per year.

In late 2019, the City was awarded a second Water Efficiency Grant through the Metropolitan Council. The grant enabled the City to provide rebates to public water utility customers who wanted to replace

existing toilets with WaterSense toilets. Through this initiative, 175 toilet replacements are estimated to save nearly 3.55 million gallons of water annually.

4.5 Public Education and Participation

4.5.1 Public Education and Participation Issues

Education and Participation

The MPCA MS4 Permit and Watershed Management Organization (WMO) plans identify individuals, businesses, and local organizations as having the potential to generate stormwater pollution. MS4's are required to educate the public about the pollution potential of common behaviors and activities such as:

- Disposing of trash, recyclables, and yard waste
-
- Changing motor oil
- Disposing of leftover paint and other household chemicals
- Disposing of pet waste
- Applying lawn chemicals
- Storing and applying deicing salt

Education strategies shall focus on how behaviors and activities can pollute waterbodies and groundwater, providing clear guidance on specific actions individuals can take to reduce pollution potential and influencing direct action by creating opportunities for public involvement.

Coordination with other government agencies

WMOs, counties, neighboring communities, and lake conservation districts have similar water-related public education and participation goals. Coordinating educational efforts with these agencies can limit duplicative efforts, control expenditures, and provide consistent messages to the public.

4.5.2 Public Education and Participation Policies, Goals, and Objectives

The policies, goals, and objectives that correspond to the issues identified in subsection 4.5.1 are summarized in Table 19. The issue heading is first, followed by a related policy. The goals for that policy are identified in the first column of the table. The corresponding objectives for that goal are found in the third column. Each objective is assigned a unique number (second column) to assist with tracking the objectives in Table 26 Implementation Plan in Chapter 5.

Table 19. Public Education and Participation Policies, Goals, and Objectives

Issue: Education and Participation		
Policy: Continue to implement a public education, outreach, and participation program in accordance with the City's MS4 Permit.		
Goal	**Objective**	
Educational Resources - Increase public awareness and understanding of stormwater issues by providing educational resources to City residents, business owners, and local organizations.	5.1	At least once per calendar year, distribute educational materials focusing on 1) illicit discharge recognition and reporting; 2) deicing salt (impacts on receiving waters, reduction methods, and proper storage); 3) pet waste (impacts on receiving waters, proper management, and regulations); and 4) at least two other stormwater related issues of high priority. Topics may include promoting raingardens and other BMP's, TMDL reduction targets, native plantings, shoreland management, invasive species (including encouraging public and staff to report invasive plants to the County Weed Management Coordinator) , landscaping and lawn care, yard waste disposal, composting, hazardous waste disposal, groundwater recharge and conservation, preventing groundwater contamination, lake improvements through lake associations, and changing local business practices. This information may be distributed through City newsletters, the City website, utility bills, new resident packets, social media, the White Bear Press, and workshops/events. When developing and distributing educational materials, consideration should be given to low-income, people of color, and non-native English-speaking residents.
	5.2	Review and update the City's website at least once per year. Include information about illicit discharge detection and reporting, deicing salt, pet waste, invasive species, native plants, water conservation, drinking water supply protection, lake data, Surface Water Management Plan, SWPPP document, annual public meeting, permit and review programs, Public Works operations and maintenance activities, BMP cost share incentive programs, stormwater studies and projects, links to the Watershed Management Organizations, residential and business recycling, yard waste disposal, and hazardous waste disposal.

	5.3	Document the public education and outreach program in the City's SWPPP tracking table at least twice per year. Include target audiences, number of participants, quantities and description of educational materials, types of activities, dates, , partnerships, and the name of the person responsible for implementation.
	5.4	Distribute stormwater educational materials at the Environmental Advisory Commission's Environmental Resource Expo held annually at Marketfest. Invite WMOs to exhibit at the event.
	5.5	Create an email distribution list for stormwater related topics. Advertise how to sign up for this service through City newsletters, the White Bear Press, and on the City's website and Facebook page.
	5.6	Survey homeowners on the use of individual water softeners. If needed, create an educational program to educate residents about the City's water softening treatment plant and discourage the use of individual water softening units.
	5.7	Conduct an annual assessment of the City's public education program to evaluate compliance with the City's MS4 General Permit and to determine how the program might be improved. Document any changes made to the program.
Public Participation - Increase public awareness and understanding of stormwater issues within the community by providing opportunities for public participation and involvement.	5.8	Hold a public meeting during the City Council meeting in April each year to report on the prior year's SWPPP activities and goals for the next year, and solicit input on the City's SWPPP. Advertise annual SWPPP meeting on the City's website and in the White Bear Press. Make proper notice in the local paper, City website, and email distribution list. Document notices of meeting, dates, location, estimated number of attendees, all relevant input, and responses to input.
	5.9	Place a PDF of the SWPPP, annual reports, and other SWPPP supporting documents on the City's stormwater webpage. Include a comment form on the SWPPP webpage and document the activity and input received in the City's SWPPP tracking table. Consider input received.

	5.10	Advertise the new 'report a problem' link on the City's website and encourage the public to report illicit discharges, outdoor irrigation violations, construction site erosion control concerns, and other stormwater related problems. Communicate the procedure and contact information for notification to residents in the City newsletter, on the City's website, and in new resident packets.
	5.11	Continue to provide and promote at least one public involvement activity per year that includes a poolution prevention or water quality theme such as the Adopt-a-Drain program, Recycling Association on Minnesota (RAM) rain barrel distribution event, WBLCD lake clean-up event, WMO raingarden workshops, household hazardous waste collection days, City cleanup events, etc. Document event notices, dates, locations, description of activities, number of participants, etc.
	5.12	Start an adopt a wetland program to clean up trash and to monitor and remove invasive species.
	5.13	Create a database of residents and businesses interested in volunteering for stormwater related activities such as raingarden planting, native garden maintenance, shoreline cleanup events, etc.
	5.14	Seek opportunities to partner with WMOs, Ramsey County SWCD, and local entities (e.g., religious groups, schools, and service clubs) on surface water quality improvement projects.
	5.15	Investigate opportunities for public engagement with water quality and habitat restoration projects near the Center for the Arts.
	5.16	Conduct an annual assessment of the City's public participation program to evaluate compliance with the City's MS4 General Permit and to determine how the program might be improved. Document any changes made to the program.
Issue: Coordination with Other Government Agencies		
Policy: Collaborate with other organizations that share similar water quality education goals.		
Goal	**Objective**	
Coordination - Coordinate the development and implementation of the City's educational program with other organizations that focus on	5.17	Coordinate/develop public education materials and outreach programs with WMOs, counties, neighboring communities, lake conservation districts and other agencies. Programs could consist of website development, public presentations, educational materials, newsletter

stormwater education to minimize duplication and ensure a consistent message.		articles, etc. Develop procedures for coordination of educational programs with these agencies.
	5.18	Promote WMO cost share grants, workshops, and trainings on the City's website, newsletters, and social media.
	5.19	Continue to collaborate with VLAWMO on joint educational initiatives including the storm drain stenciling program, Adopt-a- Drain program, trainings, and others.
	5.20	Continue to financially support the annual Ramsey Washington Metro Watershed District Waterfest event.
	-	Continue membership with Watershed Partners through Hamline University. *Addressed as part of objective 8.7 in Table 22.*

4.5.3 Public Education and Participation Past Projects

Environmental Resource Expo

The City of White Bear Lake Environmental Advisory Commission hosts an annual Environmental Resource Expo on the last night of Marketfest. The commission members invite local environmental organizations to table at the event. Past exhibitors have included VLAMWO, Pollinator Friendly Alliance, Ramsey County Master Gardeners, Metro Transit hybrid bus, electric cars, Center for Energy and Environment, Citizens Climate Lobby, MN350, Rush Line, Tamarack Nature Center, and Sierra Club Zero Waste Task Force.

Aqua Fair

The City partnered with VLAWMO, H2O for Life, White Bear Lake Area Schools, and Conservation Minnesota to plan and host a student and community event focused on conserving and protecting groundwater resources. The event included games centered around water education, Walk for Water event that raised funds for a school service project, presentations by local groundwater experts, raingarden and rain barrel talks, and exhibit tables by each of the partners. The Aqua Fair was held in the spring of 2017 and 2018, but was dropped due to H2O for Life budget cuts.

Water Conservation Event

Prior to the City of White Bear Lake's involvement with Aqua Fair, the City organized a water conservation event in the parking lot at City Hall to promote water conservation. The event was held in the spring of 2015 and 2016 and featured exhibitors, interactive displays, rain barrel and native plant sales, and rain garden presentations. Exhibitors included Metropolitan Council Environmental Services, Race to Reduce/H2O for Life, Ramsey County Soil and Water Conservation Division, VLAWMO, and DNR.

Adopt-a-Drain

Adopt-a-Drain is a program of Watershed Partners, a coalition of public, private, and non-profit organizations administered by the Center for Global Environmental Education at Hamline University. The Adopt-a-Drain program was developed in 2014 as an effort to reduce the amount of debris and harmful pollutants from entering local waters through storm drains.

In 2019, the City became a member of Watershed Partners and began promoting the Adopt-a-Drain program City wide. VLAWMO and the City also partnered to created a targeted promotion in the Goose Lake subwatershed, including customized Goose Lake signage. Each year, the City receives an annual report from Watershed Partners that summarizes the number of drains adopted and the amount of debris collected.

Adopt-a-Drain in White Bear Lake, 2019
Annual Report

46
new participants in 2019

76
drains adopted in 2019

Reporting Data

24 White Bear Lake participants reported cleanings, which represents 52.2% of all White Bear Lake participants.

White Bear Lake participants collected 1,118.2 lbs of debris from their adopted storm drains in 2019.

Debris Type	Amount (lbs)
Brown leaves	490.3
Grass and green leaves	141.6
Sediment and dirt	466.4
Trash	19.6
Salt	0.2

4.6 Regulatory Program

4.6.1 Regulatory Program Issues

Official Controls

The City has adopted numerous ordinances to regulate the use and development of land within its jurisdiction. These ordinances and corresponding Engineering Design Standards are key tools for implementing this SWMP and guiding land development decisions in construction site runoff control, post construction stormwater management, floodplain management, shoreland management, and wetland management. To ensure these ordinances are followed, the City implements a permit program. The City's ordinances and Engineering standards should be revised periodically in response to identified weaknesses or gaps in the City's permit program, revisions of other jurisdictions' regulatory programs, and changing technologies. Revisions should be made to improve clarity and reduce redundancy to better protect the City's natural resources and to streamline the permit program. Table 23 in Section 5.2.6 lists all official controls related to stormwater management and water resource protection.

Construction Site Stormwater Runoff Control

Stormwater runoff from construction sites can have significant adverse impacts on local and regional water resources unless it is properly managed. Exposed soil from land disturbing activities is vulnerable to erosion and can lead to the transport of sediment, phosphorus, and other pollutants to surface waters. Sedimentation in surface waters can reduce sunlight to aquatic plants, lead to fish kills, reduce storage capacity of downstream receiving waters, and impede navigation. MS4's are required to develop, implement, and enforce a program to reduce pollutants in stormwater runoff from construction activities. The construction site runoff control program must include an ordinance and procedures for site plan review, site inspections, and enforcement.

Post Construction Stormwater Management

Land use changes and development often involve removal of existing vegetation, soil compaction, and an increase in the amount of impervious surfaces such as roads, parking lots, and rooftops. These changes to land use do not allow water to infiltrate into the soil, thereby increasing runoff volume and reducing groundwater recharge. If not managed properly, increases in runoff volume can raise flood levels and cause erosion in stream channels and storm sewer outlets. In addition, as stormwater runoff flows over areas altered by development, sediment and chemicals can be suspended in the runoff and carried to receiving waters. Managing post construction stormwater on site is an effective way to mitigate these impacts. MS4's are required to develop, implement, and enforce a program to reduce runoff volume and pollutants from post construction sites. The post construction stormwater runoff control program must include an ordinance requiring runoff controls, strategies for structural or non-structural control practices, and adequate long-term operations and maintenance of control practices.

Floodplain Management

Areas around waterbodies that are prone to flooding should be managed to minimize flood losses. Minnesota statutes Chapter 103F and Chapter 462 delegate authority to municipalities to adopt regulations designed to minimize flood losses in these floodplain areas. Chapter 103F further stipulates that communities subject to recurrent flooding must participate and maintain eligibility in the National Flood Insurance Program (NFIP). Areas of the City prone to larger regional flooding near surface water sources during a 100-year storm events have been identified and mapped by the Federal Emergency Management Agency (FEMA) through the NFIP. The water level corresponding to the 100-year storm event is referred to as the Base Flood Elevation (BFE) and is the basis for the mapped floodplain extent.

The floodplain maps, called Flood Insurance Rate Maps (FIRM's), identify the land areas to which the City's floodplain regulations apply. Having been last updated in June 2010, there is concern that the FIRM's are based on outdated information. The Rice Creek Watershed District (RCWD) created floodplain maps for waterbodies within its boundary and discovered discrepancies between the FEMA maps and their Hydrologic and Hydraulic model results. RCWD has assisted several partner cities with submitting current RCWD modeling results to FEMA to improve the accuracy and relevance of the FIRMs; however, this process is costly and time intensive. VBWD has performed more recent hydrologic and hydraulic modeling of the Silver Lake watershed and estimated 100-year flood elevations.

Shoreland Management

Intensive development within shoreland areas can impact water quality and fish and wildlife habitat. Numerous studies have shown that the percent coverage of a watershed by impermeable surfaces is a good indicator of a lake's water quality. Generally, when more than 25 percent of a lake's watershed is covered by impervious surfaces, severe and permanent degradation can occur. Altering the shorelines by removing vegetation or grading and filling can cause erosion into public waters and destroy fish and wildlife habitat. The City updated its shoreland regulations in 2010. The regulations should be updated periodically to be consistent with or more restrictive than current statutory and other agency requirements.

Wetland Management

Uncontrolled development near wetlands and drainage ways can impact the functions and values of wetlands and increase flood risk. Historically, some of the City's wetlands were drained, filled, or converted to stormwater ponds as part of development. The City recognized the value of wetlands and passed the Wetland Overlay District code in 1983 to control development near wetlands and drainage ways. The state Wetland Conservation Act (WCA) was passed in 1991 to limit the further loss of wetlands.

4.6.2 Regulatory Program Policies, Goals, and Objectives

The policies, goals, and objectives that correspond to the issues identified in subsection 4.6.1 are summarized in Table 20. The issue heading is first, followed by a related policy. The goals for that policy are identified in the first column of the table. The corresponding objectives for that goal are found in the third column. Each objective is assigned a unique number (second column) to assist with tracking the objectives in Table 26 Implementation Plan in Chapter 5.

Table 20. Regulatory Program Policies, Goals, and Objectives

Issue: Official Controls		
Policy: Keep stormwater related ordinances and engineering standards up to date		
Goal	**Objective**	
Official Controls – Revise ordinances and stormwater design standard documents in 2021 and review every 5 years to remain consistent with Federal, State, and Watershed District regulations.	6.1	Review the zoning code, subdivision code, and stormwater ordinances that regulate stormwater at a minimum after adoption of WMO plans, Watershed District rules and reissuance of the MS4 General Permit and NPDES Construction Stormwater permit. Revise as necessary to be at least as stringent as theWMO plans and rules and MPCA permits.
	6.2	Amend the IDDE ordinance to 1) require owners of pets to remove and properly dispose of pet waste on City owned land areas; and, 2) require proper salt storage at commercial, institutional, and non-NPDES permitted industrial facilities. Proper salt storage shall include covered or indoor salt storage areas on an impervious surface, and implementation of practices to reduce exposure when transferring material in designated salt storage areas.
	6.3	Review the Engineering Design Standards that regulate stormwater management every 5 years and revise as necessary. Verify that the standards are at least as stringent as the MPCA MS4 and Construction Stormwater Permits and WMO plans and rules. Consider adding stormwater reuse and soil amendment/scarification standards as an option to meet volume control requirements.
	6.4	Include a guidelines or policy that takes wildlife into consideration in transportation and redevelopment projects. Encourage natural areas to be preserved or restored with native species after construction, taking into account wildlife habitat needs and how wildlife travels between wetland and upland areas.
	6.5	Conduct an annual assessment of the City's Construction Site Stormwater Runoff Control program and Post-Construction Stormwater Management program to evaluate compliance with the City's MS4 General Permit and to determine how the program might be improved. Document any changes made to the program.

Issue: Construction Site Stormwater Runoff Control		
Policy: Continue to implement the City's permit and review program for new and redevelopment projects in accordance with the City's MS4 Permit.		
Goal	**Objective**	
Plan Review - Review development and redevelopment plans for sites that include land disturbing activities.	6.6	Continue to review development plans to ensure compliance with the City's Engineering Design Standards for Stormwater Management, and Zoning ordinance. Notify applicants of the NPDES Construction Stormwater Permit and Watershed District permit programs.
	6.7	Review written procedures for engineering stormwater site plan reviews and incorporate procedures into a check list. Revise as necessary to ensure compliance with the MS4 General Permit.
	6.8	Develop a guidance document to assist applicants with understanding the City's permitting process and submittal requirements.
	6.9	Continue to offer a pre-submittal meeting to assist applicants early in the project development process with identifying permit submittal and regulatory requirements.
	6.10	Review and update engineering standard plates and guidance documents as necessary.
Site Inspections - Minimize the transport of sediment and other pollutants into the City's storm sewer system through regular construction site inspections.	6.11	Continue to routinely inspect active construction sites to ensure compliance with NPDES permit requirements and City design standards. Periodically review the inspection checklist and standard procedure and revise if needed. Coordinate inspections with watershed districts for sites greater than 1 acre.
	6.12	Review written procedures and checklists for construction site inspections, receipt of construction site non-compliance complaints, and enforcement response procedures and revise as necessary to ensure compliance with the MS4 General Permit.
	6.13	Hold preconstruction meetings for all City construction projects to discuss project specific BMP's, requirements of the NPDES construction permit/project SWPPP, City NPDES standards for erosion control monitoring, site inspections, and violations.

	6.14	Continue to send Building inspectors to the U of M Erosion and Stormwater Management Certification class and refresher courses (every 3 years following initial training).
Issue: Post Construction Stormwater Management		
Policy: Continue to require permanent stormwater management control practices for new and redevelopment projects in accordance with the City's MS4 Permit.		
Goal	**Objective**	
<u>Permanent Stormwater Control</u> Ensure that private stormwater management practices are properly constructed and maintained.	6.15	Continue to review development plans to ensure compliance with the City's Engineering Design Standards for rate and volume control and stormwater treatment.
	6.16	Require as-builts of all permanent stormwater management practices and review for compliance with the approved design. Periodically review the as-built submittal checklist and revise as necessary.
	6.17	Continue to require stormwater operation and maintenance agreements (SOMA's) for private stormwater practices, with annual reporting requirements. Review and update agreement language as needed.
	6.18	Implement a construction inspection program for permanent stormwater management practices.
	-	Develop a GIS database to track all private stormwater best management practices that are included in Stormwater Operation and Maintenance Agreements (SOMAs). Include soil borings, record drawings, SOMAs and stormwater calculations in the database. *Addressed in objective 7.39.*
Issue: Floodplain Management		
Policy: Comply with the rules and regulations of the National Flood Insurance Program (NFIP) to minimize potential losses due to periodic flooding within the Floodplain Overlay District.		
Goal	**Objective**	
<u>Floodplain Management</u> - Minimize potential losses due to periodic flooding through regulation that focuses on managing flood storage, land use, and structure placement.	6.19	Continue to review development projects to ensure compliance with the City's Floodplain Overlay District ordinance.
	6.20	Work with Watershed Districts and the DNR to update FIRMs.

	-	Update the Floodplain Overlay Ordinance as required by FEMA and the DNR to ensure adequate protection for structures and eligibility for flood insurance programs. *Addressed as part of objective 6.1.*
Issue: Shoreland Management		
Policy: Guide land development in shoreland areas that is consistent with state shoreland rules.		
Goal	**Objective**	
Shoreland Overlay District - Protect water quality and near shore habitat through regulation that focuses on minimizing impervious surfaces in the Shoreland Overlay District and protecting shoreline areas.	6.21	Continue to review development projects to ensure compliance with the City's Shoreland Overlay District ordinance.
	-	Periodically review and revise the City's Shoreland Overlay District ordinance to be consistent with the DNR's model shoreland ordinance language. A*ddressed as part of objective 6.1.*
Issue: Wetland Management		
Policy: Guide land development near wetlands and drainage ways		
Goal	**Objective**	
Wetlands Overlay District – Protect wetland functions and values and minimize flood risk.	6.22	Continue to review development projects to ensure compliance with the City's Wetland Overlay District ordinance.
	-	Periodically revise the City's Wetland Overlay District ordinance and revise as necessary. A*ddressed as part of objective 6.1.*
WCA –Support the Wetland Conservation Act (WCA).	6.23	Continue to coordinate with the WCA LGUs within the City (RCWD, RWMWD, VLAWMO, and VBWD) during development review to ensure compliance with the Wetland Conservation Act.

4.7 Pollution Prevention, Operations, and Maintenance

4.7.1 Pollution Prevention, Operations, and Maintenance Issues

Inspection and Maintenance of City Owned Facilities

City facilities and operations have the potential to contribute pollutants to stormwater runoff. MS4's must develop a program to help reduce pollutants from landscaping and lawn care practices, pest control, vehicle equipment cleaning and maintenance, material storage and handling, and waste disposal.

Stormwater conveyance and treatment facilities also have the potential to contribute pollutants to downstream waterbodies if not properly maintained. Regular inspections and maintenance help to preserve the function and performance of these systems. Ongoing inspections and maintenance of the City's stormwater infrastructure has become more complex over the years due to new regulations and a

better understanding of what is necessary to keep treatment facilities functioning propery. Staffing and equipment shortages have already been identified as a significant barrier to meet MS4 storm system inspection and maintenance requirements. As stormwater treatment practices continue to be installed as part of the City's street and parking lot reconstruction projects, the overall stormwater system inspection and maintenance needs will continue to grow.

Stormwater facility inspections and maintenance is performed by staff in both the Engineering and Public Works departments. Each department uses its own software for documentation which has proven to be time intensive and difficult to compile for annual MS4 reporting.

The City has also entered into agreements for the maintenance and operation of shared stormwater management facilities. The maintenance agreements describe the roles of each organization and how the maintenance costs are divided between partners.

Maintenance Access

Proper access through access agreements is needed to inspect and maintain storm sewer pipe, outfalls, and receiving waters. Some of the City's receiving waters, including Priebe Lake, Bossard Pond, and Oak Knoll Pond, lack public access. Where easements exist, obstructions such as fences and trees hinder access in some locations.

PAH Contamination

PAHs (Polycyclic Aromatic Hydrocarbons) are a class of organic chemicals that occur naturally in crude oil and coal, and are present in products made from these fossil fuels such as gasoline, creosote, asphalt, and coal tar. PAHs are also formed by the incomplete combustion of organic materials such as wood and fossil fuels. PAHs persist in the environment, are toxic to aquatic life, and some are listed in Minnesota as possible or probable human carcinogens.

PAHs are being discovered in the sediment of stormwater ponds in Minnesota, primarily in urbanized areas. Research conducted by the MPCA, Metropolitan Council, and the U.S. Geological Survey concluded that coal tar based driveway sealants are a major source of PAHs in stormwater pond sediment (67%) followed by vehicle emissions (29.5%).

One of the costliest ongoing maintenance activities of the City is pond cleanout work as it relates to requirements of the NPDES MS4 Permit. The MPCA's Managing Stormwater Sediment Best Management Practices Guidance describes when the dredged sediment can be used as unregulated clean fill and when it is considered regulated solid waste. The cost difference can be significant depending on the levels of PAH contamination found in the sediment. The City tested sediment in five receiving waterbodies in 2007 and 2008: Lily Lake, Varney Lake, Peppertree Pond, Oak Knoll Pond and Heiner's Pond**.** Lily Lake was the only waterbody out of the five that did not test positive for PAH contamination and was subsequently dredged. Of the four that tested positive, only Varney Lake was dredged in 2011/2012 as part of a pilot project. The project is described in Section 4.7.3 Pollution Prevention, Operations, and Maintenance Past Projects.

The City has not completed additional work on PAH contaminated ponds due to the high cost to remove and dispose of the material at a landfill certified to receive contaminated material. Other Cities that have completed work that included PAH contaminated sediment have seen costs that are nearly three times higher than the disposal cost of clean sediment.

In January of 2019, the cities of Bloomington, Burnsville, Eden Prairie, Golden Valley, Maple Grove, Minnetonka and White Bear Lake filed a federal lawsuit against seven refiners of coal tar for allegedly contaminating numerous stormwater ponds with PAHs. The lawsuit alleges that the defendants marketed and sold the refined coal tar products for use in pavement coatings knowing they were toxic and not safe. The lawsuit seeks to recover the costs associated with increased monitoring and testing of stormwater sediments and increased disposal costs for PAH-contaminated dredged waste.

Road Salt

Chloride is a main component of most deicing products commonly used by municipalities to maintain safe road conditions in the winter. Chloride applied to roads will dissolve in melting snow and ice and be transported by storm sewers to local lakes and wetlands. Once in water, chloride is very difficult to remove and will continue to accumulate over time. Elevated concentrations of chloride in waterbodies are toxic to aquatic plant and animal life. Concentrations of chloride in shallow groundwater are also increasing. If this trend continues, higher concentrations in deep aquifers may eventually occur.

The MPCA's Twin Cities Metropolitan Chloride Management Plan states that there are currently no alternative deicing products that are environmentally safe and economical to use; therefore, efforts should focus on improving winter maintenance practices that reduce deicing product usage. The City continues to refine its winter salt application procedures to minimize salt use on roadways and parking lots, recognizing that additional opportunities may exist to reduce salt usage even further without negatively impacting road safety.

Street Sweeping

Pollutants such as road salt, sediment, leaves, grass clippings, oil, trash, and other debris collect on the surface of streets and parking lots. Street sweeping prevents these pollutants from washing into storm sewers and surface waters. Street sweeping not only provides significant benefits in achieving water quality goals, but frequent sweeping may also reduce the need for catch basin and outfall maintenance.

Proper equipment, timing, and frequency are critical to the effectiveness of street sweeping. The Center for Watershed Protection recommends an optimal sweeper frequency of about twice between each rainfall event. In addition, TMDL implementation plans for many of the local impaired lakes identify improvements in sweeping equipment and technology and targeted frequent sweeping as a priority load reduction strategy. While the City sweeps all streets at least twice per year, implementing more frequent and targeted sweeping would require a substantial financial investment in additional equipment and staff.

Illicit Discharges

Illicit discharges include any discharge into a storm sewer system that is not entirely composed of stormwater. The City developed an illicit discharge detection and elimination (IDDE) program as part of its MS4 Permit to detect, address, and prevent illicit discharges. Staff and residents that identify illicit discharges report to the City's code enforcement or Engineering Department. There are approximately five illicit discharge reports per year for violations that generally involve small spills or illegal dumping. There continues to be a need to further refine the City's IDDE program and focus additional efforts on educating residents, businesses, and contractors about the hazards of illicit discharges and to provide convenient locations for residents to properly dispose of household hazardous waste, bulky waste, and yard waste.

Training

MS4s must develop a training program for all municipal staff involved in activities that could discharge pollutants to the City's storm sewer system. Staff must be trained in pollution prevention/good housekeeping techniques to prevent and reduce stormwater pollution from activities such as:

- Building maintenance
- Vehicle fleet maintenance
- Landscaping and park maintenance
- Stormwater system maintenance
- Winter road maintenance
- Proper waste disposal
- Hazardous waste spill prevention and control

IDDE training for staff is also required as part of the MS4 Permit. Understanding illicit discharge regulations, hazards, identification, and reporting is essential for success of the program. To minimize duplication of effort and cost, the City shall use existing training programs and training materials available from the MPCA and Watershed Management Organizations whenever possible.

4.7.2 Pollution Prevention, Operations, and Maintenance Policies, Goals, and Objectives

The policies, goals, and objectives that correspond to the issues identified in subsection 4.7.1 are summarized in Table 21. The issue heading is first, followed by a related policy. The goals for that policy are identified in the first column of the table. The corresponding objectives for that goal are found in the third column. Each objective is assigned a unique number (second column) to assist with tracking the objectives in Table 26 Implementation Plan in Chapter 5.

Table 21. Pollution Prevention, Operations, and Maintenance Policies, Goals, and Objectives

Issue: Inspection and maintenance of City owned facilities		
Policy: Implement an inspection and maintenance program for City owned facilities in accordance with the City's MS4 permit.		
Goal	**Objective**	
City Facilities - Prevent pollution to surface water resources and groundwater through proper maintenance of municipal buildings, vehicle fleet, landscaping, and parks.	7.1	Develop a map or GIS database of City owned/operated facilities. Identify facilities that have the potential to contribute pollutants to stormwater (public works facilities, snow storage areas, parks, public parking lots, etc.)
	7.2	Continue to inspect the Public Works and old Public Works facilities on a quarterly basis. This task includes locating and inspecting all exposed stockpiles and storage/material handling areas and documenting any identified erosion control or runoff issues.
City-owned Stormwater Facilities - Preserve the performance of City owned	7.3	Maintain storm sewer conveyance infrastructure (pipes, catch basins, manholes, ditches)

stormwater management facilities through regular inspection and maintenance.	7.4	Inspect 20% of outfalls each year. Record and track follow-up actions needed for maintenance. Maintain as necessary and evaluate frequency of maintenance required. Inspect for illicit discharges as part of the outfall inspections.
	7.5	Inspect 20% of receiving waters each year. Record and track follow-up actions needed for maintenance. Monitor sedimentation and implement pond cleanout and dredging, when needed, as per the process outlined in the MPCA Managing Stormwater Sediment Best Management Practices guidance document. Inspect for illicit discharges as part of the receiving waters inspections.
	7.6	Inspect all City-owned structural pollution control devices on an annual basis. Record and track follow-up actions needed for maintenance. Maintain as necessary and evaluate frequency of maintenance required.
	7.7	Continue to maintain City owned raingardens each season. Maintenance includes weeding, mulching, and removing sediment from pretreatment devices.
	7.8	Annually inspect stormwater reuse systems at Lakewood Hills and Boatworks and maintain as needed.
	7.9	Remove sediment deltas at storm sewer outfalls in White Bear Lake. Identify outfall locations that need armoring.
	7.10	Record inspections, follow-up actions, and completed maintenance in the City's MS4 software.
	7.11	Develop a GIS database for inspections and maintenance which includes a mobile application for field inspections.
	7.12	Update the inspection and maintenance Standard Operating Procedure (SOP) and maintenance schedule for cleaning and repairing sump catch basins, swirl separators, underground infiltration pipes, infiltration basins, and ponds. Continue to periodically review the SOP and update as needed.
	7.13	Develop procedures for determining treatment capacity (TSS and TP treatment effectiveness) of city-owned stormwater ponds/receiving waters.
	7.14	Conduct an annual assessment of the City's operation and maintenance program to evaluate compliance with the City's MS4 General Permit and to determine how the program might be improved. Document any changes made to the program.

Stormwater Related Maintenance Agreements - Collaborate with partners to ensure that stormwater facilities are maintained as detailed in the stormwater maintenance agreements (Appendix D).	7.15	4th and Otter iron sand filter maintenance PW2019-14.
	7.16	Whitaker Pond PW2009-19.
	7.17	County Road F Raingardens PW2002-17.
	7.18	Priebe Lake Outlet
	7.19	Central Middle School stormwater BMP "Water Tracks" inspection and maintenance of sumps and underground pipe via vac truck (verbal agreement with VLAWMO).
	7.20	South Heights Stormwater Pond Maintenance Agreement PW2020-02M (not executed)
	7.21	Maintenance postcard to residents of the 2009 and 2012 raingarden projects. Consider other methods of outreach such as a neighborhood maintenance workshop.
Issue: Maintenance access		
Policy: All new stormwater management facilities shall have a designated access location and recorded maintenance easement.		
Goal	**Objective**	
Maintenance Access - Strive to provide adequate maintenance access to all existing City-owned stormwater management facilities.	7.22	Identify receiving waters and storm sewer infrastructure with no access easements. Review possible access locations on a project by project basis. Obtain easements/rights of access from private property owners if feasible.
Issue: PAH Contamination		
Policy: Identify locations of PAH contaminated sediment in City receiving waters and strive to remove accumulated sediment in a cost effective manner.		
Goal	**Objective**	
PAH Contamination – Determine the extent of PAH contamination in City receiving waters and the available funding sources for proper removal and disposal of PAH contaminated sediment.	7.23	Collect and test pond sediment samples to determine locations, types and concentrations of PAH contamination as per the MPCA Managing Stormwater Sediment Best Management Practices Guidance document.
	7.24	Secure funding to properly dispose of PAH contaminated sediment.
Issue: Road Salt		
Policy: Minimize salt use while maintaining safe roadways.		
Goal	**Objective**	
Winter Street Maintenance Program – Strive to reduce salt use through smart salt training and implementation.	7.25	Annually review the WBL Snow and Ice Control Policy and application practices. Consider alternative products, calibration of equipment, inspection of vehicles and staff training to reduce salt use. Include practices to reduce exposure when transferring material from salt storage

		areas. Revise as necessary to ensure compliance with the MS4 general Permit.
	7.26	Document the amount of deicer applied each winter maintenance season on all City owned surfaces. Determine an effective method for tracking salt use.
	7.27	Annually assess thew winter maintenance operations to reduce the amount of deicing salt applied to City owned surfaces and to determine current and future opportunities to improve BMPs. Consider utilizing the MPCA WMAt tool to assess existing practices, identify areas for improvement, and track progress.
	7.28	Retrofit plow trucks with salt saving equipment, such as equipment that can change the rate of salt application based on driving speed.
Issue: Street Sweeping		
Policy: Continue to implement the City's street sweeping program in accordance with the City's MS4 Permit.		
Goal	**Objective**	
Street Sweeping Program - Reduce pollutant loading to water resources through effective street sweeping.	7.29	Continue to sweep all City streets at least once in the spring and once in the fall, with more frequent sweeping around lakes and in the downtown area and in areas where larger quantities of debris accumulate.
	7.30	Increase the frequency of street sweeping in untreated areas that are directly tributary to an impaired waterbody. Track areas where larger quantities of debris accumulate for more frequent sweeping.
	7.31	Establish a sweeping schedule for the pervious pavement at Lion's Park.
Issue: Illicit Discharges		
Policy: Continue to implement the Illicit Discharge and Detection Elimination (IDDE) Program in accordance with the City's MS4 Permit.		
Goal	**Objective**	
IDDE Program- Reduce the frequency and environmental impact of non-stormwater pollutants that are intentionally or accidentally discharged into the City's storm sewer system.	7.32	Implement BMPs that prevent or reduce pollutants in stormwater dischare from landscaping, park, and lawn maintenance, road maintenance, and ROW maintenance. Create standard operation procedures for these activities.
	7.33	Identify and document written or mapped priority areas likely to have an illicit discharge such as business/industrial sites, storage areas with materials that could result in an illicit discharge, and areas where illicit discharges have occurred in the past. Conduct additional inspections in these areas. Document all inspection activities in compliance with the reissued MS4 permit.

	7.34	Incorporate IDDE into all City inspection and maintenance activities and coordinate with the Engineering Department, Building Department, and Public Works Department to establish a consistent record keeping system. Document all inspection and maintenance activities in compliance with the reissued MS4 permit.
	7.35	Work with Police, Fire, Engineering, and Public Works staff to revise the standard operating procedures (SOPs) for: 1) investigating, locating, and eliminating the source of illicit discharges; 2) spill response procedures; and 3) Enforcement procedures, to be in compliance with the requirements of the reissued MS4 General Permit.
	7.36	Conduct an annual assessment of the City's IDDE program to evaluate compliance with the City's MS4 General Permit and to determine how the program might be improved. Periodically review the IDDE ordinance, standard operating procedures (SOP), and enforcement response procedures and revise if necessary. Document any changes made to the program.
	-	Amend the IDDE ordinance to include pet waste disposal requirements and proper salt storage at commercial, institutional, and non-NPDES permitted industrial facilities. A*ddressed through implementation of the City's regulatory program (section 6.2).*
Storm Sewer Map - Maintain a map of all storm sewer infrastructure including pipes, catch basin sumps, ponds, outfalls, and structural stormwater BMP's.	7.37	Annually update the storm sewer map to reflect newly constructed/modified pipes, outfalls, and structural stormwater BMP's.
	7.38	Implement a GIS-based database management system for the storm sewer system that is linked with the system map. Include ID numbers for outfalls and ponds, date installed, asbuilt information, inspection results, and any maintenance performed or recommended.
	7.39	Develop a GIS database to track all private stormwater best management practices that are included in Stormwater Operation and Maintenance Agreements (SOMAs). Include soil borings, record drawings, SOMAs and stormwater calculations in the database.Consider also including BMP's installed through WMO cost share programs.
Waste Disposal - Provide opportunities for residents to properly dispose of	7.40	Continue to partner with Ramsey County and WBLA School District to provide a household hazardous waste mobile site and medicine collection program in the City.

pharmaceuticals, household hazardous waste, and yard waste.	7.41	Promote the Washington County Environmental Center and Ramsey County year-round household hazardous waste and yard waste facilities.
Issue: Training		
Policy: Provide training opportunities for City staff including pollution prevention, good housekeeping, winter salt application, and illicit discharge detection and elimination.		
Goal	**Objective**	
Staff Training - Develop and implement a stormwater management training program for City employees commensurate with each employee's job duties to address the importance of protecting water quality and to identify, prevent, and correct illicit discharges from daily public works activities and other City operations.	7.42	Continue to send Public Works staff to the U of M Stormwater BMP Maintenance certification course. Document date of event, subject matter, and individuals in attendance.
	7.43	Continue to send Public Works staff that perform winter maintenance activities to the MPCA Smart Salt training annually. Document date of event, subject matter, and individuals in attendance.
	7.44	Continue to require at least one City parks staff member to maintain a pesticide applicator certification.
	7.45	Train field staff annually on illicit discharge recognition and reporting. Field staff includes police, fire, public works, building, and engineering. Currently this training is provided as part of the annual employee safety training at City Hall. Document the date, names and departments of attendees, and subject matter.
	7.46	Provide illicit discharge training to individuals commensurate with their responsibilities, including those responsible for investigating, locating, eliminating illicit discharges, and enforcement. Previously trained individuals shall attend a refreshed training every 3 years following the initial training. Document date, names and departments of attendees, and subject matter.
	7.47	Conduct annual spill prevention and response training sessions and review spill containment and cleanup procedures with Public Works staff. Provide training for best management practices in the handling of hazardous materials.
	7.48	Provide other training as needed.
	7.49	Review staff training programs and literature annually and make changes as necessary. Educational material, presentations, and requests for additional information will be distributed and documented.

4.7.3 Pollution Prevention, Operations, and Maintenance Past Projects

Varney Lake Sediment Removal Project

Receiving Water: Willow Creek, Kohlman Lake

In 2007 and 2008, the City hired a consultant to test sediment in five receiving waters: Heiner's Pond, Lily Lake, Oak Knoll Pond, Peppertree Pond, and Varney Lake for possible PAH contamination. All receiving waters except for Lily Lake tested above level 1 for PAH contamination.

Varney Lake sediment sample results revealed high levels of PAH contaminated sediments. In 2011, the City secured a Clean Water Land and Legacy grant in partnership with the MPCA to excavate approximately 10,000 cubic yards of contaminated sediment and encapsulate it on-site in a top soil covered berm rather than trucking the sediment to a costly hazardous waste disposal site. The berm, located in an upland area on the north end of Varney Lake, is covered with two fabric liners and approximately two feet of topsoil and landscaping. The demonstration project included five years of testing to monitor the fate and migration of the PAH contaminates in the covered berm. The results of the testing validated a University of Minnesota study that PAH compounds do not leach off sediment particles and enter ground water.

Priebe Lake Restoration, Sediment Removal, and Storm Sewer Project (Project 99-08)

Receiving Water: White Bear Lake

As part of the Priebe Lake Restoration Project described in section 4.3.3, the City hired a contractor to remove accumulated sediment deltas at all storm sewer outfalls to the Lake and to repair the outfall structures. In late fall, the lake was drawn down by opening a plug in the outlet structure so that the lake bed would dry out and freeze. Access to the lake was negotiated with the property owners on the southeast east side of the lake, between 2685 South Riviera Drive and 2691 South Rivera Drive.

Other Sediment Dredging Projects

- **Wetland East of E County Line Road, Washington County:** The City reimbursed Washington County for dredging sediment out of the wetland downstream of Priebe Lake.

- **Lily Lake:** City tested sediment in five receiving waterbodies in 2007 and 2008: Lily Lake, Varney Lake, Peppertree Pond, Oak Knoll Pond and Heiner's Pond. Lily Lake was the only waterbody out of the five that tested below level 1 PAH contamination and was subsequently dredged.

- **White Bear Lake (project 87-10):** In the late fall of 1987, the City dredged accumulated sediment in White Bear Lake at Lion's Park to improve fishing, navigation, and to make it easier to launch canoes. The sediment accumulated in the bay over time due to the prevailing wind and erosion.


Dredging park
THE CITY of White Bear Lake cleaned up the silt in Lion's Park

White Bear Press, November 30, 1988

4.8 Funding

4.8.1 Funding Issues

Funding Mechanisms

Adequate funding is necessary to meet the objectives of this SWMP and to comply with local, state, and federal regulations. The City utilizes various budget funds to implement its stormwater program. Some of these budget funds are supported by property taxes. The City anticipates establishing a more stable and equitable method of funding its stormwater program while also keeping the burden on taxpayers as low as possible by prioritizing objectives and finding alternative sources of funding.

Partnerships

The City will continue to partner with other organizations that share common water resource protection goals, recognizing that there may be additional opportunities for partnerships to meet shared goals in a more cost-effective manner.

4.8.2 Funding Policies, Goals, and Objectives

The policies, goals, and objectives that correspond to the issues identified in subsection 4.8.1 are summarized in Table 22. The issue heading is first, followed by a related policy. The goals for that policy are identified in the first column of the table. The corresponding objectives for that goal are found in the third column. Each objective is assigned a unique number (second column) to assist with tracking the objectives in Table 26 Implementation Plan in Chapter 5.

Table 22. Funding Policies, Goals, and Objectives

Issue: Funding Mechanisms		
Policy: Prioritize funding and staff resources to most effectively meet the objectives of this SWMP while minimizing impact on taxpayers by pursuing other funding sources.		
Goal	**Objective**	
Alternate Funding Sources- Adequately fund the City's stormwater program while minimizing impact on taxpayers by seeking out grants and other alternative sources of funding.	8.1	Review and adjust the stormwater utility fee to meet expenditure needs.
	8.2	Pursue grants and other funding sources to help fund the activities and projects in this SWMP.
	8.3	Complete an annual review of the City's 10-year Capital Improvement Plan and identify priority projects and funding sources.
	8.4	Fund the 2031-2040 Surface Water Management Plan.
Issue: Partnerships		
Policy: Manage costs by seeking out partnerships with other entities that share common goals.		
Goal	**Objective**	
Partnerships – Leverage partnerships with watershed organizations, neighboring communities, and other	8.5	Continue to attend the RWMWD Public Works Forum and the RCWD City/County Partner Meetings to identify opportunities to partner with WMOs, Ramsey County, and other communities to meet shared objectives.

organizations that share common water resource protection and education goals.	8.6	Continue membership with the Minnesota Stormwater Coalition through the League of MN Cities.
	8.7	Continue membership with Watershed Partners through Hamline University.
	8.8	Continue membership in the GreenStep Cities program.
	8.9	MS4 General Permit Fee

Chapter 5. Implementation

This Chapter describes the programs, activities, and collaborations relevant to the implementation of the objectives established in Chapter 4 of this Surface Water Management Plan (SWMP). Since a number of agencies have jurisdiction over water resources within the City, roles of each of these agencies are also described.

5.1 City Roles and Responsibility

The City's roles and responsibilities related to surface water management are listed below. These roles are described in more detail throughout this chapter.

- Land use planning
- Prepare a Local Surface Water Management Plan
- Establish official controls for surface water, shoreland, wetland, and floodplain management
- Implement official controls and permit programs
- Inspect, maintain, and reconstruct the City's stormwater system
- Manage nutrient loads to impaired waterbodies to meet state water quality standards
- Construct capital improvement projects to control flooding and to protect and improve water quality.
- Educate the public, staff, and City Council
- Develop and implement a wellhead protection plan to protect groundwater supplies
- Control noxious weeds

5.2 Programs and Activities

This section describes the various City programs and activities in place to make progress towards the goals and objectives identified in Chapter 4 of this SWMP. For consistency, the programs and activities in this section are organized into the same eight major categories and sub-category headings as in Chapter 4:

1. Stormwater Runoff Management
2. Lake, Stream, and Wetland Management
3. Natural Resources Management and Recreation
4. Groundwater Management
5. Public Education and Participation
6. Regulatory Program
7. Pollution Prevention, Operations, and Maintenance
8. Funding

Many of the objectives listed in Chapter 4 and in the implementation plan in Section 5.3 of this Chapter are also required as part of the City of White Bear Lake's Storm Water Pollution Prevention Program (SWPPP). The City's SWPPP supports its General Storm Water Permit for Small Municipal Separate Storm Sewer System's (MS4) as required by the Minnesota Pollution Control Agency (MPCA). The MPCA's

program is in response to the federal Phase II storm water regulations issued by the United States Environmental Protection Agency (EPA). The MS4 General Permit was re-issued on November 16, 2020. New permit requirements have been incorporated into this SWMP. The City will continue to submit an annual report to the MPCA by June 30th of each year documenting SWPPP activities from the previous year.

5.2.1 Stormwater Runoff Management

Stormwater rate and volume Control

Development and redevelopment projects provide an opportunity to install rate and volume control practices on public and private property. The City of White Bear Lake's street reconstruction program is the main program used to help meet the City's stormwater runoff rate and volume control objectives. Every year the City of White Bear Lake reconstructs 2 to 3 miles of streets. Reconstructed City streets are improved to a "urban section" (streets with concrete curb and gutter and storm sewer). Street reconstruction provides the most cost-effective time to install and upgrade rate and volume control practices. These practices are designed to meet NPDES Permit requirements, Watershed District rules, and City stormwater standards. The City's Engineering Department is responsible for design and construction oversite and acquiring all stormwater related permits. All City-owned streets and parking lots are anticipated to be fully reconstructed by 2030.

The City's permitting program regulates private development and redevelopment to minimize increases in stormwater runoff rates and to reduce runoff volumes. The City's regulatory program is described in section 5.2.6 Regulatory Program.

Since 2008, the City's Engineering Department has kept records of the volume reduction required and provided for each street reconstruction project within RCWD, RWMWD, and VLAWMO. Table 23 summarizes the volume banking totals through 2020.

Table 23. Volume Reduction Banking Totals Through 2020

Watershed Management Organization	Total Volume Banking (cubic feet)
RCWD	13008
RWMWD	6,016
VLAWMO	-3,214

RWMWD rules allow for projects with volume reduction provided above their volume control requirement to be banked for use on another project. RCWD had a similar volume control credit program that allowed for public linear project volume banking, but discontinued the program in 2013. Volume control credits and debits established for public linear projects within RCWD prior to July 2013 will continue to be recognized and enforced until all credits are used or debits are fulfilled. RCWD encourages the City to continue to use its credits on future projects. The City used RCWD volume credits for the 2020 street reconstruction project and will consider using additional credits for street reconstruction projects planned in 2022.

As part of street reconstruction and mill and overlay projects, the City collaborates with Watershed Management Organizations (WMOs) to provide an opportunity for interested residents to install a curb

cut raingarden on their property. The City markets and coordinates the program and provides the curb cut, and the WMOs provide cost share funding, design, contractor coordination, and maintenance education. Residents sign a contract with their respective WMO agreeing to maintain the raingardens throughout the term of the contract.

Stormwater runoff quality

Volume control practices are installed as part of the City's street reconstruction program. The City's stormwater standards allow for water quality requirements to be satisfied if the volume control requirement is met. In situations where volume control via infiltration is not feasible, water quality standards shall be met using the MIDS flexible treatment options outlined in the City's Engineering Design Standards for Stormwater Management.

The City's permitting program regulates private development and redevelopment to minimize increases in stormwater runoff rates and to reduce runoff volumes. The City's regulatory program is described in section 5.2.6.

Public Works staff maintain City owned buildings, parks, streets, and storm sewer infrastructure to minimize pollutants. The City's pollution prevention, operations, and maintenance program is described in section 5.2.7.

Localized Flooding

Many known localized street flooding issues have been addressed by infrastructure improvements over the past 20 years; however, minor street flooding still occurs in some areas. The City's storm sewer infrastructure and road right-of-way is effective at conveying stormwater, although localized street flooding can occur due to flat grades, lack of storm sewer infrastructure, plugged storm sewer inlets, undersized storm sewer or inlets, and street settling.

Localized street flooding typically occurs where a localized area of roadway sinks over time and in alleys that are not serviced by storm sewer. The flooding in the alley between 7th Street and 8th Street and localized flooding at Lakeview Avenue and Cottage Park Road identified in the public survey was addressed when storm sewer was installed in the alley as part of the 2018 and 2020 street reconstruction projects respectively. Other identified localized flooding areas are addressed by the City's Engineering Department as streets are reconstructed.

Climate Adaptation

As rainfall events trend toward more intense rainfall and greater depth storms in the summer, and more snowfall and milder temperatures in the winter, the City's stormwater infrastructure should be analyzed to determine if changes to the City's stormwater infrastructure are needed to increase conveyance and ponding capacity. RCWD and RWMWD updated their hydrologic and hydraulic models based on current rainfall data including the new design precipitation values published through NOAA's Atlas 14. The results of this effort provide new 100-year flood elevations. The RCWD modeling results do not show future flood risk in the portion of the City within the RCWD boundary. Results from the RWMWD model are currently being evaluated to determine the level of future flooding risk. RWMWD will be communicating with its member cities about flood risk areas and, in some cases, working to implement flood control projects to mitigate the flooding from future 100-year storm events.

The VBWD has updated its hydrologic and hydraulic modeling of the Silver Lake watershed since the adoption of its 2015 watershed management plan. The modeling was performed using a continuous

precipitation record dating back to 1949, from which the 100-year event has been extrapolated using statistical methods.

5.2.2 Lake, Stream, and Wetland Management

Impaired Waters

Section 303(d) of the federal Clean Water Act (CWA) requires states to designate beneficial uses for waters and to develop water quality standards to protect these uses. The Minnesota Pollution Control Agency (MPCA) administers the requirements of the federal Clean Water Act and maintains a list of impaired waters that do not meet water quality standards. Each impaired waterbody requires an assessment to determine the sources of the impairment. This process is known as a total maximum daily load (TMDL) analysis. A TMDL establishes the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards for that pollutant. Through the TMDL process, a waste load allocation (WLA) is developed that assigns allowable pollutant loadings from each contributor. Watershed Management Organizations within the City have taken a lead role in TMDL assessments and implementing capital improvement projects. In general, the City is expected to fulfill MS4 responsibilities to help meet WLA's and to assist in finding opportunities for the implementation of projects and to provide support for projects within the City's right-of-way. Through the Joint Power's Agreement with VLAWMO, the City agrees to partner on all capital improvement projects within the City's jurisdiction, including future projects identified through the Goose Lake Adaptive Management Planning process.

ORVW Waters: Approximately 180 acres of the southeast corner of the City lies within the Valley Branch Watershed District. The ultimate discharge from this watershed is the Saint Croix River, which is listed as an Outstanding Resource Value Water (ORVW) because of its designation as a national scenic river, and as such is subject to restricted discharge in accordance with Minnesota Rules 7050.0335.. The City will work with the MPCA to determine if an ORVW assessment is required due to the following circumstances:

- The portion of the City within VBWD flows to another MS4 community
- The portion of the City within VBWD is at the top of a watershed that flows south to Silver Lake in Maplewood, which is not on the MPCA impaired waters list
- The City does not anticipate changes in land use, hydrology, or modifications to the City's MS4 system in this area;
- The City and VBWD have both adopted minimal impact design standards (MIDS) and will address water quality improvements as part of street reconstruction projects.

Within this boundary is the Century College MS4, which encompasses 77.5 acres and the Minnesota Department of Transportation MS4 encompassing the rights-of-way for Interstate 694 and TH 120 (Century Avenue).

MS4 Permit WLA: The Municipal Separate Storm Sewer Systems (MS4) Permit Total Maximum Daily Load (TMDL) Waste Load Allocations (WLAs) List includes United States Environmental Protection Agency (EPA) approved TMDL WLAs for permitted MS4s. The new MS4 General Permit that was reissued on November 16, 2020 includes new WLA requirements. The City will work with each of the four Watershed Management Organizations for assistance in meeting these requirements.

High Quality Lakes

The City's Engineering Department collaborates with Watershed Management Organizations and lake conservation districts on a number of projects that help protect White Bear Lake and Birch Lake, both of which have good overall water quality. The City will continue to work with partners to identify capital projects and provide ongoing education and outreach.

Wetlands

Wetland Functions and Values. Ramsey Washington Metro Watershed District (RWMWD) completed a MnRAM functions and values assessment to classify wetlands within their jurisdiction for management purposes. The assessment classifies wetlands into management categories that are used to create wetland management standards for permitting and regulatory programs. The RWMWD wetland classification categories defined in the RWMWD 2017-2026 Watershed Management Plan are included below. These wetland management categories are based on the MnRAM 3.0 basic protection standard flowchart for classification.

- **Manage A** (MnRAM 3.0 Preserve) – Management A wetlands are the exceptional and highest-functioning wetlands or those sensitive wetlands receiving conveyed stormwater runoff that have yet retained a medium level of vegetative diversity/integrity. They are wetlands that should be preserved in (or improved to) their most pristine or highest functional capacity with wide, natural buffers, in perpetuity.

- **Manage B** (MnRAM 3.0 Manage 1) – Management B wetlands are high-quality wetlands that should be protected from development and other pressures of increased use, including indirect effects. Maintaining natural buffers will help to retain the significant function these wetlands provide.

- **Manage C** (MnRAM 3.0 Manage 2) – Manage C wetlands provide medium functional levels and the wetland extent should be maintained. Maintaining natural buffers will help to retain the significant function these wetlands provide. These wetlands often provide optimal restoration opportunity.

Table 24 summarizes the RWMWD wetland management classifications for wetlands within the City, and includes a summary of buffer and water quality pretreatment standards that are incorporated in the RWMWD rules and regulations.

Table 24. RWMWD Wetland Classification and Water Quality Requirements

Wetland Name	RWMWD Classification	Buffer Requirements[1]		Water Quality Pretreatment Requirement[2]
		Minimum Buffer(ft)	Average Buffer (ft)	
Willow Wetland	Manage A	37.5	75	90% total suspended sediment (TSS) removal
Handlo's Pond	Manage B	25	50	
Peppertree Pond				
Varney Lake				
Heiner's Pond	Manage C	12.5	25	

[1] RWMWD regulations do not allow stormwater BMP's within the wetland buffer

[2] From runoff generated by a 2.5" of rainfall. See RWMWD rules for further design requirements.

Valley Branch Watershed District performed a District-wide inventory from 2007 through 2009 using the MnRAM assessment. Most of the wetlands within the VBWD boundary that are located within the City have been inventoried. The complete inventory and assessment is available on the VBWD website at www.vbwd.org.

Starting in 2019, Vadnais Lake Area Water Management Organization (VLAWMO) began developing a method to assess wetland functions and values, which will include wetland delineations and a MnRAM wetland assessment. Over the timeframe of this SWMP, all wetlands within the VLAWMO jurisdiction will be assessed and classified, including Rotary Wetland in White Bear Lake.

The City of White Bear Lake adopts the classification systems for the geographic area of the individual Watershed Management Organizations.

5.2.3 Natural Resources Management and Recreation

Native Habitat

Preserving and restoring native habitat is recognized by local Watershed Management Organizations (WMOs) as an important component for improving watershed health while also providing valuable fish and wildlife habitat. This involves focusing on preserving and restoring aquatic and associated upland habitats and is typically accomplished through partnerships with both public and private entities.

The White Bear Lake Environmental Advisory Commission (EAC) is working towards increasing pollinator friendly natural habitat in the city by creating "pollinator pathways" where pollinators have pesticide-free corridors of habitat spanning both public and private properties. As a first step in developing pollinator pathway corridors, the EAC is identifying existing native habitat sites through an interactive pollinator map on the City's website, where residents and businesses can add their existing pollinator friendly gardens to the map.

To assist with conservation planning and to ensure compliance with the Minnesota endangered species laws, the DNR encourages communities to check the Natural Heritage Information System (NHIS) data for known occurrences of state-listed species. The NHIS list of rare plants, animals and significant natural areas within the City of White Bear Lake are summarized in Chapter 2, Table 7. To assist the City with preserving these species and their habitat, the DNR created the Rare Species Guide that includes information on the biology, habitat use, and conservation measures. The guide can be found at: https://www.dnr.state.mn.us/rsg/index.html. The City will consult this guide when planning restoration projects. The City will also consider polices for taking wildlife into consideration in transportation and redevelopment projects, which is discussed in section 5.2.6.

Lake and Wetland Buffers. The City owns numerous lakeshore and wetland properties. Where possible, the City partners with the Department of Natural Resources (DNR) and WMOs to establish native buffers. Some of the completed shoreline restoration projects are highlighted in Section 4.3.3.

As part of the City's public education and outreach program described in Section 5.2.5, the City provides educational materials to private lakeshore owners about the importance of natural buffers and resources for technical and financial assistance.

Requirements for development in shoreland areas is discussed in section 5.2.6. As part of the planned ordinance revisions in 2021, the City will review buffer language and consider revisions that promote native vegetation.

Minnesota's Buffer Law, signed into law by Governor Mark Dayton in 2015, requires an average 50-foot and minimum 30-foot buffer of perennial vegetation along lakes, rivers, and streams and buffers of 16.5 feet along ditches. Exemptions includes preexisting structures such as buildings and paved roads and trails. The deadline for implementation for buffers on public waters was November 1, 2017, and the deadline for public ditches was November 1, 2018. The law provides flexibility for landowners to install alternative practices with equivalent water quality benefits that are based on the Natural Resources Conservation Service Field Office Technical Guide. As of December 2018, approximately 96% of parcels adjacent to Minnesota waters are compliant with the buffer law. In Ramsey County, the Ramsey Soil and Water Conservation Division (SWCD) is responsible for inspections of compliance with the buffer law. Every two years, SWCD performs an aerial photo check on parcels for red flags, and then chooses 12 sites for on the ground inspections. The SWCD reports to BWSR who is the legal authority. If there is an issue that is related to an MS4 permit, BWSR communicates this to the MPCA.

Upland Habitat Establishment. In the fall of 2019, the Environmental Advisory Commission and Parks Commission held a joint meeting to discuss partnership opportunities for potential habitat restoration projects in City parks. In response to the joint meeting, staff created a list of priority locations for restoration projects, including Bossard Park, Matoska Park, and Lakewood Hills Park; with the ultimate goal of conducting vegetation surveys and creating a City-wide habitat restoration management plan. As part of the restoration plan, the City will identify possible partnerships to complete projects. Each of the four Watershed Management Organization's offer technical expertise and cost share funding for upland habitat establishment. The WMO's also typically have an extensive volunteer base for help with invasive species removal and planting. Local native plant groups and lake associations may also be a source for volunteers. The City and Rotary Club partner each spring for an Arbor Day tree planting event, and there may be opportunities to incorporate restoration projects into this annual event.

The City also encourages native plants and habitat restoration projects on private property by providing information on the City's website and newsletters, which is described in section 5.2.5.

Vegetation Maintenance. The City contracts with a restoration company for the long-term maintenance of native plantings and restorations on City-owned property, including raingardens, shorelines, and upland areas. Public Works Parks Department staff prefers this arrangement to continue into the foreseeable future.

Invasive Species

There are several laws and regulations in place intended to minimize the introduction and spread of terrestrial (land-based) and aquatic (water based) invasive plants and animals.

Invasive Species Management

Terrestrial Invasive Plants. The Minnesota Department of Agriculture regulates terrestrial invasive plants through the Minnesota Noxious Weed Law (State Statutes 18.75-18.91 and 160.23). Enforcement of the Noxious Weed Law is the shared responsibility of Counties, Cities, and Townships. Noxious weeds are classified as prohibited, restricted, or specially regulated depending on the level of regulation and allowable uses for each species:

- *State Prohibited Noxious Weeds* are separated into two regulatory listings - eradicate and control. Plants in the eradicate list are not widely established in Minnesota but must be eradicated if found. Plants in the control list are established in Minnesota and must be controlled to prevent further spread and maturation. For both listings, propagation, sale, or transportation of these plants in prohibited.

- *Restricted Noxious Weeds* are widely distributed in Minnesota and the only feasible means of control is to prevent their spread by prohibiting the importation, sale, and transportation in the state. Restricted Noxious Weeds are not required to be controlled or eradicated by law, but management is strongly encouraged to reduce the spread to new areas.

- *Specially Regulated Plants* may have demonstrated economic value and be sold commercially but have the potential to cause harm in non-controlled environments. The MDA define the use and management requirements for each plant.

The City's Engineering Department contracts with a shoreline restoration company each season to control Purple Loosestrife and Knotweed on City owned shorelines along Heiner's Pond and White Bear Lake. Knotweed is categorized by the MDA as a Specially Regulated Plant, allowing it to be sold commercially with a label affixed to the plant container indicating that it is inadvisable to plant this species within 100 feet of a waterbody or floodplain. Purple Loosestrife is categorized by the MDA as a prohibited noxious weed that must be controlled to prevent further spread and maturation. In addition, propagation, sale, and transport of Purple Loosestrife is prohibited. In the Rotary Wetland, biological control is being used to try control the Purple Loosestrife. The City has considered mechanical control; however, due to the size of the infestation and challenging access, this method is cost prohibitive.

The Ramsey County Soil and Water Conservation Division utilizes funding from BWSR for the Ramsey County Cooperative Weed Management Area (CWMA) partnership to manage invasive plants that negatively impact natural lands, parks and open spaces in the County. The 2018 and 2019 CWMA grant treatment sites included Japanese Knotweed removal near the shoreline of White Bear Lake just south of the intersection of Lake Avenue and Morehead Avenue. This grant extends through the year 2020. In 2020 Ramsey County began removal of knotweed at the trail leading to Willow Wetland at Fair Oaks Drive.

Aquatic invasive species. The Minnesota Department of Natural Resources (DNR) is the primary state agency responsible for management and control of aquatic invasive plants and animals through Minnesota Statutes 84D and Minnesota Rule 6216. The DNR aquatic invasive species authority includes issuing permits, making rules, and enforcing regulations. The DNR keeps a list of waters that are infested with aquatic invasive species. This list can be found on the DNR's website at https://www.dnr.state.mn.us/invasives/ais/infested.html.

Aquatic invasive species are classified in a four-tiered system based on the level of regulation and allowable uses: prohibited, regulated, unregulated nonnative species, and unlisted nonnative species.

- *Prohibited.* Prohibited invasive species can threaten natural resources and their use. It is unlawful (a misdemeanor) to possess, import, purchase, transport, or introduce these species except under a permit for disposal, control, research, or education.

Examples of prohibited invasive species found in City Lakes include Eurasian Water Milfoil (found in Birch Lake and White Bear Lake) and Zebra Mussel (found in White Bear Lake).

- *Regulated.* It is legal to possess, sell, buy, and transport regulated invasive species, but they may not be introduced into a free-living state, such as being released or planted in public waters.

- *Unregulated nonnative.* Non native species that are not subject to regulation under Minnesota Invasive Species Statutes, but are regulated for fishing, hunting, and transporting.

- *Unlisted nonnative.* Species that are not prohibited, regulated, or unregulated. The DNR must conduct an evaluation and designate the species into an appropriate category before an unlisted nonnative species may be legally released into a free-living state.

The state of Minnesota allocates money to all Minnesota counties for Aquatic Invasive Species Prevention Aid under Minnesota Legislation Chapter 308, H.F. No. 3167, sec. 11 [477A19]. The Aquatic Invasive Species Prevention Aid program seeks to prevent the introduction of or to limit the spread of aquatic invasive species at lake access sites within each County. The money is allocated based on each County's share of watercraft trailer launches and parking spaces. In Ramsey County, the Soil and Water Conservation division is charged with stewarding the AIS prevention aid dollars. The money is used for managing the early detection of species (zebra mussels plates and boat launch surveys), prevention tactics (watercraft inspections), and response to new infestations (creating partnerships and developing plans). The City worked with the Ramsey County Soil and Water Conservation division to add AIS signage and a boat clean out station at the Matoska boat landing in 2019. Watercraft inspectors are also stationed at the Matoska boat landing periodically throughout the summer.

Partnerships. Watershed Management Organization (WMO) involvement in AIS management varies depending on the species. WMO's limit management of AIS to instances where the AIS have a demonstrated negative effect on water quality.

The White Bear Lake Conservation District (WBLCD) provides educational materials about aquatic invasive species. In 2015, the WBLCD issued a pamphlet on zebra mussels that is still available on their website and in some public libraries. In the late summer of 2019, the WBLCD contracted for treatment of non-native phragmites, with a follow-up application one year later, in 2020. The infestations appear to be under control, but they remain vigilant to control its spread.

The City will continue to support aquatic invasive species public education initiatives and management efforts of the DNR, Ramsey County, WMO's, and WBLCD.

Recreation

The City's water resources and parks provide outdoor recreational opportunities for residents and visitors. Area residents identify biking, walking, wildlife viewing, visiting beaches, and boating as important recreational amenities in the City. Existing public landings and trails provide the necessary infrastructure to support outdoor recreation. Efforts are underway to link existing local trails into a more regional trail system, which will provide additional access to these areas.

Trails. The Lake Links Trail project is a planned 1.5-mile multi-use trail envisioned to connect White Bear Avenue in the City of White Bear Lake to Century Avenue in White Bear Township, primarily following South Shore Boulevard around White Bear Lake. The Lake Links project advisory team includes

representatives from Ramsey County Parks & Recreation, Ramsey County Public Works, the City of White Bear Lake and White Bear Township. Lake Avenue, which runs along the western edge of White Bear Lake, was converted from a two-way road to a one-way road in the 1990s in order to accommodate a walking trail. The trail, named the Sather Trail in 2016, begins at Ramsey County Beach and terminates at the intersection of Lake Avenue and Highway 61. The trail alignment from Lions Park to South Shore Boulevard was completed as part of the City's street reconstruction project in 2018. A $130,000 grant was secured through Legislature to aid in building this segment of trail. This segment of trail completes the City's portion of the Lake Links trail. The City will work with Ramsey County to extend the trail when South Shore Boulevard is reconstructed.

A walking trail was constructed on the north side Birch lake in the 1993 as part of the Birch Lake Boulevard North reconstruction project. The southeastern portion of the trail was constructed as part of the City's 2018 Street Reconstruction Project (City Project 18-06). The City will support the connection of the two trails when Ramsey County reconstructs Otter Lake Road.

Ramsey County owns the trail adjacent to White Bear Avenue around the north and east perimeter of East Goose Lake. The City reconstructed the trail in 2019. The trail now connects the Highway 61 pedestrian facilities to the existing sidewalk on the south west corner of White Bear Avenue and South Shore Boulevard.

Water-Based Recreation. The Public Works Parks Department is responsible for maintenance and improvements of water-based recreational amenities such as boat landings, sail boat moorings, canoe and kayak racks, beaches, public docks, and boardwalks. The City Council has generally delegated the decision to prioritize park improvement ideas to the Parks Advisory Commission. For the past several years, the commission has recommended that major improvements be concentrated in not more than two parks per year in order to make a more meaningful impact with available funds. Moving forward, the Parks Advisory Commission will create a comprehensive 5-year park improvement plan.

5.2.4 Groundwater Management

Groundwater quantity

Groundwater recharge. Roads, buildings, and other impervious surfaces reduce the amount of water that can naturally infiltrate and recharge groundwater. To offset impacts to infiltration due to development, the City implements volume control design standards that focus on mimicking the natural hydrology of a site, mainly through the design of infiltration practices. The City adopted volume control standards in 2015 that require a specific volume of runoff from impervious surfaces to be infiltrated into the soil as part of development and redevelopment, which is described in Section 5.2.6.

Groundwater withdrawal. Groundwater withdrawals are permitted by the DNR. Minnesota Statute 103G.265 requires the Department of Natural Resources to manage water resources to ensure an adequate supply to meet long-range requirements for domestic, agricultural, fish and wildlife, recreational, power, navigation, and quality control purposes. A water use (appropriation) permit from the DNR is required for all users withdrawing more than 10,000 gallons of water per day or 1 million gallons per year. All permitted water users are required to submit annual reports of water use.

All public water suppliers in Minnesota that operate a public water distribution system, serve more than 1,000 people, and/or all cities in the seven-county metropolitan area, must have a water supply plan approved by the DNRper MN Statute 103G.291. Water supply plans are updated every ten years and the

next updates will be due between 2026 and 2028. The plan must address projected demands, adequacy of the water supply system, existing and future water sources, natural resource impacts, emergency preparedness, supply and demand reduction measures, and allocation priorities. Additionally, public water suppliers serving more than 1,000 people must encourage water conservation by employing water use demand reduction measures that reduce water use, water losses, peak water demands, and nonessential water uses before requesting an increase in the authorized volume of appropriation.

All municipalities that supply water pumped from an aquifer to the public are required to file an Annual Report of Water Use with the DNR to report on the amounts of water pumped annually. This has been required of the DNR since the permit was instituted in 1969. The DNR assigns permitted volume to pump to ensure that the aquifer is protected. In 2018 the DNR began requiring that all Municipalities identify conservation projects (both before and after the meter) in a separate annual report. The goal of the conservation report is to track what communities are doing to protect our groundwater resources. The conservation report became optional in 2021, but the City will continue to submit the report to the DNR each year.

At 67 gallons per person per day, the City of White Bear Lake has the second lowest residential water use of the outer-ring suburbs studied between 2007 and 2013. Even so, water conservation remains a priority for the City. In response to increased groundwater withdrawal in the summer months, the City adopted a time-of-day watering ban in 2006 (City Code §401.120) and updated water utility billing to discourage summer irrigation. In early 2016, the City revised the water utility rate from a tiered rate structure to a seasonal rate structure, intended to encourage water conservation during the summer months. To reduce outdoor water use on City property, the Parks Department retrofitted rain sensors on existing irrigation systems.

In the north and east metro, the DNR has years of monitoring data, and has noted a growing concern over long-term growth of groundwater use. In response to the DNR studies, work by the USGS and others, and a specific request from the White Bear Lake Conservation District in April 2013, the DNR moved forward with the state's first Groundwater Management Area (GWMA) in the north and east metro. Groundwater management areas provide a means for the DNR to address the long-term sustainability of groundwater resources. As part of the GWMA program, the DNR aims to develop a process for assessing appropriations permits and applications for new permits that is applicable statewide, but also considers the possible need for different appropriation limits within different GWMAs. This is the first time DNR will use a designated Groundwater Management Area to address cumulative impacts of water use to help manage water resources over the long-term.

The Metropolitan Council engages in water planning for the metropolitan area. In March 2010 they published the Metropolitan Area Master Water Supply Plan. The plan includes information to help local government units plan for future development based on water needs, including the water availability analysis, the water conservation toolbox, and the Twin Cities Metropolitan Groundwater Flow Model.

In 1987, metropolitan counties were given the authority to prepare and adopt groundwater plans through MS 473.8785 (now MS 103B.255) that provided a mechanism for counties to set priorities, address issues, and build local capacity for the protection and management of groundwater. Washington County adopted its second-generation groundwater plan in 2014. The Ramsey Conservation District prepared updates to the 1995 groundwater plan in 2009, but the county board declined to submit the draft for BWSR approval. The City typically serves in an advisory capacity when a County groundwater plan is developed.

Groundwater quality

In 1989, the state of Minnesota instituted the Minnesota Groundwater Protection Act, which identified the Minnesota Department of Health (MDH) as responsible for the protection of groundwater quality. The MDH administers the Wellhead Protection Program, which is aimed at preventing contaminants from entering the recharge zones of public well supplies. In 1997, the Wellhead Protection Program rules (Minnesota Rules 4720.5100 to 4720.5590) went into effect.

Wellhead protection is the process of managing land use in critical zones of groundwater recharge to reduce the risk of contaminating water supplies. Public Water Suppliers are required to write and implement Wellhead Protection Plans that provide a scientific analysis to identify key groundwater recharge areas and guidelines for land use and zoning that are protective of groundwater. The City completed a Wellhead Protection Plan in two parts. Part 1 was completed and approved by the MDH in November of 2009 and Part 2 was completed and approved by the MDH in December of 2012. Strategies for the protection of the City's drinking water supply have been developed with the City's Wellhead Protection Plan and will be documented as part of the MS4 permit.

The City considers groundwater resources as part of its permit review process and will evaluate stormwater infiltration projects in vulnerable wellhead protection areas identified in the Wellhead Protection Plan to determine if infiltration practices are appropriate.

5.2.5 Public Education and Participation

Education and participation

Educational Resources. The City of White Bear Lake's public education program was developed in accordance with the City's MS4 General Permit to educate the public on how behaviors and activities can pollute waterbodies and groundwater, and actions the public can take to reduce the discharge of pollutants. The City distributes stormwater educational materials and publishes a number of stormwater related articles in the biannual City newsletter, places numerous posts on the City's Facebook page, and distributes educational materials at the annual Environmental Resource Expo hosted by the City's Environmental Advisory Commission. Table 26 lists the implementation activities and programs related to public education and participation.

Public Participation. Public involvement creates opportunities for the residents and the general public to participate in the processes that impact them directly which often leads to more informed decision making. Public involvement also allows the City to reach residents that might be looking for educational information on water resources or those seeking to get involved in local improvement projects. Table 26 lists the implementation activities and programs related to public participation. Other opportunities exist for public participation on an intermittent or as-needed basis, such as raingarden and shoreline planting and stakeholder engagement. In each City newsletter, the Environmental Advisory Commission highlights a resident or business that has implemented a sustainable project. This ongoing newsletter feature is titled 'Spotlight on Sustainability' and was started in the spring of 2020.

Volunteer Raingarden Planting Event at 4th and Johnson

A Public Hearing is held at a City Council meeting on the last Tuesday in April each year to discuss the City's SWPPP activities from the previous year. Notice of this meeting is published in the White Bear Press and is posted on the City's website, Facebook page, and in its spring newsletter. Comments received during this meeting (or via the City's website) will be considered and incorporated into the annual MS4 report submitted to the MPCA in June. Modifications may be made to the SWPPP, this SWMP, and the City's policies and practices as a result of the comments received.

The City documents the number of participants for each outreach activity as part of its MS4 General Permit requirements.

Coordination with other government agencies

The City coordinates with other public entities that focus on stormwater education to minimize duplication and ensure a consistent message. Water Management Organizations (WMOs) all have very active education programs with a wealth of resources and staff to assist the City. A few examples of collaborations that are not described in the implementation plan (Table 26) include: IDDE video and customized brochure provided by RWMWD, numerous raingarden and turf alternatives workshops led by RCWD and VLAWMO and hosted by the City, and raingarden brochures and residential salt use educational materials provided by VLAWMO. In turn, the City helps to promote WMO cost share grants, workshops, and programs. The City has also collaborated in the past with H2O for Life and Center for the Arts to provide assistance with specific water-related educational initiatives.

5.2.6 Regulatory Program

The City of White Bear Lake's Stormwater Pollution Prevention Plan (SWPPP) and this SWMP identifies goals and policies that define the City's stormwater regulatory permit program, which is implemented via the City's Stormwater Code (Chapter 406), Zoning Code (Chapter 1300), and Engineering Design Standards for Stormwater Management. The City of White Bear Lake's stormwater requirements were written to meet the City's goals to preserve, protect, and manage water resources as well as to meet federal, state, and WMO stormwater regulations.

Official Controls

The City has adopted ordinances to regulate the use and development of land within its jurisdiction. These ordinances are key tools for implementing this SWMP and guiding land development decisions in construction site runoff control, post construction stormwater management, shoreland management, floodplain management, and wetland management. Table 25 lists all official controls related to stormwater management and water resource protection. The City's municipal code webpage that contains all City ordinances in effect can be found at:
https://www.whitebearlake.org/administration/page/municipal-code

Table 25. Surface Water Related Official Controls

Category	Code Section	Chapter
Water Conservation	§401.040 Municipal Water System; Water Use Rates	401.Municipal Water System
	§401.120 Municipal Water System: Conservation	
Construction Site Runoff Control	§406.010 Authorization, Findings, Purpose, and Scope	406. Stormwater

Post Construction Stormwater Runoff Control		
Illicit Discharge	§406.020 Illicit Discharge Detection and Elimination	
Individual Sewage Treatment	§504.010 - §504.090 (all)	504. Individual Sewage Treatment Systems
PAH Contamination	§511.010 – §511.070 (all)	511. Prohibiting the Use and Sale of Coal Tar-Based Sealants
Security of Performance	1301.050 CUP Performance Security	1301. Administration
Drainage	1302.030 Subd 5. Drainage	1302. General Provisions
Dust Control	1302.030 subd 11. Dust	
Land Alteration	1302.070 Land Alteration	
Shoreland Management	§1303.230 “S”, Shoreland Overlay District	1303. Zoning Districts
Floodplain Management	§1303.235, “FP”, Floodplain Overlay District	
Wetland Management	§1303.240, “W”, Wetlands Overlay District	

The City’s stormwater ordinance and corresponding Engineering Design Standards for Stormwater Management, adopted in 2015, regulate erosion control and stormwater management for land disturbing activities. The City’s design standards define requirements for:

- Applicability for development and redevelopment projects
- Plan review procedures
- Construction site waste control
- Erosion and sediment control
- Final Stabilization
- Volume control
- Water quality control
- Rate control
- Freeboard
- Emergency overflows
- Stormwater Operation and Maintenance Agreements
- Floodplain management
- Buffers
- Site inspections

The Engineering Design Standards for Stormwater Management can be found on the City's website at: https://www.whitebearlake.org/engineering/page/design-standards-stormwater-management.

The City's ordinances and Engineering Design Standards for Stormwater Management will be revised periodically in response to identified weaknesses or gaps in the City's permit program, changes in technology, and revisions of other jurisdictions' regulatory programs. Future updates to city ordinances and official controls must be consistent with Watershed Management Organization plans and rules and the MPCA MS4 General Permit and Construction Stormwater Permit. The new MS4 General Permit was reissued on November 16, 2020. The City's ordinance and Engineering Design Standards for Stormwater Management will be revised in 2021, as necessary, to be consistent with the reissued permit.

When revising ordinances and standards for transportation and redevelopment projects, wildlife should be taken into consideration. To enhance the health and diversity of wildlife populations, the following measures should be considered:

- Create landscape guidelines that encourages the use of native plants (including trees) for pollinators
- Preserve natural areas or restoring areas with native vegetation after construction
- Connect habitat instead of creating several smaller non connected areas
- Provide wider culverts or other passageways under paths, driveways and roads while still considering impacts to floodplains
- Install surmountable curbs (Type D or S curbs), or curb breaks every 100 feet, to allow turtles to exit roadways near wetlands. Fencing could be installed near wetlands to help keep turtles off the road (fences that have a j-hook at each end are more effective than those that don't)
- Includea passage bench under bridge water crossings because typical bridge riprap can be a barrier to animal movement along streambanks
- Employ curb and storm water inlet designs that don't inadvertently direct small mammals and reptiles into the storm sewer.

Specify biodegradable erosion control netting ('bio-netting' or 'natural netting' types (category 3N or 4N)), and specifically not allow plastic mesh netting to prevent entrapment and death of small animals especially reptiles and amphibians.

The DNR's Roadways for Turtles - Solutions for safety document provides information on measures to incorporate into design and construction plans.

Construction Site Stormwater Runoff Control

The City's construction site runoff control permit program includes an ordinance and procedures for plan review and site inspections.

Plan review. Site plan submittals are reviewed by the Engineering Department, Planning Department, Fire Department and Building Department prior to the issuance of building and grading permits. Development and redevelopment project plans for sites which include land disturbing activities are reviewed to ensure compliance with City ordinances and the Engineering Design Standards for Stormwater Management. If an applicant requests a variance, the Planning Commission shall review the variance request and staff recommendation, and provide a recommendation to City Council.

As part of the plan review process, the City encourages Low Impact Development (LID) principles to minimize impervious surfaces and promote naturally occurring groundwater recharge. The applicant is also informed of other agency permits, including watershed district permits and the NPDES Construction Permit (generally for projects that disturb more than 1 acre). Rice Creek Watershed District (RCWD),

Ramsey Washington Metro Watershed District (RWMWD), and Valley Branch Watershed District (VBWD) implement rules and regulations and issue permits within the City. The City requests that RCWD, RWMWD, and VBWD continue to implement its rules and regulations and issue permits within the City.

The City uses several different methods to facilitate communication with applicants, including preapplication meetings, guidance documents, permit program schedules, and the City's website (whitebearlake.org). The City will continue to adapt its communications to address the needs of permit applicants and keep pace with evolving water related technology and agency requirements.

Site Inspections: The Building Department regularly inspects all construction sites in the City for compliance with NPDES permit requirements including erosion and sediment control and waste disposal. Inspectors maintain a log of erosion control inspections, their findings, and any follow up visits for non-compliant sites. Building inspectors and engineering technicians (who inspect street reconstruction projects) are certified for construction site inspections regarding proper erosion and sediment control practices. Inspectors attend a refresher course every three years to maintain their certification.

Post Construction Stormwater Runoff Control

As per the reissued MS4 General Permit, the City's stormwater regulatory mechanisms must require owners of construction activity to treat runoff from new and fully reconstructed impervious surfaces that total one acre or more, using volume control practices as a first priority. These regulatory mechanisms primarily include developing an ordinance, strategies to implement a combination of structural and non-structural best management practices (BMPs), and a program to ensure adequate long-term operation and maintenance of the BMPs.

The City's Engineering Design Standards for Stormwater Management require permanent volume control BMPs for sites proposing new or fully reconstructed impervious surfaces of 10,000 square feet or more. If the applicant can demonstrate that the volume control standard is met, then the water quality control requirement is also met. The City requires that soils be inspected on a site-by site basis as projects are considered to determine suitability for infiltration as a volume control method. Infiltration is not suitable on sites with impermeable soils, high groundwater or bedrock depth, or high potential for groundwater contamination (for example, sites that are located within the high vulnerability DWSMA areas in Figure 20, or sites with known or suspected soil contamination). If the applicant shows that volume control is not feasible, the stormwater treatment practices shall be designed to meet water quality standards using the MIDS flexible treatment options outlined in the City's design standards.

After construction, the applicant submits an as-built survey of the stormwater BMP's for review by the Engineering Department to determine if the constructed BMPs will function as designed. The owner also enters into a Stormwater Operations and Maintenance Agreement (SOMA) with the City that documents all responsibilities for operation and maintenance of all stormwater treatment practices. The maintenance agreement is executed and recorded against the property.

Floodplain Management

The Federal Emergency Management Agency (FEMA) performs flood insurance studies (FIS) and develops floodplain maps to determine areas prone to flooding during the 100-year (and sometimes 500-year) storm events. The water level corresponding to the 100-year storm events is referred to as the Base Flood Elevation (or BFE) and is the basis for mapped floodplain extents.

Minnesota statutes Chapter 103F and Chapter 462 delegate authority to municipalities to adopt regulations designed to minimize flood losses in these floodplain areas. Chapter 103F further stipulates that communities subject to recurrent flooding must participate and maintain eligibility in the National Flood Insurance Program (NFIP). Areas of the City prone to larger regional flooding near surface water sources during 100-year storm event have been identified and mapped by FEMA through the NFIP. The floodplain maps, called Flood Insurance Rate Maps (FIRM's), identify the land areas to which the City's floodplain regulations apply.

Floodplain regulations in the Floodplain Overlay District are implemented through Section §1303.235 of the City's Zoning Code. The purpose of this ordinance is to comply with the rules and regulations of the National Flood Insurance Program (NFIP) codified as 44 Code of Federal Regulations Parts 59-78, as amended, so as to maintain the community's eligibility in the NFIP and to minimize flood losses. Regulations include preserving and managing flood storage, land use, and building location restrictions.

The Rice Creek Watershed District (RCWD) created floodplain maps for waterbodies within its boundary and discovered discrepancies between the FEMA maps and their H&H model result. RCWD has assisted several partner cities with submitting current RCWD modeling results to FEMA to improve the accuracy and relevance of the FIRMs; however, this process is costly and time intensive.

The VBWD has performed H&H modeling for the Silver Lake watershed and established 100-year water surface elevations that are referenced by the VBWD Rules and permit program.

Shoreland Management

Minnesota's Shoreland Management Program guides land development along Minnesota's lakes and rivers to protect their ecological, recreational, and economic values. The state shoreland rules (MR 6120.2500 - 6120.3900) establishes minimum standards to protect habitat and water quality and preserve property values. These standards are implemented through local shoreland ordinances.

Minnesota statutes Chapter 103F and Chapter 462 delegate authority to municipalities to adopt regulations designed to guide land development in shoreland areas to protect water quality and near shore habitat. The City of White Bear Lake adopted a DNR approved Shoreland Overlay District ordinance (§1303.230 of the Zoning Code). The purpose of the ordinance is to control and guide future development within and surrounding those land areas which are contiguous to designated bodies of public water and areas of natural environmental significance. Any water resource on property to be developed will be subject to these management policies, as well as the rules and requirements of the Wetland Conservation Act and Watershed Management Organizations.

The DNR's role is to ensure that local shoreland ordinances comply with the state shoreland rules and to provide technical assistance and oversight to these local governments.

Wetland Management

Wetlands Overlay District. The City recognized the value of wetlands and passed the Wetland Overlay District code in 1983 (§1303.240 of the Zoning Code) to control development near wetlands and drainage ways. In 2010 the City updated its wetland ordinance to establish a building and hard surface setback from wetland edges. Three of the four WMOs have wetland setback regulations and the City adopted those same standards for consistency.

The City's wetland ordinance also includes requirements for buffers adjacent to rivers, streams, lakes, ponds, and wetlands. Buffer width measurements will follow the requirements of the appropriate WMO. For WMO's without an adopted standard, a minimum 15-foot and average 30-foot buffer strip at all points around wetlands shall be maintained using native vegetation. If, in the opinion of the City, the perimeter of the wetland contains significant natural vegetation in good condition, the City reserves the right to require up to a 50-foot buffer of this natural vegetation where it exists around the wetland, where no grading or disturbance of any kind shall be allowed. For City wetlands within a WMO which has buffer regulations, those requirements shall be met.

Wetland Conservation Act (WCA). The MN Legislature enacted the Wetland Conservation Act in 1991 (Minnesota Rules 8420). The purpose of the WCA is to achieve no net loss in the total acreage and no net loss of functions and values of wetlands. The City continues to defer administration of the WCA to the Water Management Organizations. The Minnesota Board of Water and Soil Resources (BWSR) is the state administrative agency for the WCA. Wetlands defined by Minnesota Statute 103G as public waters are regulated by the DNR.

5.2.7 Pollution Prevention, Operations, and Maintenance

City Facilities

The City of White Bear Lake Public Works facility was constructed in 2010. The facility includes indoor gas storage lockers for storing fuels, pesticides, and other chemicals; indoor maintenance, fueling, and washing stations; and a separate roofed structure for salt storage. Written safety and spill containment procedures are also in place.

Public Works Salt Storage Facility

The City hires a consultant to perform quarterly facility inspections at both the new and old public works sites as a requirement of the MS4 permit. Tasks includes locating and inspecting all exposed stockpiles and storage/material handling areas and documenting any identified erosion control or runoff issues. The facilities consistently meet inspection requirements.

City-owned Stormwater Facilities

Public Works Sewer Department staff conducts routine inspections of storm sewer manholes, sump manholes, catch basins, swirl separators, and infiltration pipes. All pond and lake inlets and outlets are inspected annually and after major rain events, and at least twenty percent of the storm sewer outfall are inspected each year by Engineering staff. City staff uses the results of the inspections to perform maintenance activities as necessary to fulfill the requirements of the NPDES MS4 permit. As maintenance takes place, the City evaluates the frequency of its inspections to determine the most appropriate schedule.

Three public ditches exist in the City of White Bear Lake: County Ditch 11, County Ditch 13, and County Ditch 18. Ramsey County transferred drainage authority for County Ditch 11 to Rice Creek Watershed District, County Ditch 13 to Vadnais Lake Area Water Management Organization, and County Ditch 18 to Ramsey Washington Metro Watershed District. As the drainage authorities, the Watershed Management Organizations are typically responsible for maintaining the ditches; however, the City

partners with VLAWMO to maintain County Ditch 13, which was buried sometime in the late 1970's or early 1980's as a 96" RCP to accommodate residential development.

Stormwater Related Maintenances Agreements

The City has entered into numerous stormwater-related maintenance agreements with public agencies including Watershed Management Organizations and Ramsey County. A copy of these agreements are included in Appendix D. Each agreement describes the inspection and maintenance responsibilities of each partner. Staff in the Engineering Department typically work with the partners to determine maintenance needs. Depending on the task, the City's maintenance responsibilities are either completed by a contractor or Public Works staff.

Private landowners enter into a Stormwater Operations and Maintenance Agreement (SOMA) with the City which states that the landowner is responsible for installing stormwater infrastructure consistent with the City's regulations, and for ongoing maintenance.

Maintenance Access

Proper access through access agreements is needed to inspect and maintain storm sewer pipe, outfalls, and receiving waters. Some of the City's receiving waters, including Priebe Lake, Bossard Pond, and Oak Knoll Pond, lack public access. Where easements exist, obstructions such as fences and trees hinder access in some locations. Engineering staff will address access issues on a project by project basis to determine possible access locations and to work with landowners in negotiating a permanent easement.

PAH Contamination

White Bear Lake was the first City in Minnesota to adopt an ordinance prohibiting the sale and use of coal tar-based sealers in 2010 (City Code Chapter 511. §511.101 - 511.070). A state ban of the sale and use of coal tar-based sealants went into effect on January 1, 2014. The law helps to minimize the ongoing release of harmful and persistent chemicals and also helps to minimize clean-up costs to taxpayers.

The City has put stormwater pond maintenance projects on hold after high concentrations of PAHs were found in the sediment of several receiving waters The City tested sediment in five receiving waterbodies in 2007 and 2008: Lily Lake, Varney Lake, Peppertree Pond, Oak Knoll Pond and Heiner's Pond. Lily Lake was the only waterbody out of the five that did not test positive for PAH contamination and was subsequently dredged. Of the four that tested positive, only Varney Lake was dredged in 2011/2012 as part of a pilot project. The project is described in Section 4.7.3.
In January of 2019, the cities of Bloomington, Burnsville, Eden Prairie, Golden Valley, Maple Grove, Minnetonka and White Bear Lake filed a federal lawsuit against seven refiners of coal tar for allegedly contaminating numerous stormwater ponds with PAHs. The lawsuit alleges that the defendants marketed and sold the refined coal tar products for use in pavement coatings knowing they were toxic and not safe. The lawsuit seeks to recover the costs associated with increased monitoring and testing of stormwater sediments and increased disposal costs for PAH-contaminated dredged waste. As of the date of this SWMP, the case remains under consideration.

Once the case is determined, the City's goal is to define the extent of PAH contamination in its receiving waters and determine a plan for removal. The MPCA created the Managing Stormwater Sediment Best Management Practices Guidance document to assist Cities in determining the steps associated with sediment removal projects (https://www.pca.state.mn.us/sites/default/files/wq-strm4-16.pdf).

Winter Street Maintenance Program

The city's Snow and Ice Control Policy describes the measures that the city undertakes to control snow and ice on city streets, sidewalks, parking lots and skating rinks. Reviewed annually, the policy outlines when snow removal operations are undertaken; what the priorities are for streets, sidewalks, parking lots and skating rinks; and what equipment and personnel are engaged in snow removal operations.

For snow removal, the City owns and operates six plow trucks and numerous pickup trucks, along with several specialized pieces of equipment for sidewalks and trails. Temperature gauges in trucks gauge how much salt to apply. To minimize salt use, salt spreaders on the trucks are calibrated annually to ensure proper application rates with the goal of spreading the correct amount of salt to remove ice, but not leave a white residue on the road surface. In warmer weather, less salt is applied. Sand is not used for winter street maintenance.

The MPCA Phase 2 MS4 General permit that was reissued on November 16, 2020 requires permittees with an applicable WLA for chloride to document the amount of deicer applied each season, and to conduct an assessment of winter maintenance operations to reduce the amount of deicing salt applied and determine current and future opportunities for improvement. The MPCA developed a tool called WMAt for use by winter maintenance professionals. The WMAt can be used voluntarily to understand current practices, identify areas of improvement, and track progress. The City is assigned a Chloride Waste Load Allocation for South Long Lake in New Brighton and Kohlman Lake in Maplewood.

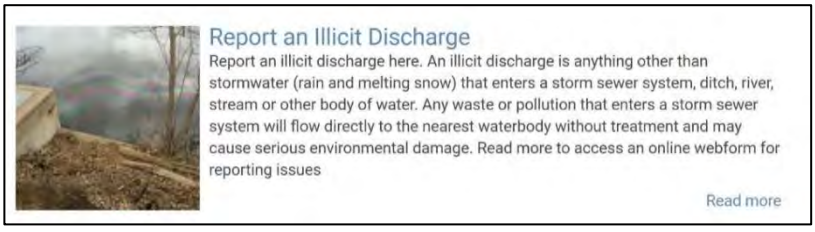
Street Sweeping Program

The City owns and operates one regenerative air street sweeper. Public Works Streets Department staff is responsible for the City's street sweeping program. Streets are cleaned in the spring and fall as weather allows, with at least two passes through all City streets. The sweeping program also includes weekly sweeping of the downtown area and streets along the lake as well as areas with Oak trees (NE corner of town, Lake Ave, East of Bald Eagle, etc.). Other targeted areas include storm damaged locations and Division Street, which is swept two to three times in the spring due to gravel driveways. A log is kept of miles of streets swept and quantities of debris collected.

IDDE Program

City Council adopted an illicit discharge ordinance in 2015 to prohibit illicit connections and discharges to the City's storm sewer system. The ordinance contains enforcement provisions the City can take in the event an illicit discharge occurs (City Code Chapter 406. §406.020). Through this Ordinance, the City is authorized to regulate illicit discharge entering the City's storm drainage system by any user.

The Engineering Department created an online tool on the City's website to make it convenient for the public to report non-emergency illicit discharges. Reports from the online tool are forwarded to Engineering Department for documentation. Depending on the type of discharge, either Engineering staff, Building Department inspectors, or the code enforcement officer will visit the site to determine next steps. If lawn clippings are reported, Engineering staff delivers a door hanger to the property as a reminder to sweep clippings off the street. For emergency situations, the public is directed to call 911. The City includes IDDE information and promotes the online reporting tool annually in the spring newsletter.



As part of the storm sewer inspection program, City Public Works crews inspect the stormwater systems to check for illicit discharges or other problems. The City also conducts IDDE training for staff as part of its annual AWAIR (A Workplace Accident & Injury Reduction) program.

Storm Sewer Map

The Engineering Department maintains the City's storm sewer map (Figure 10). The map is GIS based and includes all City owned pipes, manholes, catch basins, and structural treatment practices. The map also includes other owned pipes and systems (Ramsey County, Mn/DOT, Private, Watershed, etc.). The Engineering Department updates the storm sewer map annually.

The City plans to implement a more comprehensive, GIS-based, database management tool for the storm sewer system that is linked with the system map. The database will help the City track the condition of system components and inspection and maintenance scheduling. The system will assist in evaluating the frequency of maintenance for components of the City's system.

Waste Disposal

The City promotes back yard composting, the City's curbside yard waste pickup program, and County residential yard waste and household hazardous waste (HHW) programs to prevent these potential sources of pollutants from reaching the storm sewer system. The City partnered with Ramsey County and the White Bear Lake Area School District in 2018 to offer a Ramsey County HHW mobile collection site within the City at the North Campus High School. The mobile HHW event was so successful that it is now an annual event.

In 2016, Engineering Department staff collaborated with Ramsey County and the City's Police Department to provide a medicine drop off location at the Public Works facility. The drop box provides a convenient location for residents to dispose of unwanted medication.

To help White Bear Lake residents properly dispose of unwanted items, the City hosts a spring and fall clean-up day on the first Saturday in May and October. Residents can drop off trash, construction materials, recycling, electronics, batteries, tires, florescent bulbs, and many other items. Household Hazardous Waste is not accepted. The cleanup event is held at the old public works facility. Public Works staff administers the event.

Staff Training

Erosion and Stormwater Certification: Three Public Works staff are certified in BMP Maintenance through the U of M Erosion and Stormwater Management Certification Program. Staff attends a recertification class once every 3 years in order to maintain their certification.

Spill prevention and Response Training: Appropriate City staff have training and equipment available to deal with small spills of hazardous material on City property. All spills which cause pollution of the air, land, or water resources must be reported immediately to the State Duty Officer at 651.649.5451.

Road Salt Training: Four Public Works staff attend the MPCA Smart Salt training each year. The symposium training includes information on protecting Minnesota's waters, minimizing the use of deicer's, and provides tools and resources to assist in winter maintenance.

IDDE Training: The Engineering Department conducts IDDE training for all City staff as part of its annual AWAIR safety training. The training includes an in-person presentation, a short IDDE video, and a

brochure. To minimize duplication of effort and to conserve resources, the City uses existing training materials available from the Ramsey Washington Metro Watershed District.

5.2.8 Funding

The activities and programs detailed in this SWMP are implemented by staff from several departments. Department budgets and specific project budgets are categorized into six major fund categories: General Fund, Special Revenue Funds, Capital Project Funds, Debt Service Funds, Enterprise Funds, and Internal Service Funds. Below is a description of the funds and corresponding funding mechanisms used to implement the activities and programs of this SWMP. Refer to the implementation plan (Table 26) for detailed implementation items and their corresponding funding sources.

- **General Fund.** The General Fund accounts for revenues and expenditures to provide basic governmental services. This fund allocates budgets for staff in each department, including Planning & Zoning, Building & Code Enforcement, and Public Works (Public Works Facility, Engineering, Streets, Snow/Ice Removal, and Parks). The General Fund also budgets the required annual fees for the White Bear Lake Conservation District.

  General Fund revenue sources: Major revenue sources for the General Fund include property taxes applied to all general taxable properties within the City's boundaries, a portion of the State's Local Government Aid, and fees collected for construction permits. Permit fees help to offset the cost of staff time for private development and redevelopment plan review and project inspections.

- **Special Revenue Funds**
  - **Storm Water Pollution Prevention (SWPP) Fund.** The SWPP fund was established to provide dedicated revenue for stormwater related activities. The fund fully or partially supports public education and participation activities, stormwater treatment facility maintenance, capital stormwater projects not associated with street reconstruction, invasive species control, habitat restoration, inspections, training, and membership fees. The fund also supports a 1 FTE staff position who is responsible for developing and managing the City's MS4 program.

    SWPP Fund revenue sources: Initially, a portion of the City's local government aid was allocated each year to replenish the SWPP fund budget. As a result of a decrease in the City's local government aid in 2021, the fund will no longer receive this revenue stream. Therefore, a quarterly storm water infrastructure fee was established on residential and commercial utility bills to support the fund's operation.

- **Capital Project Funds**
  - **Interim Construction Fund.** The interim construction fund accounts for costs related to street rehabilitation, sidewalks, and trails.

    Interim Construction Fund revenue sources: A major revenue source is financial assistance offered to cities for high volume or key streets covered by the municipal state aid street system. Funding for the assistance comes from transportation–related taxes, which the state distributes based on a statutory formula. The Interim Construction Fund also receives an annual transfer from the Street Improvement Trust within the Community Reinvestment Fund, and relies on special assessments from the property owners in the project area pay a portion of the cost of storm sewer construction, upgrades, and treatment systems.

In years when the interest earnings were very high, the City paid a large portion of the street reconstruction expenditures with the interest revenues and did not need additional financing. However, low interest rates have significantly affected the City's available resources, so the City began issuing bonds in 2018 cover expenditures for street improvement projects.

- **Equipment Acquisition Fund.** This fund accounts for major capital equipment purchases identified in the City's long-range plans. Snowplowing and street sweeping equipment are budgeted in this fund.

  Equipment Acquisition Fund revenue sources: This fund receives revenue from a portion of the annual State's Local Government Aid. The City designates special revenue from lease payments for cell tower sites on city properties and the franchise fee from Ramsey Washington Cable to provide additional revenue to this Fund.

- **Park Improvement Fund.** This fund accounts for the acquisition, developments, and improvements to City owned parkland and facilities.

  Park Improvement Fund revenue sources: Primary revenue sources are park dedication fees levied against all new buildings constructed within the City, boat launch tag sales at Matoska Park, and an annual transfer from the Park Improvement Trust within the Community Reinvestment Fund. The fund also receives donations from local non-profit organizations to support projects that benefit their groups' activities.

- **Enterprise Funds**
  - **Sewer Fund.** This fund accounts for costs associated with the collection and treatment of wastewater, and sanitary sewer infrastructure operation, maintenance, and capital improvements. The sewer fund budget also allocates resources for Sewer Department personnel and equipment acquisition. Some stormwater inspection and maintenance activities are performed by Sewer Department employees, including storm sewer, sump manhole, and underground infiltration pipe inspections and cleaning, and outfall maintenance.

    Sewer Fund revenue sources: A sewer rate fee for residential and commercial water supply customers supports the fund.

Alternate Funding Sources

Storm Water Infrastructure Fee: A $5.00 per quarter storm water infrastructure fee was implemented on January 1, 2021 to provide a stable and equitable funding source for the SWPP Fund. The SWPP Fund will transfer resources to other funds that support the stormwater program. In the future, City Council may consider changing from a flat fee to a fee that is based upon the contribution of stormwater runoff to the City's stormwater system asa more equitable way for the City to share the cost of this public service.

Grants: The City has received several Watershed Management Organization cost share grants for past water quality projects and habitat restorations. The City will continue to pursue grants and other funding sources to help fund the activities and projects identified in this SWMP.

Partnerships

The City has a long history of collaborating with other organizations to provide the most efficient and cost-effective way to meet goals. Examples of City partnerships include attending the RWMWD Public Works Forum and the RCWD quarterly partner meeting, participating in the GreenStep Cities Program, and supporting the Adopt-a-Drain program through membership in Watershed Partners.

5.3 Implementation Plan

Each numbered objective identified in Chapter 4. Issues, Goals, and Objectives forms the basis of the implementation plan in Table 26 that the City would ideally plan to implement over the 10-year timeframe of this SWMP. The table is a comprehensive list of implementation activities assuming full funding which is currently beyond the city's resources. City Council annually reviews and adopts the budget. Project and program items identified Table 26 may or may not be budgeted depending on available funding.

As a means of prioritizing, rows highlighted in green in Table 26 identify lower priority implementation items. These items may become higher priority over the timeline of this SWMP if funding sources become available.

5.4 Capital Improvement Plan

The City's 10-year Capital Improvement Plan (CIP) is one of the fundamental building blocks in developing an effective budgeting process by providing a long-range framework to meet the infrastructure needs and development objectives of the community. The City's CIP sets forth the anticipated major maintenance, replacement and expansion of the City's public infrastructure for a five-year period. The CIP is linked to the goals and policies of the City's Comprehensive Plan and the objectives identified in this SWMP. The primary objective of the CIP is to integrate the specific goals, policies and Council recommendations within the City's capability to finance and maintain capital improvements.

The CIP is reviewed annually for the purposes of measuring progress, modifying priorities, and extending the CIP an additional year into the future. Each year, the Mayor and City Council will determine whether the CIP is setting the correct course for the City, that reasonable progress is being made, and that the financing plan remains sound. It will be through the annual revision or reaffirmation of the CIP that the Mayor and City Council are afforded a significant opportunity to exercise planning and policy setting authorities in a meaningful and lasting manner.

Table 27 lists all capital projects, including major maintenance activities, identified in the implementation plan (Table 26).

Chapter 6. Plan Adoption and Amendments

6.1 Formal Plan Review and Adoption

Minnesota Statute 103B.235 describes the required formal review process for local water management plans.

Subd. 3. Review. After consideration but before adoption by the governing body, each local unit shall submit its water management plan to the watershed management organization for review for consistency with the watershed plan adopted pursuant to section 103B.231. If the county or counties having territory within the local unit have a state-approved and locally adopted groundwater plan, the local unit shall submit its plan to the county or counties for review. The county or counties have 45 days to review and comment on the plan. The organization shall approve or disapprove the local plan or parts of the plan. The organization shall have 60 days to complete its review; provided, however, that the watershed management organization shall, as part of its review, take into account the comments submitted to it by the Metropolitan Council pursuant to subdivision 3a. If the organization fails to complete its review within the prescribed period, the local plan shall be deemed approved unless an extension is agreed to by the local unit.

Subd. 3a. Review by Metropolitan Council. Concurrently with its submission of its local water management plan to the watershed management organization as provided in subdivision 3, each local unit of government shall submit its water management plan to the Metropolitan Council for review and comment by the council. The council shall have 45 days to review and comment upon the local plan or parts of the plan with respect to consistency with the council's comprehensive development guide for the metropolitan area. The council's 45-day review period shall run concurrently with the 60-day review period by the watershed management organization provided in subdivision 3. The Metropolitan Council shall submit its comments to the watershed management organization and shall send a copy of its comments to the local government unit. If the Metropolitan Council fails to complete its review and make comments to the watershed management organization within the 45-day period, the watershed management organization shall complete its review as provided in subdivision 3.

The following organizations will receive Agency Review Drafts of this Surface Water Management Plan (SWMP) for the formal review and comment:

- Ramsey-Washington Metro Watershed District (60-day review period)
- Rice Creek Watershed District (60-day review period)
- Vadnais Lake Area Watershed Management Organization (60-day review period)
- Valley Branch Watershed District (60-day review period)
- Ramsey County (45-day review period)
- Washington County (45-day review period)
- Metropolitan Council (45-day review period)

After the City receives formal comments on the Agency Review Draft, the City will make necessary revisions to the SWMP to receive agency approval. Upon approval of the SWMP by the Watershed

Management Organizations, the City Council must formally consider and adopt the final SWMP through a Council Action within 120 days of approval.

6.2 Amendment Procedures

This SWMP will extend through the year 2030. The City of White Bear Lake recognizes that this SWMP may periodically be amended to remain a useful long-term planning tool. Comprehensive studies and some capital improvement projects undertaken will warrant review and amendment. Occasionally, the goals, policies, objectives, and implementation may need revisions.

Request for Amendments

Amendment proposals can be requested at any time by any person or persons either residing or having business within the City. Any individual can complete a written request for a SWMP amendment and submit the request to City staff. The request shall outline the specific items or sections of the SWMP requested to be amended, describe the basis and need for the amendment and explain the desired result of the amendment towards improving the management of surface water within the City. Following the initial request, staff may request that additional materials be submitted in order for staff to make a fully-informed decision on the request.

The City may also initiate an amendment to respond to amendments to a Watershed Management Organization (WMO) plan or following the completion and approval of a TMDL implementation plan.

Staff Review

Following a request for SWMP amendments, staff will make a decision as to the completeness and validity of the request. If additional information is needed by staff to determine the validity of the request, staff will generally respond to the requestor within 30-60 days of receiving the request.

Following receipt of sufficient information such that validity of the request can be evaluated, there are three options which are described below:

a. Reject the amendment. Staff will reject the amendment if the request reduces, or has the potential to reduce the ability to achieve the goals and policies of the SWMP, or will result in the SWMP no longer being consistent with one or more of the WMOs plans.

b. Accept the amendment as a minor issue, with minor issues collectively added to the SWMP at a later date. These changes will generally be clarifications of plan provisions or to incorporate new information available after the adoption of the 2021 SWMP. Minor changes will generally be evaluated on the potential of the request to help staff better implement and achieve the goals and policies the SWMP. Minor issues will not result in formal amendments but will be tracked and incorporated formally into the SWMP at the time any major changes are approved.

c. Accept the amendment as a major issue, with major issues requiring an immediate amendment. In acting on an amendment request, staff should recommend to the City Council whether or not a public hearing is warranted. In general, any requests for changes to the goals and policies or the development standards established in the SWMP will be considered major amendments.

Staff will make every attempt to respond to the request within 30-60 days of receiving sufficient information from the requestor. The timeframe will allow staff to evaluate the request internally and

gather input from the WMOs and other technical resources, as needed. The response will describe the staff recommendation and which of the three categories the request falls into. The response will also outline the schedule for actions, if actions are needed to complete the requested amendment.

Watershed Management Organization Approval

All proposed major amendments must be reviewed and approved by the appropriate WMOs prior to final adoption of the amendments. Major amendments would include changes to the goals and policies of the SWMP. Staff will review the proposed amendments with the WMOs to determine if the change is a major amendment and if determined to be major amendment, then will assess the ability of the requested amendment to maintain consistency with WMOs plans.

Council Consideration

Major amendments and the need for a public hearing will be determined by staff and if identified as a major amendment, the request will be considered at a regular or special Council meeting. Staff recommendations will be considered before decisions on appropriate action(s) are made. The requestor will be given an opportunity to present the basis for, and intended outcomes of, the request at the public hearing and will be notified of the dates of all official actions relating to the request.

Public Hearing and Council Action

The initiation of a public hearing will allow for public input or input based on public interest in the requested amendment. Council, with staff recommendations, will determine when the public hearing should occur in the process. Consistent with other formal Council actions and based on the public hearing, Council would adopt the amendment(s), deny the amendment(s) or take other action.

Council Adoption

Final action on any major amendments, following approval by the WMOs, is Council adoption. Prior to adoption, an additional public hearing may be held to review the SWMP amendments and notify the appropriate stakeholders.

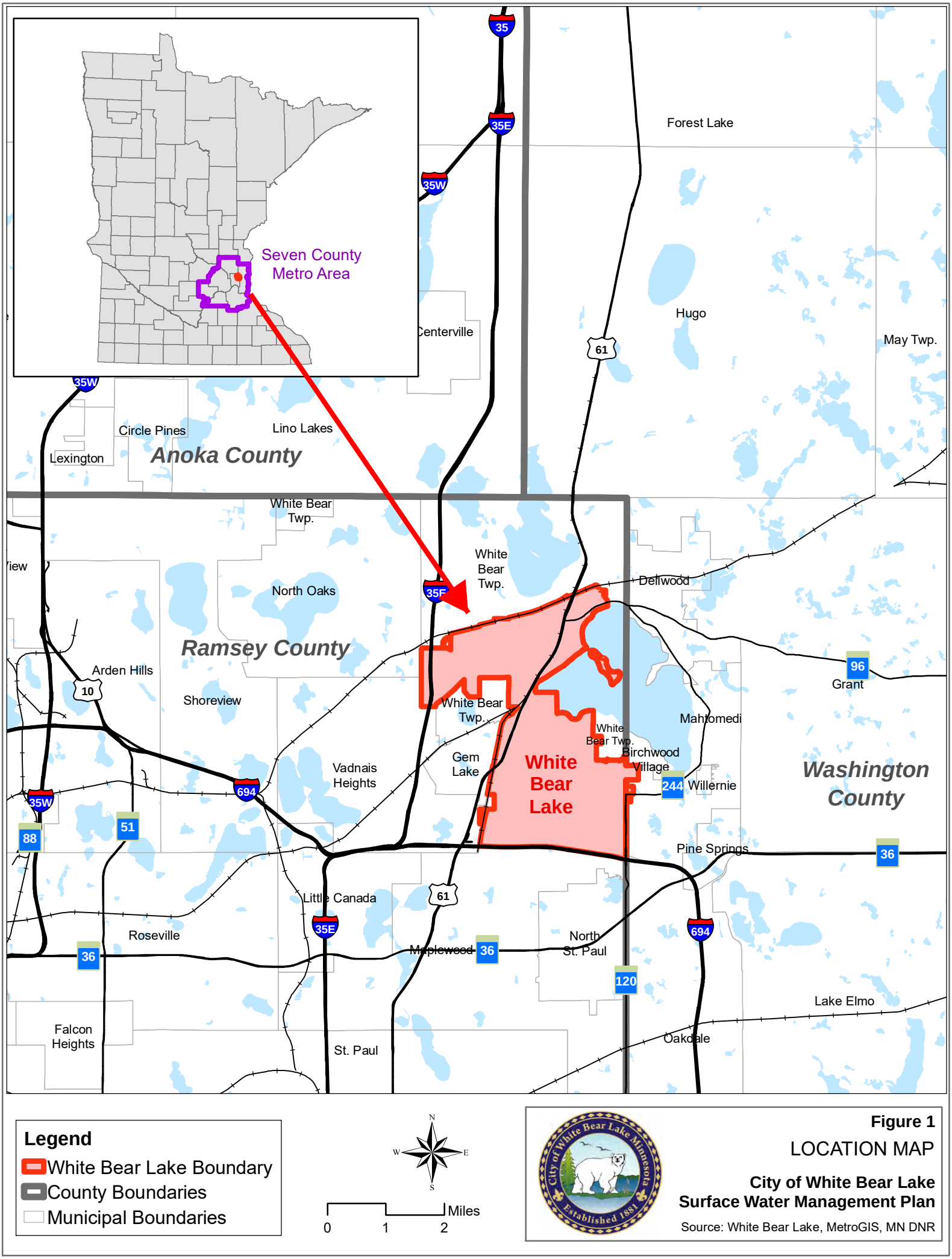


Figure 1

LOCATION MAP

City of White Bear Lake
Surface Water Management Plan

Source: White Bear Lake, MetroGIS, MN DNR

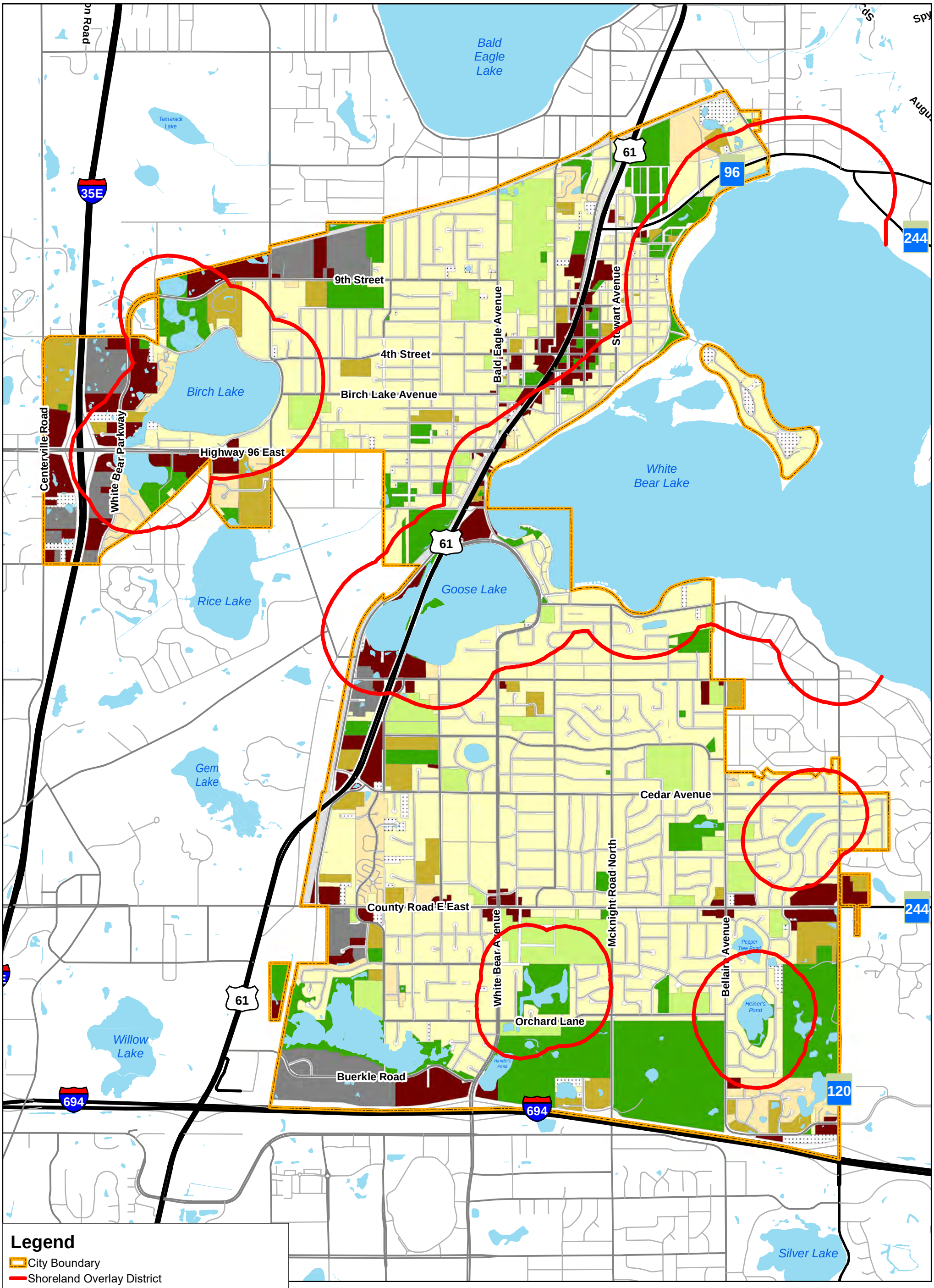


Figure 2

EXISTING LAND USE

City of White Bear Lake
Surface Water Management Plan

Source: City of White Bear Lake

Bald Eagle Lake
Tamarack Lake
35E
61
96
24
9th Street
Bald Eagle Avenue
Stewart Avenue
4th Street
Birch Lake
Birch Lake Avenue
Centerville Road
White Bear Parkway
Highway 96 East
White Bear Lake
61
Rice Lake
Goose Lake
Gem Lake
Oak Knoll Pond
Cedar Avenue
Mcknight Road North
County Road E East
White Bear Avenue
Bellaire Avenue
Pepper Tree Pond
Heiner's Pond
Orchard Lane
61
Willow Lake
Handlo's Pond
Buerkle Road
694
120
Silver Lake

Legend

- City Boundary
- Shoreland Overlay District
- Very Low Density Residential (77.3 ac)
- Low Density Residential (1964.8 ac)
- Medium Density Residential (1071.7 ac)
- High Density Residential (198.0 ac)
- Commercial (126.2 ac)
- Downtown (89.1 ac)
- Lake Village (15.3 ac)
- Business Park (279.5 ac)
- Industrial (92.3 ac)
- Public/Semi-Public (408.4 ac)
- Park, Recreation, & Open Space (538.1 ac)
- Arts District (4.3 ac)
- TOD Mixed Use (41.1 ac)
- Neighborhood Mixed Use (6.5 ac)
- Railway (73.9 ac)

N
W
E
S

0 0.225 0.45 Miles

Figure 3

FUTURE LAND USE

City of White Bear Lake
Surface Water Management Plan

Source: City of White Bear Lake, Ramsey County

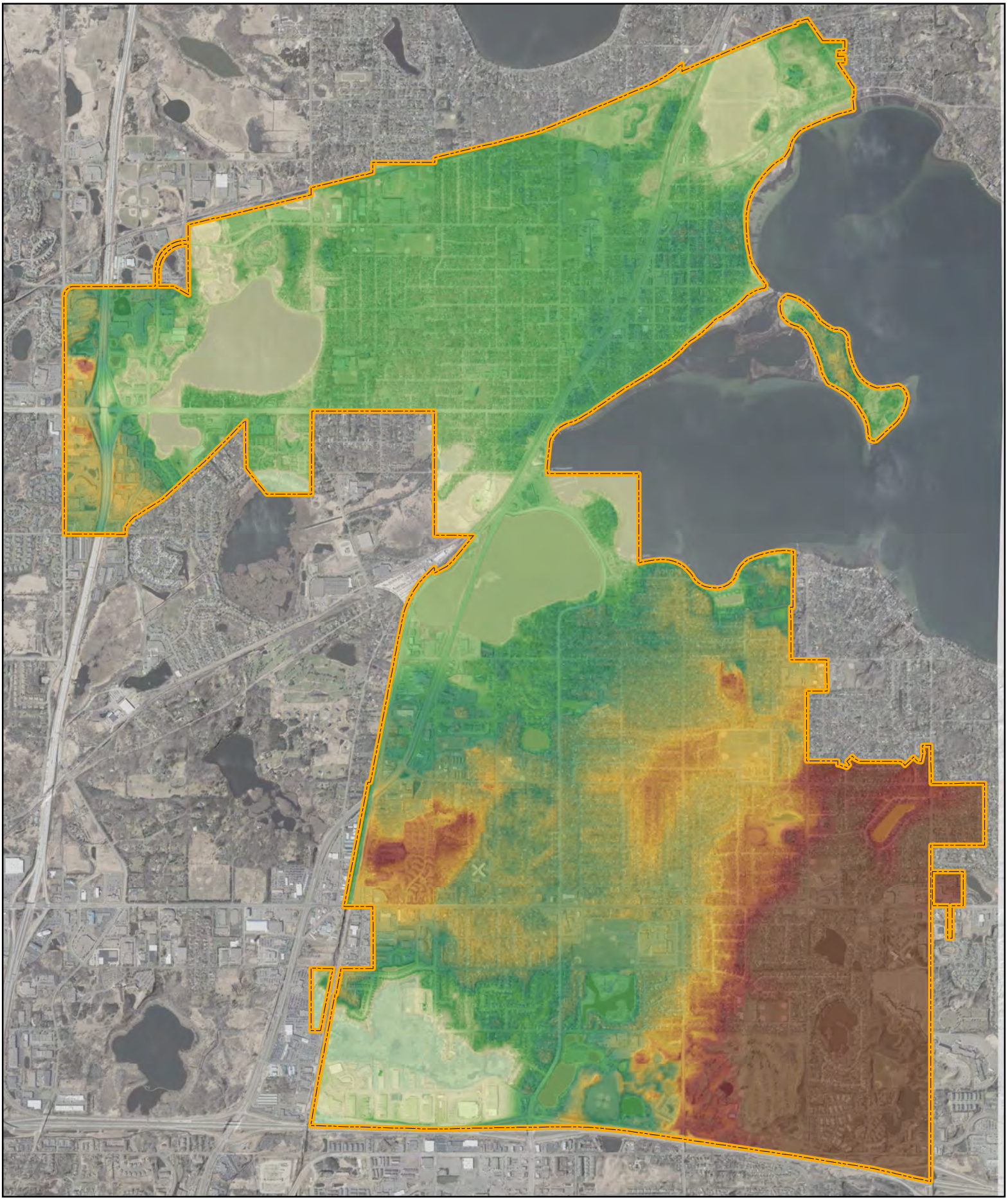


Figure 4

TOPOGRAPHY

City of White Bear Lake
Surface Water Management Plan

Source: MNGEO, City of White Bear Lake

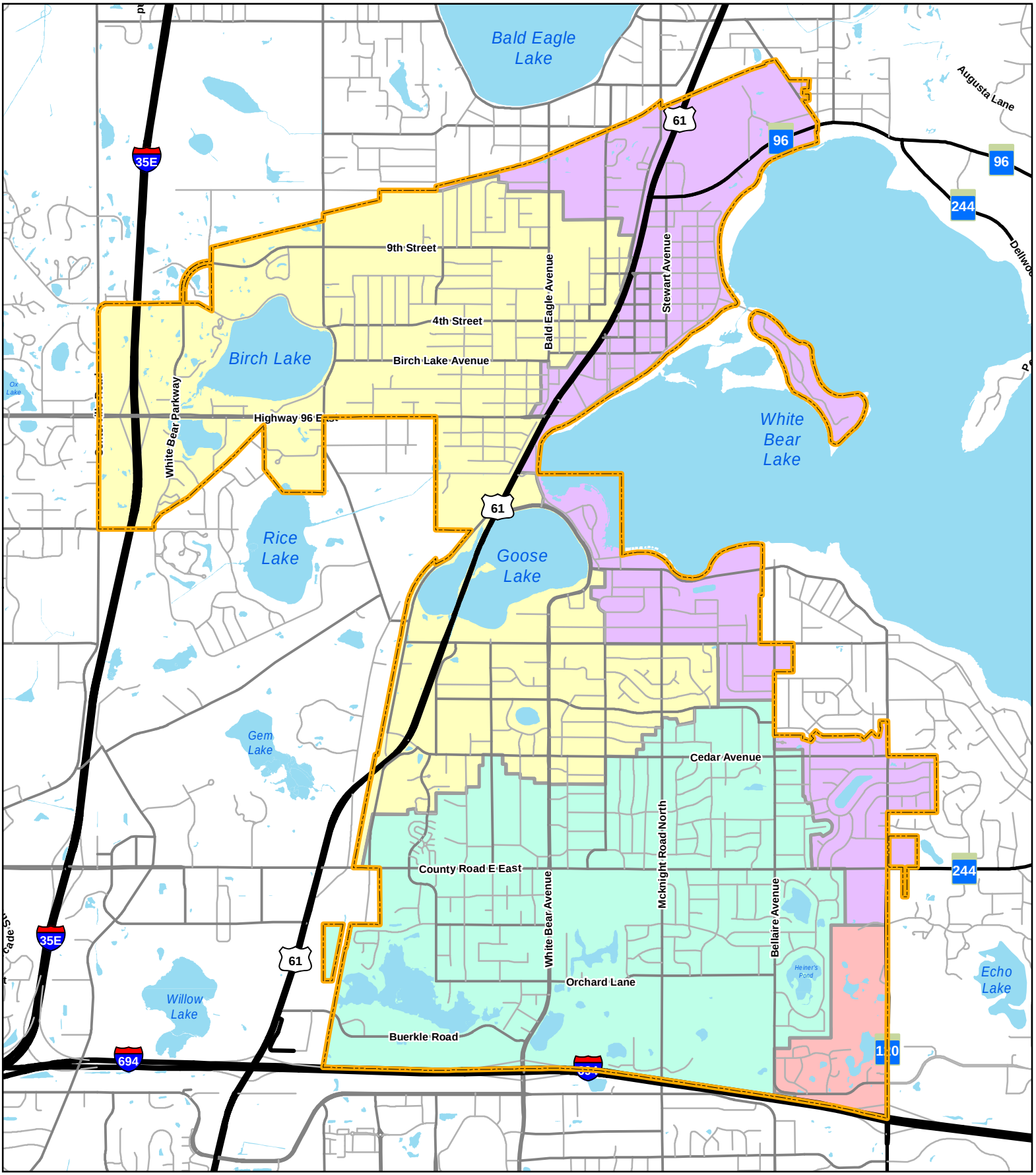
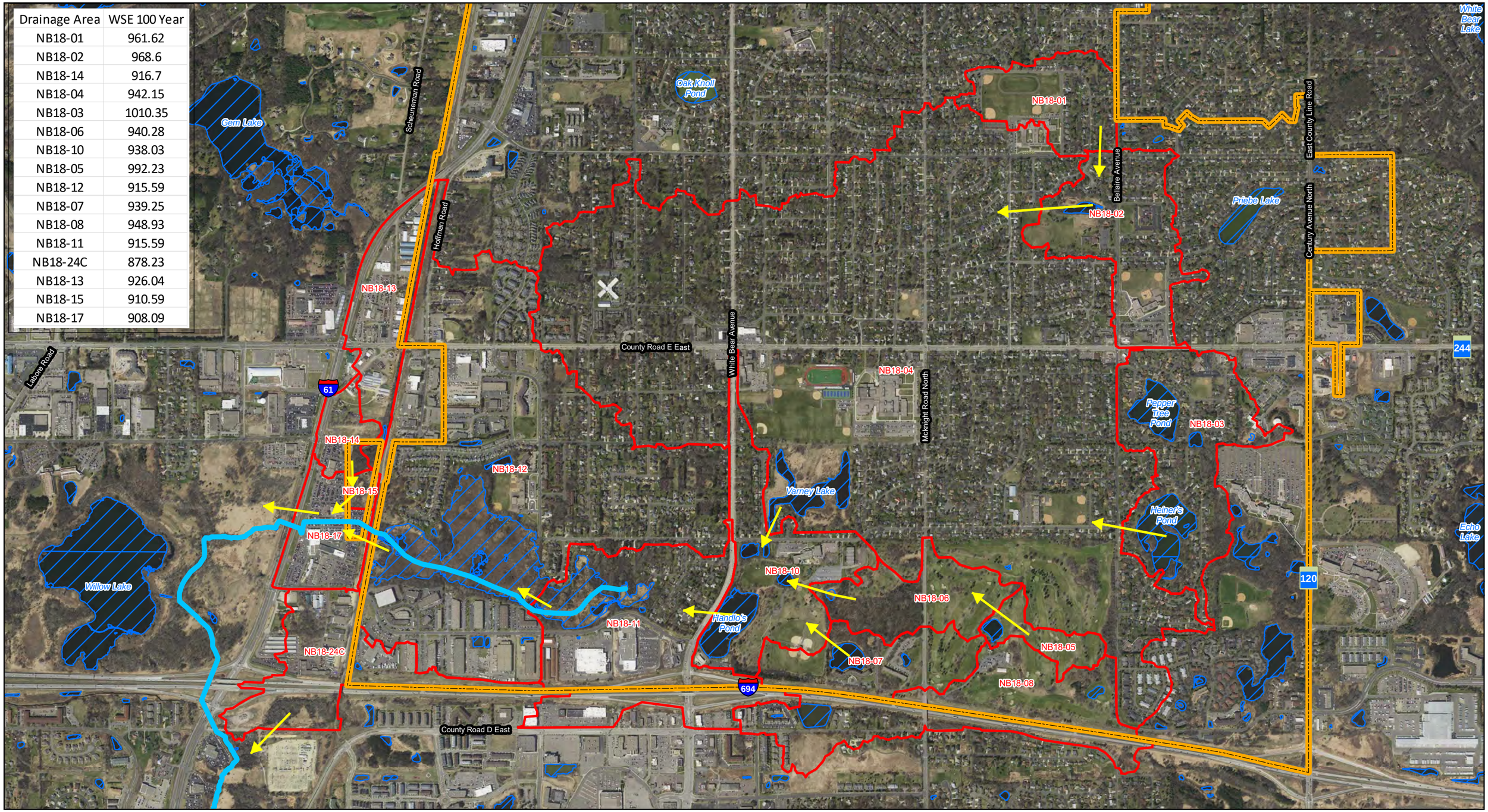


Figure 5
WATERSHED MANAGEMENT ORGANIZATIONS
City of White Bear Lake
Surface Water Management Plan

Source: Ramsey Washington Metro Watershed District (RWMWD), Rice Creek Watershed District (RCWD), Valley Branch Watershed District (VBWD), Vadnais Lake Area Water Management Organization (VLAWMO)

Drainage Area	WSE 100 Year
NB18-01	961.62
NB18-02	968.6
NB18-14	916.7
NB18-04	942.15
NB18-03	1010.35
NB18-06	940.28
NB18-10	938.03
NB18-05	992.23
NB18-12	915.59
NB18-07	939.25
NB18-08	948.93
NB18-11	915.59
NB18-24C	878.23
NB18-13	926.04
NB18-15	910.59
NB18-17	908.09



Legend

- Willow Creek
- Drainage Areas
- Drainage Area Outflow
- City Boundary
- Waterbody

N W E S

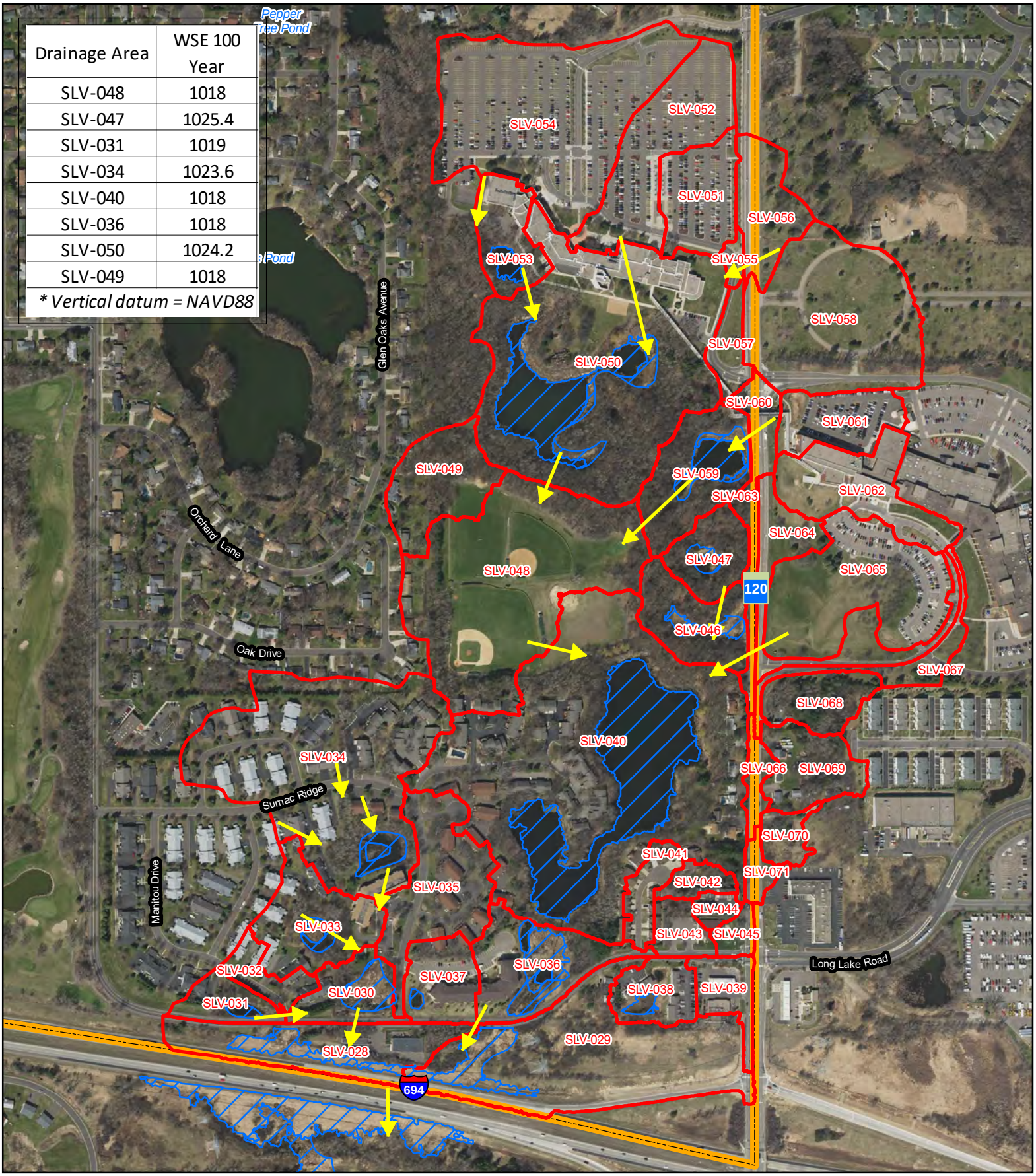
0 0.2 0.4 Miles

Figure 6

WILLOW CREEK SUBWATERSHED

City of White Bear Lake
Surface Water Management Plan

Source: Ramsey Washington Metro Watershed District (RWMWD)



Drainage Area	WSE 100 Year
SLV-048	1018
SLV-047	1025.4
SLV-031	1019
SLV-034	1023.6
SLV-040	1018
SLV-036	1018
SLV-050	1024.2
SLV-049	1018

** Vertical datum = NAVD88*

Legend

- Drainage Areas
- Drainage Area Outflow
- City Boundary
- Waterbody

N
W E
S

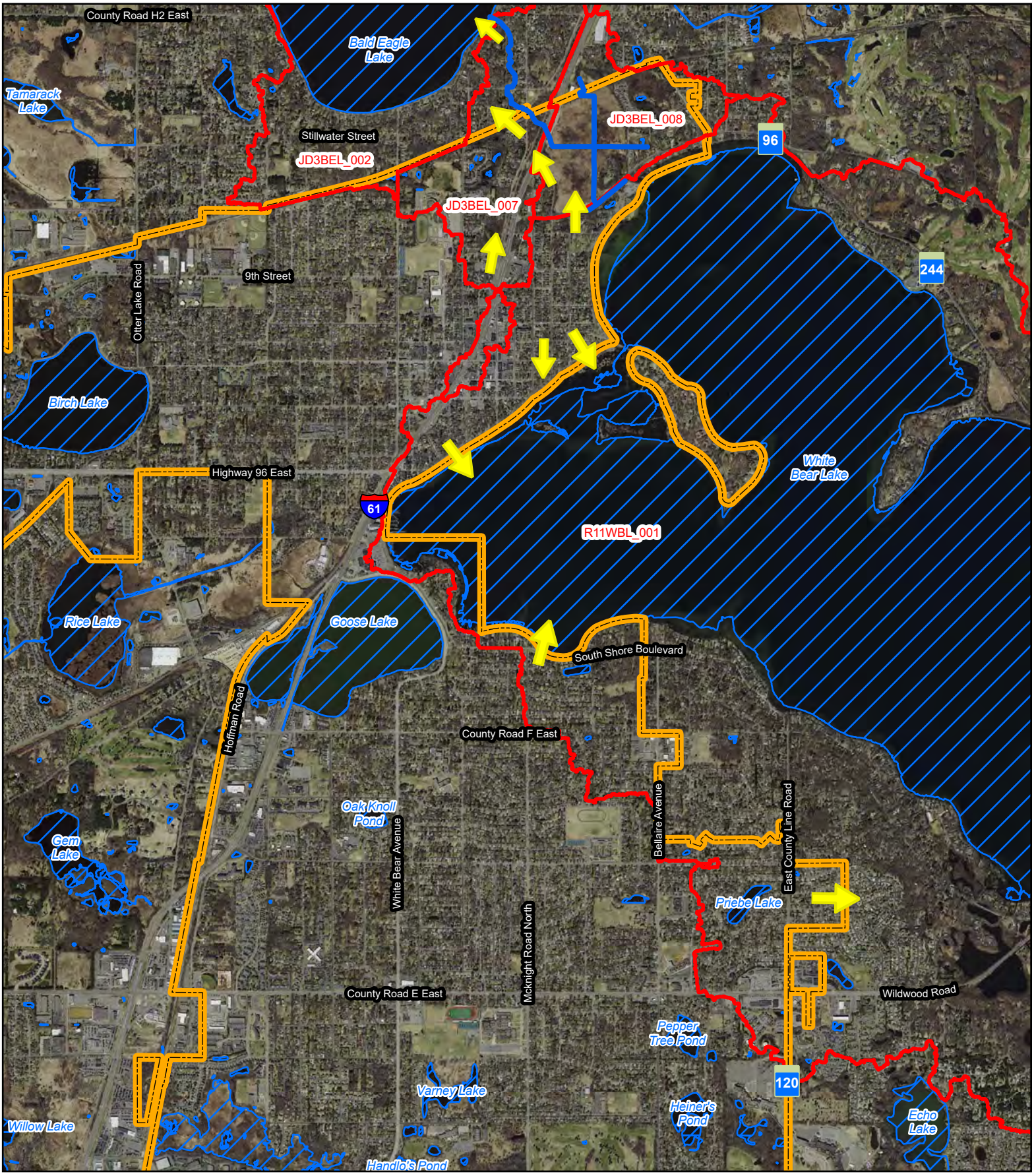
0 0.0425 0.085 Miles

Figure 7

SILVER LAKE SUBWATERSHED

City of White Bear Lake
Surface Water Management Plan

Source: Valley Branch Watershed District (VBWD)



Legend

- RCD 11
- Drainage Areas
- Drainage Area Outflow
- City Boundary
- Waterbody

N
W E
S

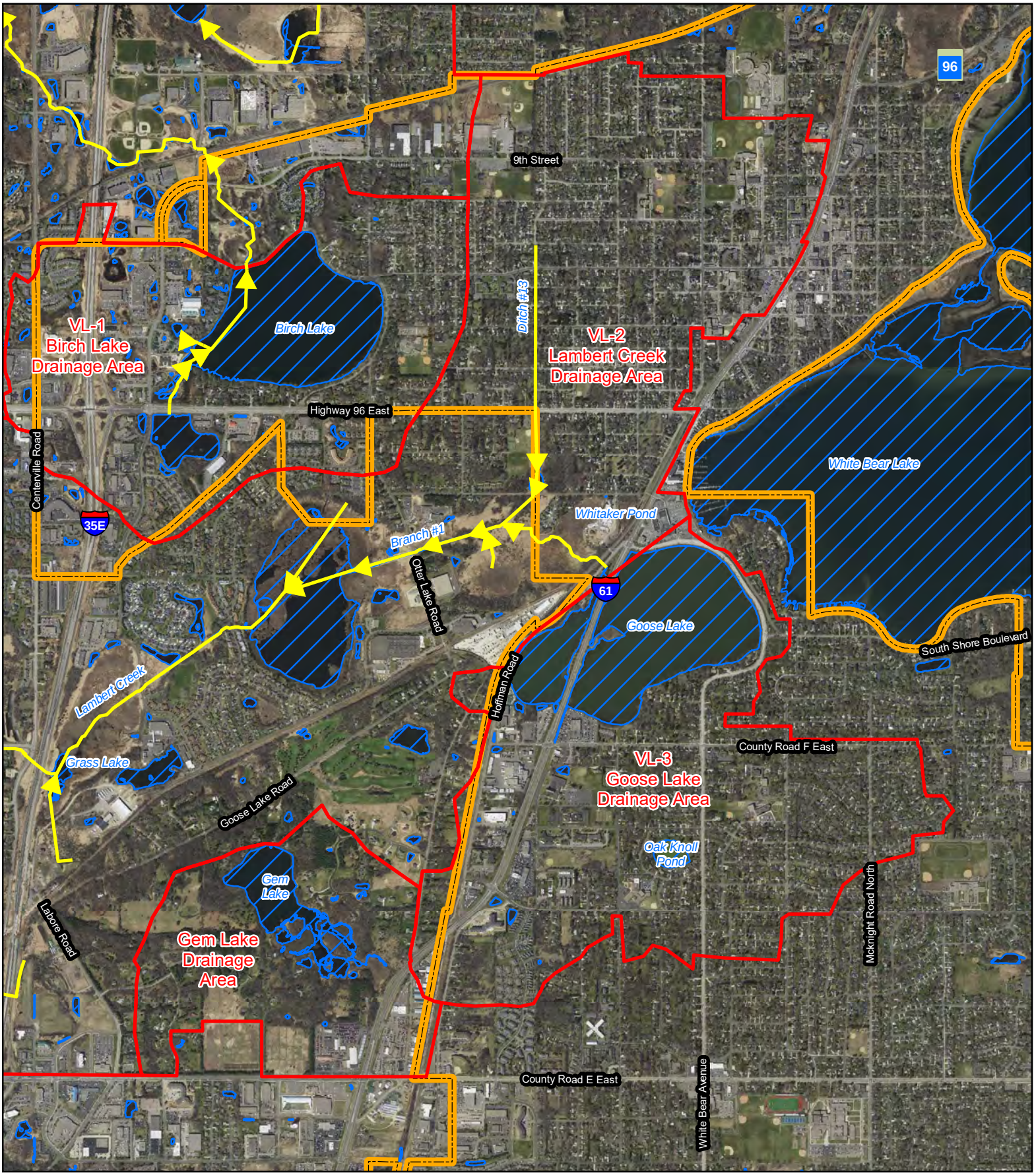
0 0.2 0.4 Miles

Figure 8

BALD EAGLE LAKE SUBWATERSHED

City of White Bear Lake
Surface Water Management Plan

Source: Rice Creek Watershed District (RCWD)



Legend

- Drainage Areas
- Stream Flow Arrows
- City Boundary
- Waterbody

N
W E
S

0 0.25 0.5 Miles

Figure 9

VADNAIS LAKE SUBWATERSHED

City of White Bear Lake
Surface Water Management Plan

Source: Vadnais Lake Area Water Management Organization (VLAWMO)

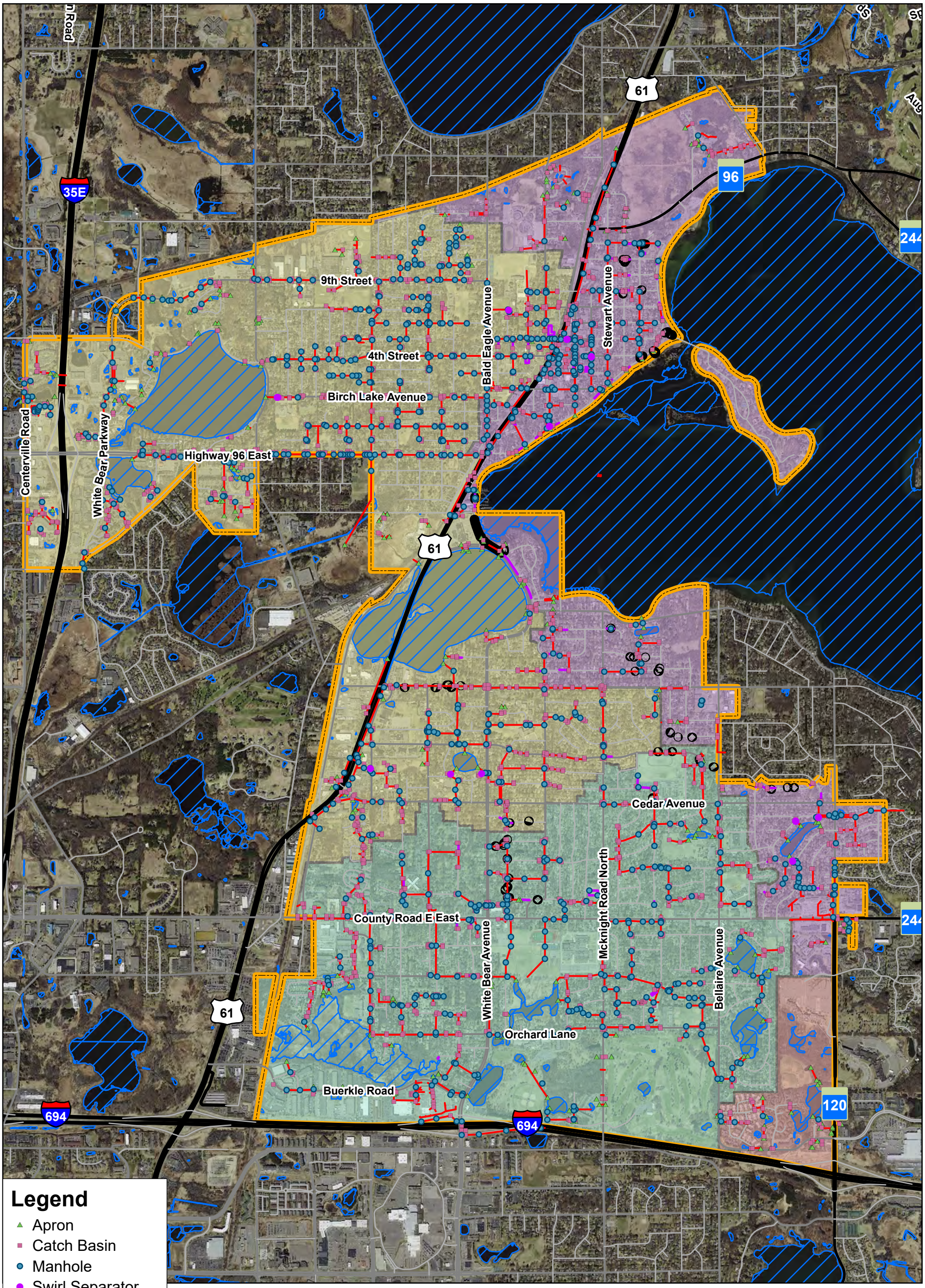
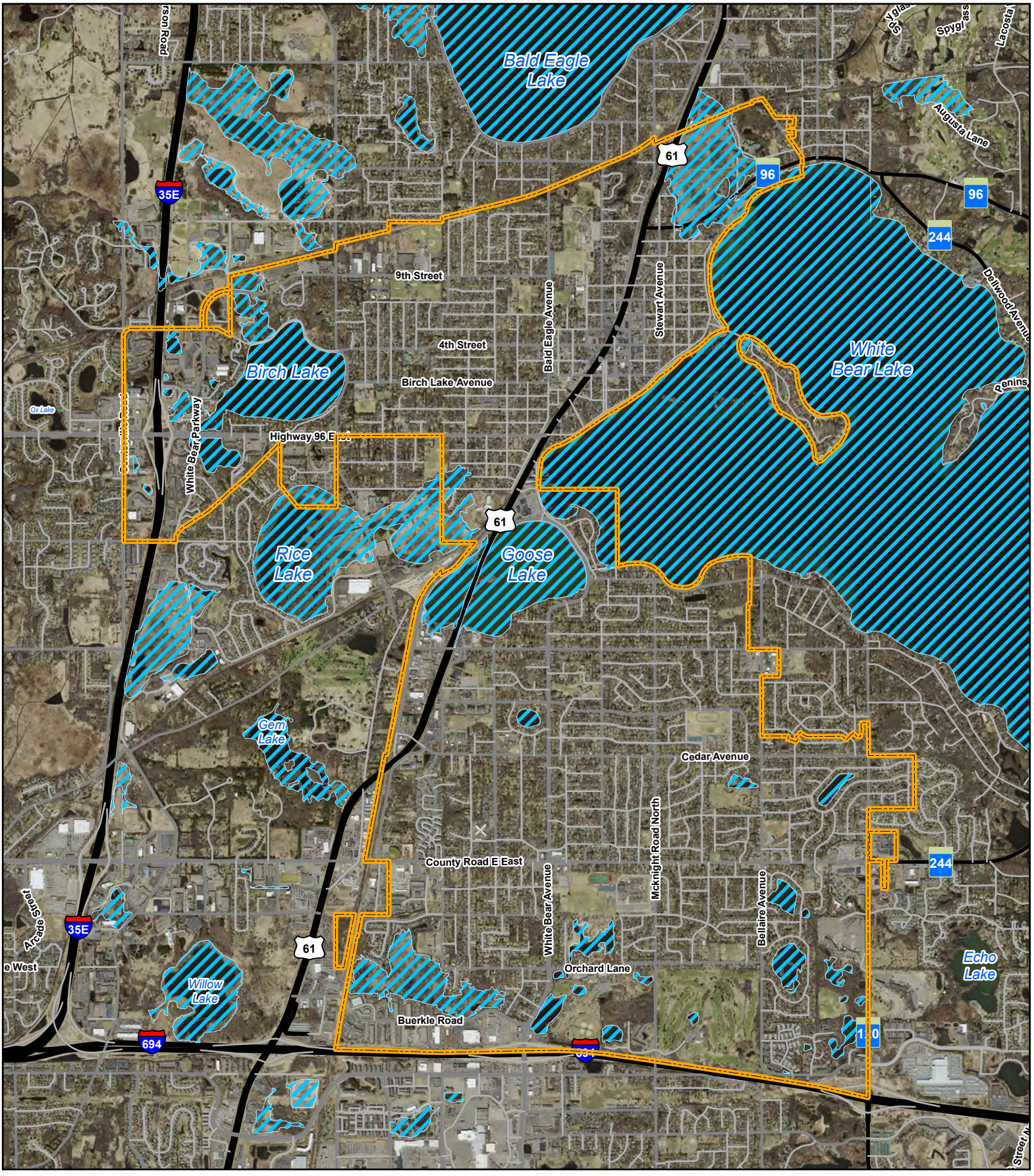


Figure 10

STORM SEWER

City of White Bear Lake
Surface Water Management Plan

Source: City of White Bear Lake



Legend

- City Boundary
- Special Flood Hazard Area

N
W E
S

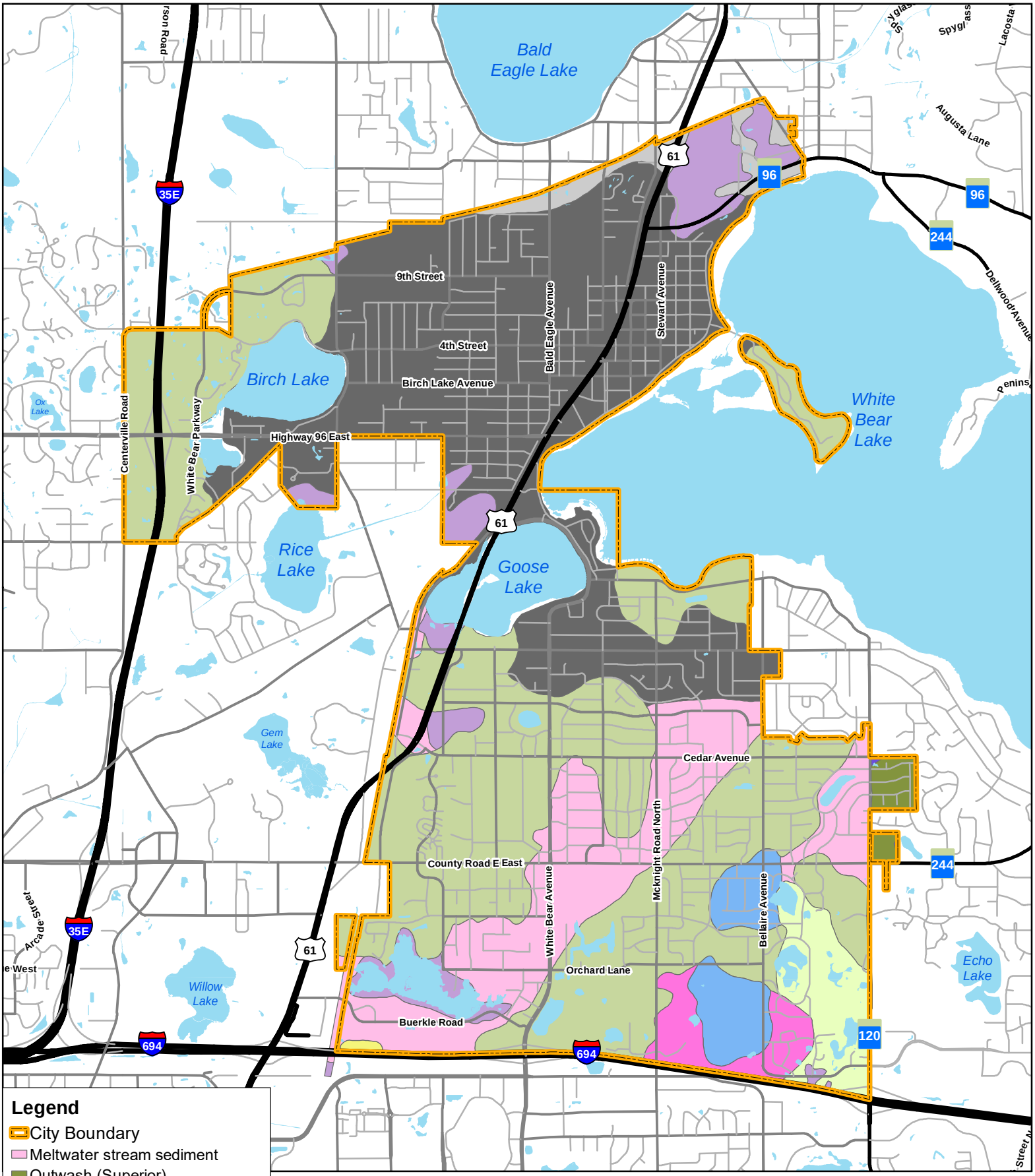
0 0.25 0.5 Miles

Figure 11

SPECIAL FLOOD HAZARD AREAS

City of White Bear Lake
Surface Water Management Plan

Source: MnDNR



Legend

- City Boundary
- Meltwater stream sediment
- Outwash (Superior)
- Sed. of ice-walled lake plains
- Till (Superior)
- Till under sandy lake sed.
- Till under stream sediment
- Till w stream-modified surface
- Coarse meltwater stream sed.
- Organic sediment
- Sandy lake sediment;Grantsburg
- Till; Grantsburg sublobe

N W E S

0 0.25 0.5 Miles

Figure 12

SURFICIAL GEOLOGY

City of White Bear Lake
Surface Water Management Plan

Source: MNGS

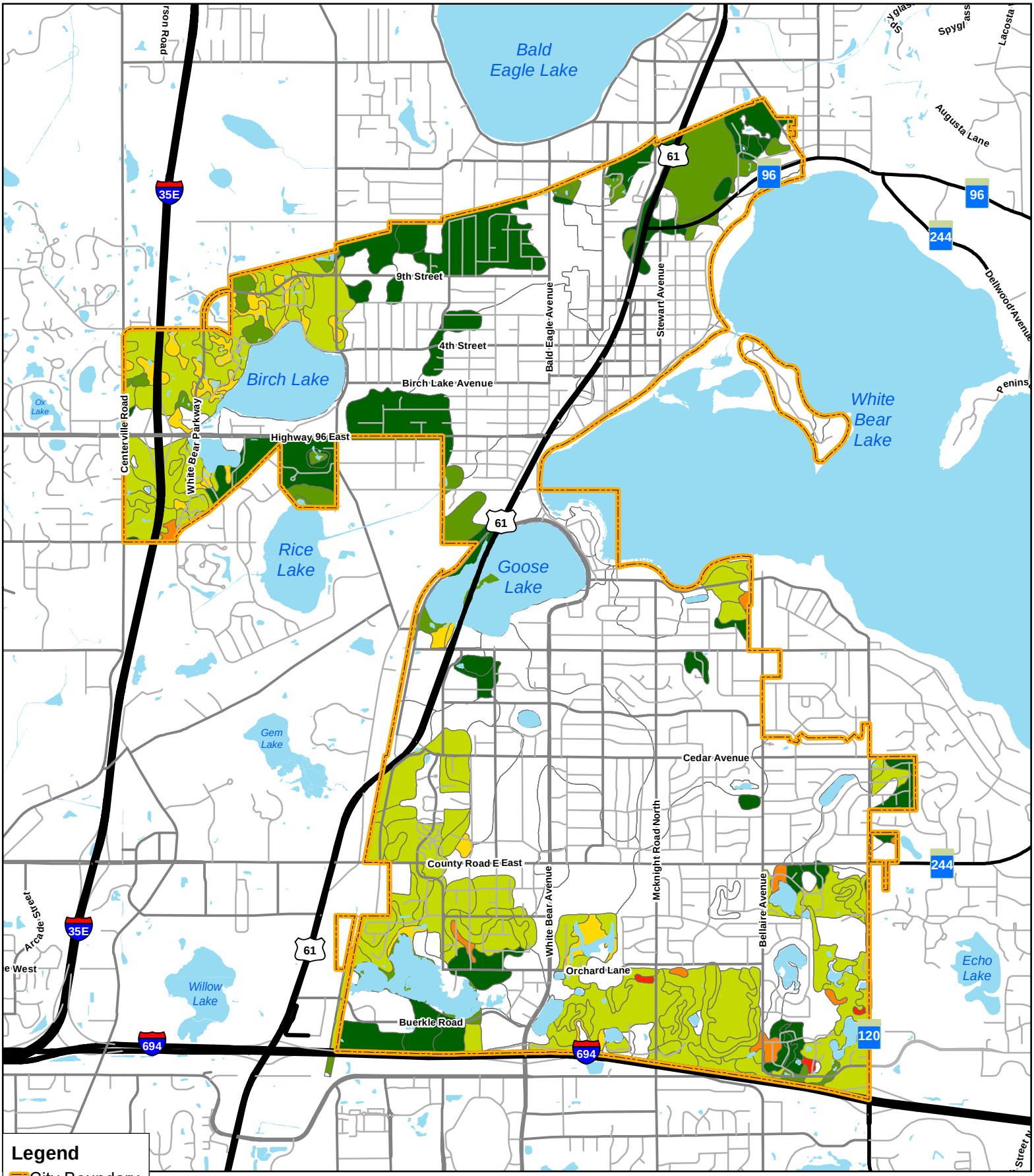
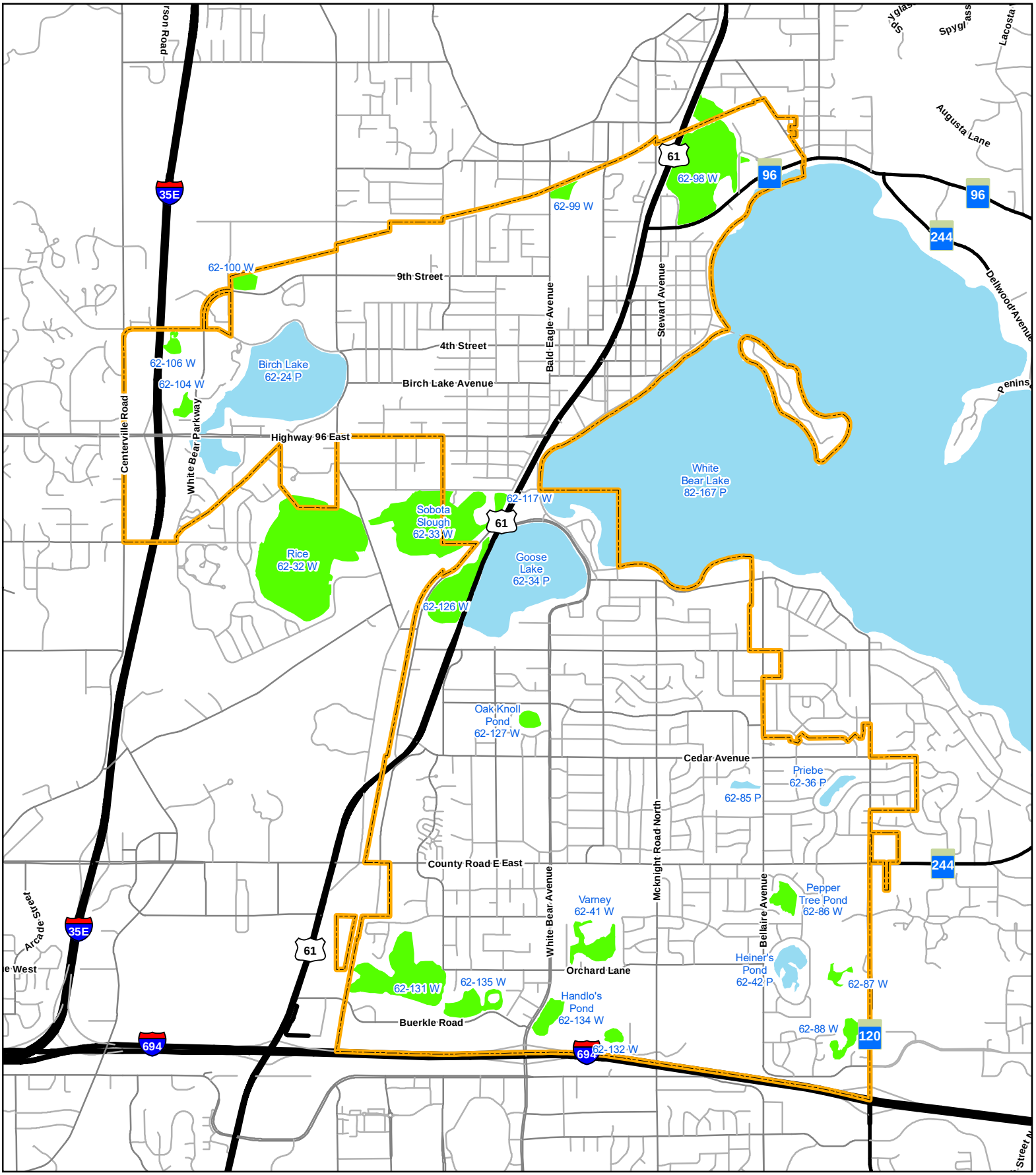


Figure 13

HYDROLOGIC SOIL GROUPS

City of White Bear Lake
Surface Water Management Plan



Legend

City Boundary

Public Waters Classification

- Public Water Basin
- Public Water Wetland

N W E S

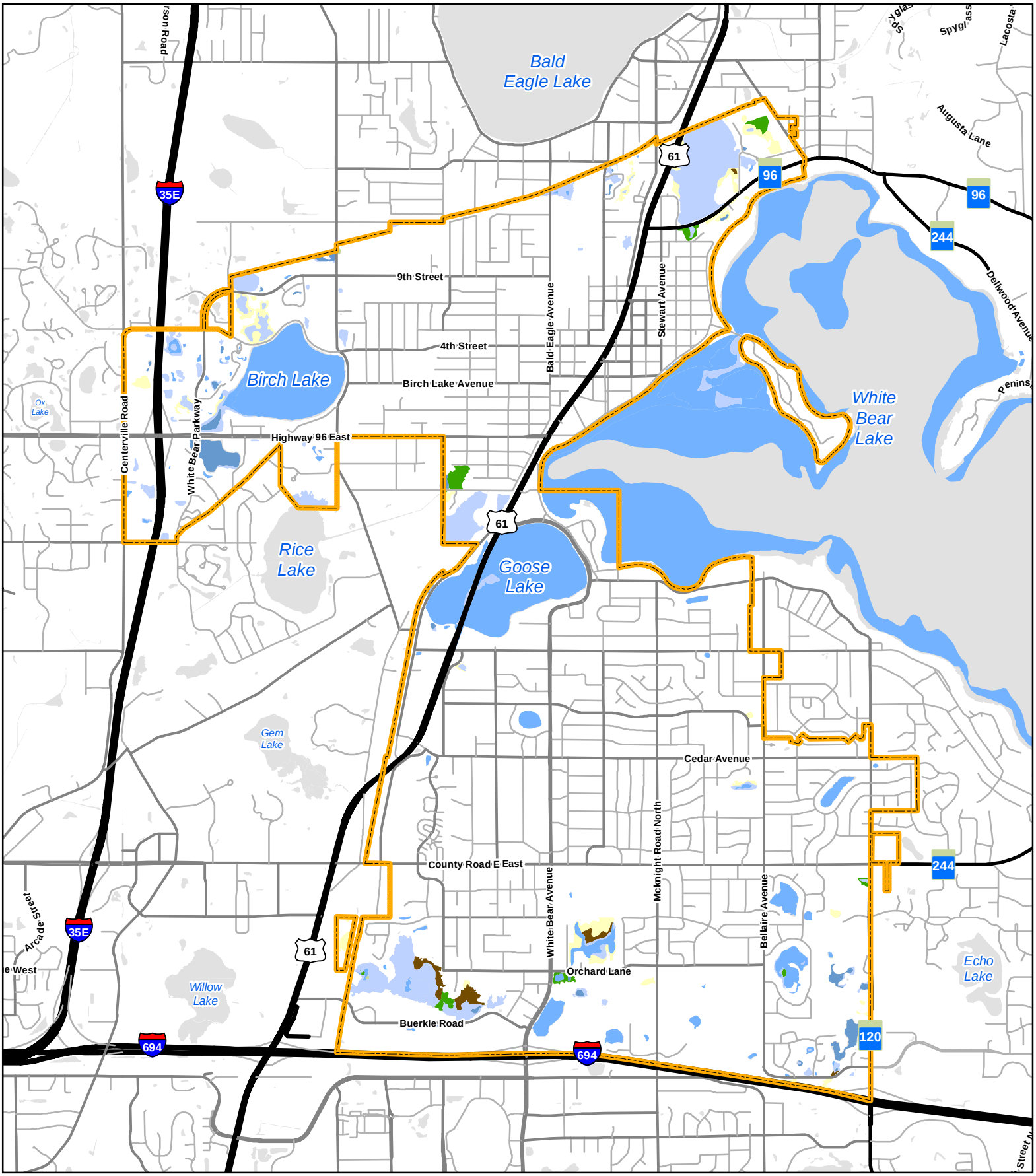
0 0.25 0.5 Miles

Figure 14

PUBLIC WATERS INVENTORY

City of White Bear Lake
Surface Water Management Plan

Source: Minnesota DNR



Legend

- City Boundary

Circular 39 Plant Community Classification

- Type 1 - Seasonally Flooded Basin
- Type 2 - Wet Meadow
- Type 3 - Shallow Marsh
- Type 4 - Deep Marsh
- Type 5 - Shallow Open Water
- Type 6 - Shrub Wetland
- Type 7 - Hardwood Wetland

N
W E
S

0 0.25 0.5 Miles

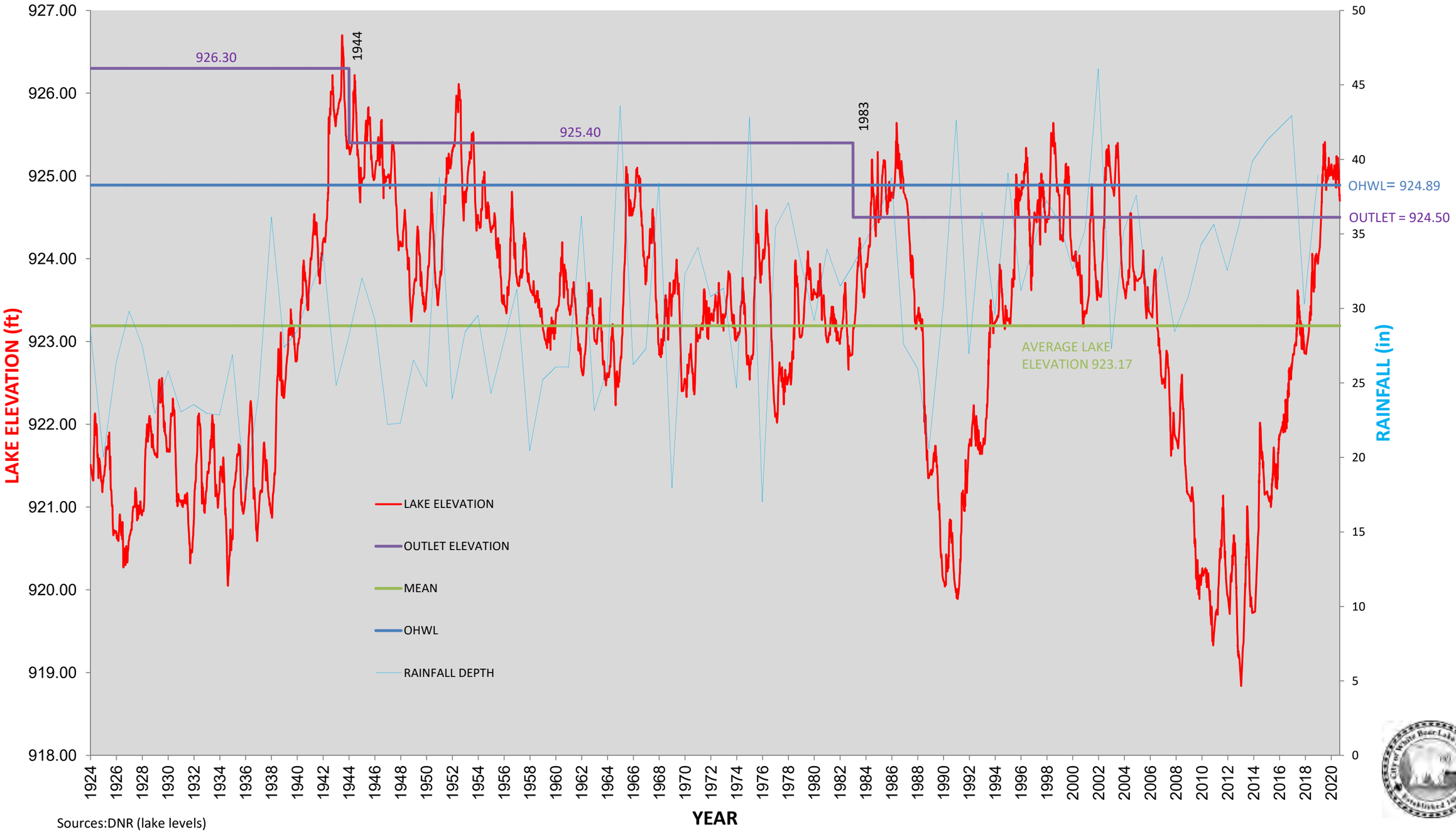
Figure 15

NATIONAL WETLANDS INVENTORY

City of White Bear Lake
Surface Water Management Plan

Source: Minnesota DNR

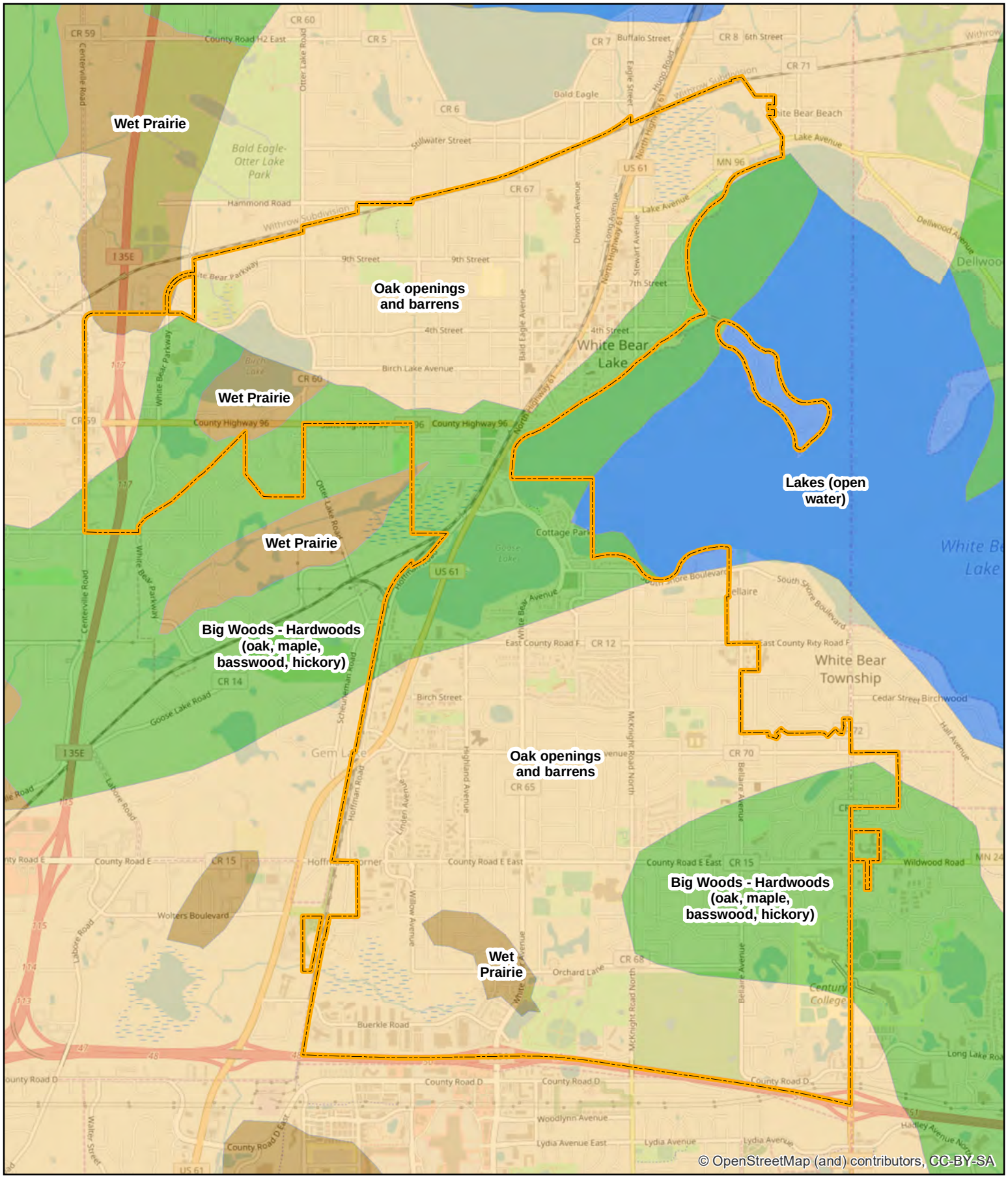
FIGURE 16 - WHITE BEAR LAKE HISTORICAL LAKE LEVELS VS. LOCAL RAINFALL



Sources:DNR (lake levels)

Meterologist Frank Watson Climate Data for WBL. http://weathermanwatson.com/frank (rainfall data from 2008- 2018)

10/29/2020



Legend

- Wet Prairie
- Oak Openings and Barrens
- Big Woods - Hardwoods (Oak, Maple, Basswood, Hickory)
- Lakes (open water)
- City Boundary

N W E S

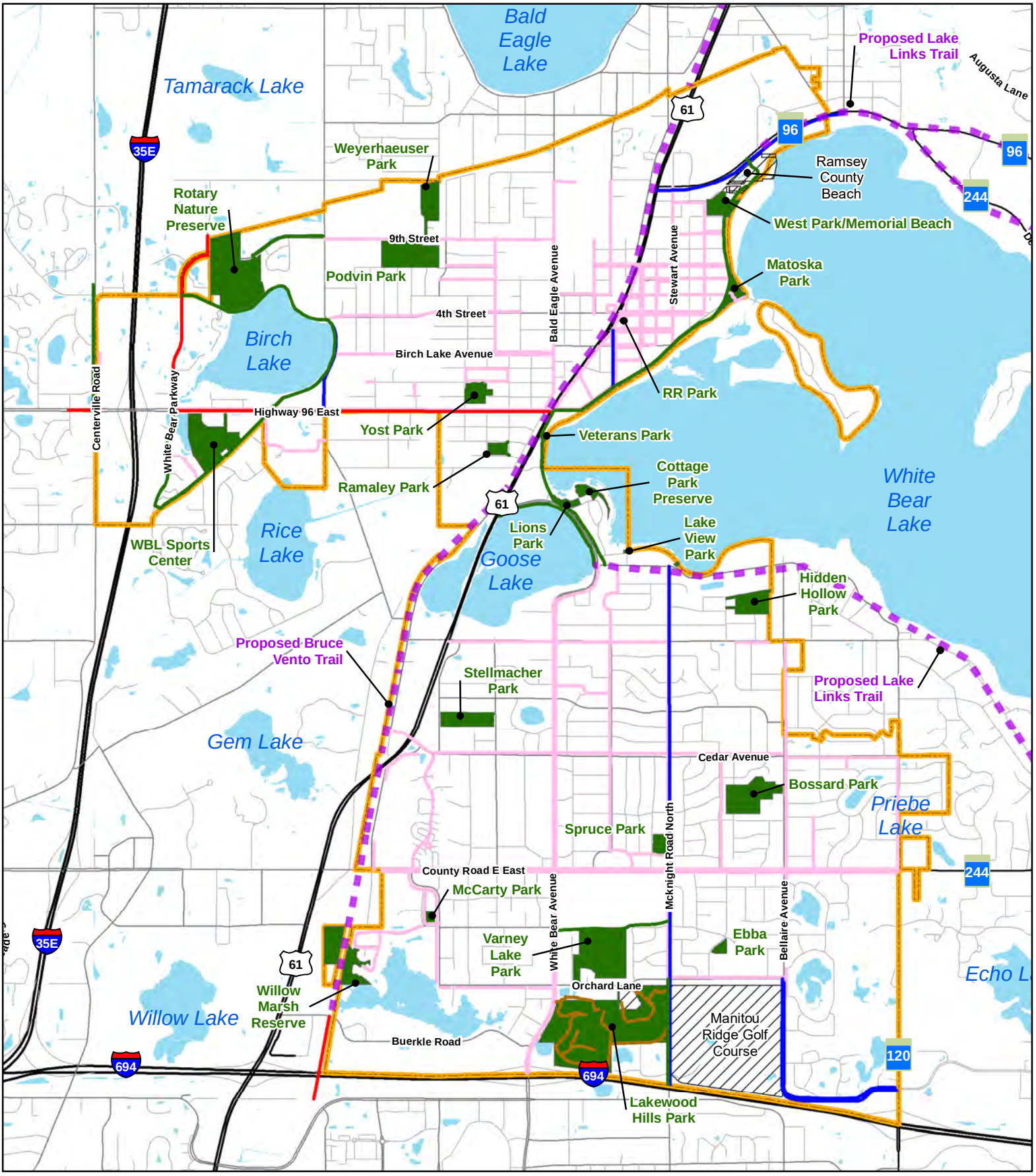
0 0.25 0.5 Miles

Figure 17

PRESETTLEMENT VEGETATION

City of White Bear Lake
Surface Water Management Plan

Source:MnDNR



Legend

- Mixed Use Trail
- On-Road Bike Lane
- Regional Trail
- Sidewalk
- Woodchip Trail
- Proposed Trail
- Parks
- CountyFacilities
- City Boundary

N W E S

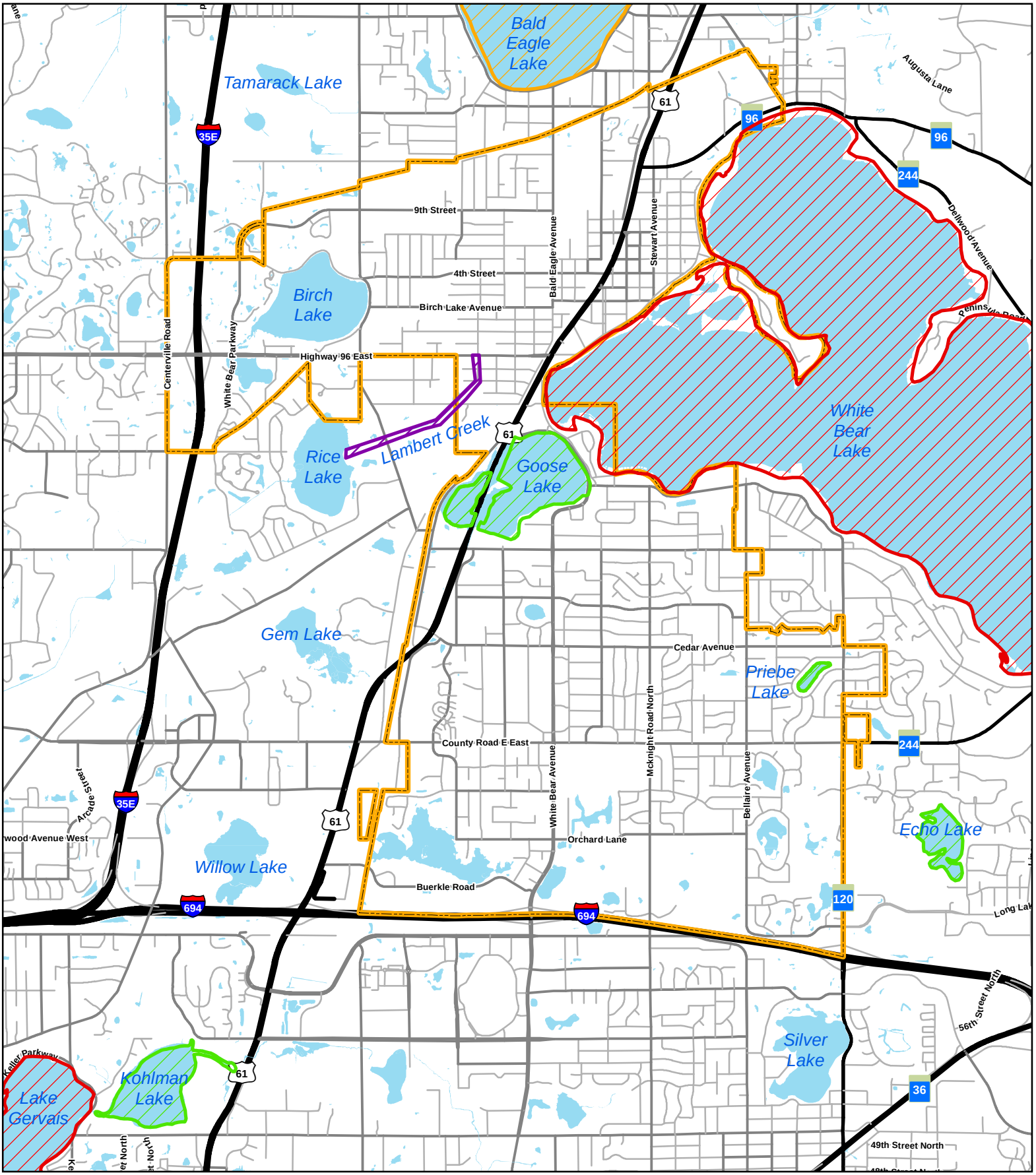
0 0.25 0.5 Miles

Figure 18

Parks and Trails

City of White Bear Lake
Surface Water Management Plan

Source: City of White Bear Lake



Legend

Pollutant or Stressor

- Fecal Coliform
- Mercury
- Nutrients
- Mercury & Nutrients
- City Boundary

N W E S

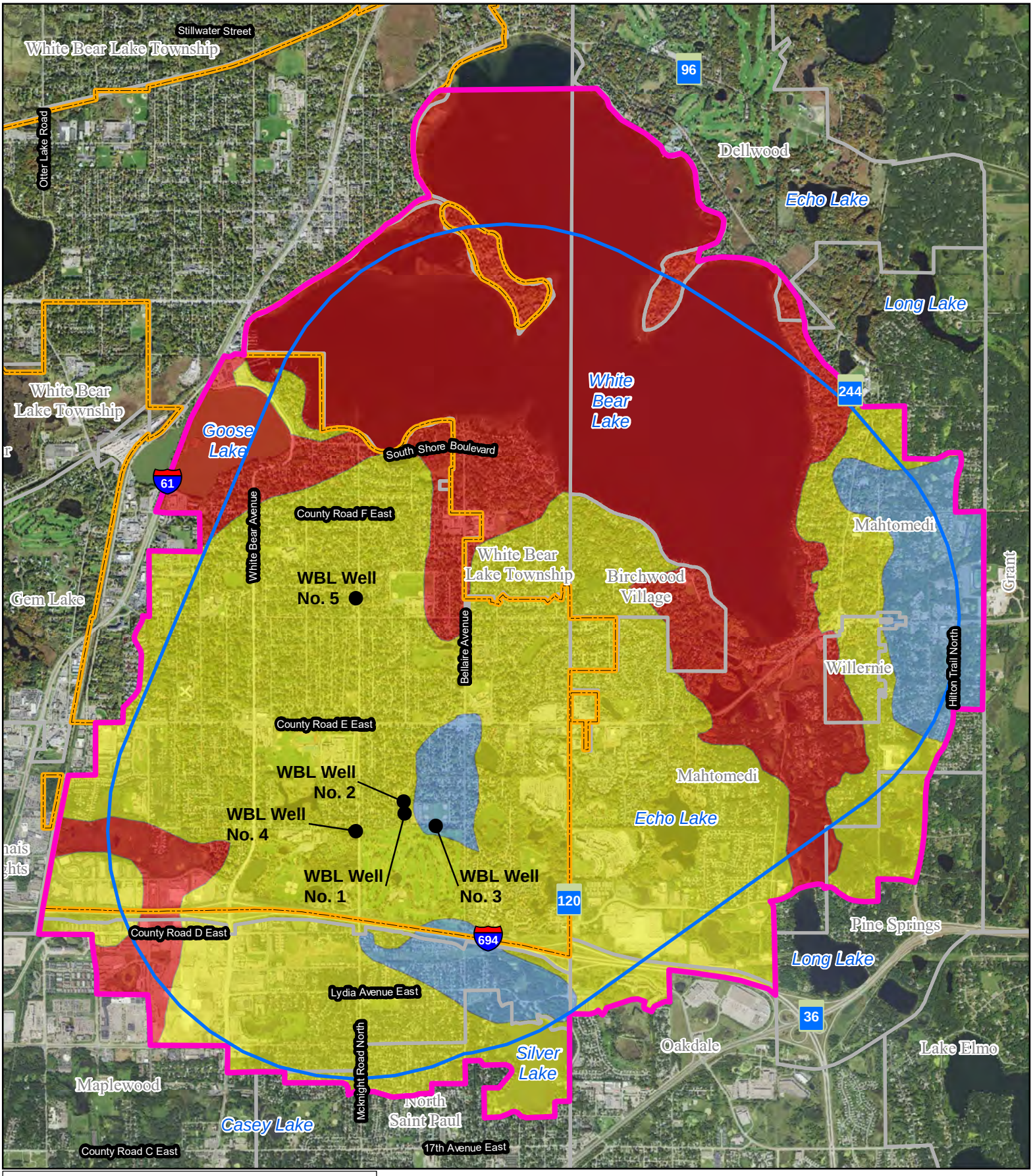
0 0.25 0.5 Miles

Figure 19

IMPAIRED WATER BODIES

City of White Bear Lake
Surface Water Management Plan

Source: MPCA



Legend

- Wellhead Protection Area (WHPA)
- Drinking Water Supply Management Area (DWSMA)
- Public Water Supply Sources
- City Boundary

DWSMA Vulnerability

- High Vulnerability
- Moderate Vulnerability
- Low Vulnerability

N
W E
S

0 0.25 0.5 Miles

Figure 20

WHPA, DWSMA AND DWSMA VULNERABILITY

City of White Bear Lake

Surface Water Management Plan

Source: City of White Bear Lake Wellhead Protection Plan

Table 26. Implementation Plan

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Stormwater Runoff Management																	
Rate/Volume Control	1.1	Install rate control and volume control practices in conjunction with municipal street and parking lot reconstruction projects.	Engineering		$100,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	Interim Construction Fund	CIP, Goose, Wilkinson, Lambert Creek SLMP's, MS4 TMDL Report	
	1.2	Convert alleys to pervious pavement in conjunction with municipal street reconstruction projects.	Engineering	VLAWMO, RCWD		$25,000	$25,000		$150,000						Interim Construction Fund	CIP	Tentative projects include one alley near Hisdahl's off of Hwy 96 in 2022, one near 2nd Street in 2023, and six near Division Avenue in 2025
	1.3	Expand the City owned stormwater reuse system at Lakewood Hills Park to irrigate soccer field turf.	Engineering, Public Works	RWMWD									$50,000		SWPP Fund, grants	CIP, MS4 TMDL Report, Kohlman Lake TMDL,	
	1.4	Promote Water Management Organization raingarden cost share programs to residents as part of the City's street reconstruction program. Provide a curb cut at no cost to residents.	Engineering	RCWD, RWMWD, VBWD, VLAWMO	X	X	X	X	X	X	X	X	X	X	Interim Construction Fund	MS4 TMDL Report	Cost is included as part of the City's street reconstruction program (objective 1.1). Assume $5,000/year
	1.5	Participate in a future State Water Reuse Clean Water Fund expanded workgroup to stay informed on any proposed stormwater reuse regulation.	Engineering		X	X	X	X	X	X	X	X	X	X			Staff time only
Water Quality Control	1.6	Identify existing erosion issues, prioritize, and implement corrective actions.	Engineering, Public Works			$10,000		$10,000		$10,000		$10,000		$10,000	Interim Construction Fund		
	1.7	Retrofit outfall manhole structures to White Bear Lake along Lake Avenue, and Gisella to capture trash and other floatables.	Engineering	RCWD	$10,000		$50,000								SWPP Fund, grants	SWPP fund budget (2021) CIP (2023)	Gisella sump manhole in 2021. Assumes City's share of grant match.
	1.8	Install water quality practices to treat runoff from City-owned parking lots at Matoska Park	Engineering	RCWD	$5,000										Interim Construction Fund, grants	CIP	Assumes City's share of grant match
	1.9	Retrofit volume control/water quality treatment practices on other City properties/parking lots if feasible (1299 Birch Lake Blvd, Lakewood Hills Park and others)	Engineering	RCWD, RWMWD, VBWD, VLAWMO	$10,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	Interim Construction Fund, SWPP Fund, grants	CIP	Lakewood Hills in 2021. Assumes City's share of grant match.
Localized Flooding	1.10	Address existing localized street flooding issues identified by staff and the public through the City's planned street reconstruction projects. Areas identified include an alley between Cook and Stewart and 6th and 7th Streets, and Old White Bear Avenue at South Shore Boulevard.	Engineering		X	X	X	X	X	X	X	X	X	X	Interim Construction Fund	CIP	Cost is included as part of the City's street reconstruction program (objective 1.1).
	1.11	Develop a GIS database of snowmelt flood prone areas and document the location of all low point overland emergency overflows. This map will assist public works in locating high priority areas for snow removal.	Engineering, Public Works				X	X							General Fund - Engineering		Staff time only

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
	1.12	Install a controlled outlet for the City owned infiltration basin on Gisella Boulevard.	Engineering								$100,000				Interim Construction Fund	CIP	Cost of project implementation if feasible.
Future Flooding Risk	1.13	Work with Watershed Management Organizations to identify and evaluate potential future flooding risk.	Engineering	RCWD, RWMWD, VBWD, VLAWMO					X								
	1.14	Assess the need to create a City-wide stormwater model. The model would be used to evaluate the City's stormwater infrastructure to determine capacity and level of future flooding risk.	Engineering	RCWD, RWMWD, VBWD, VLAWMO					X	$50,000					SWPP Fund	CIP	Cost of creating model
Stormwater Runoff Management Costs			Interim Construction Fund		$115,000	$410,000	$400,000	$410,000	$400,000	$410,000	$400,000	$410,000	$400,000	$410,000	10-year total =		$3,355,000
			Interim Construction Fund (lower priority)								$100,000				10-year total =		$100,000
			SWPP Fund		$10,000	$5,000	$55,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	10-year total =		$100,000
			SWPP Fund (lower Priority)							$50,000			$50,000		Lower Priority 10-year total =		$100,000
Lake, Stream, and Wetland Management																	
Goose Lake	2.1	East Goose Lake Adaptive Lake Management planning and public engagement	Engineering	VLAWMO	$30,000										SWPP Fund	SWPP Fund budget	City's portion of estimated costs, assuming 50% partner match. Cost at high end of range: $15,000-$30,000
	2.2	East Goose Lake Adaptive Lake Management program and project implementation.	Engineering	VLAWMO		$75,000	$75,000	$75,000	$75,000	$75,000	$50,000	$50,000	$50,000	$50,000	SWPP Fund, grants	CIP, future ALM plan	City's portion of estimated costs, assuming 50% partner match. Cost at high end of range: $210,000-$375,000 over three to five years. Also assumes additional costs beyond five years
	2.3	Stormwater treatment opportunities as part of the Bruce Vento trail project.	Engineering	VLAWMO, Ramsey County					$50,000						SWPP Fund, project partners, grants	CIP, East Goose and West Goose Lakes (and Oak Knoll Pond) In-Lake Treatment Feasibility Study	Assumes City's share of the project implementation cost. Will be considered if feasible.
Priebe Lake & Clearwater Creek	2.4	Participate in the TMDL process with lead agency.	Engineering	MPCA, RCWD				X	X							MPCA Impaired Waters list	Staff time only. Assumes a TMDL is planned for Priebe within the timeframe of this SWMP

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Bald Eagle Lake	2.5	Assist RCWD in working with the White Bear Lake Area School District #624 and owners/managers of commercial properties along Hwy 61 that were identified as potential stormwater retrofit locations in the South Bald Eagle Lake Subwatershed: Urban Retrofit Analysis.	Engineering	RCWD	X	X	X	X	X	X	X	X	X	X		CIP. South Bald Eagle Lake Subwatershed Assessment	staff time only
Kohlman Lake	2.6	Collaborate with RWMWD to evaluate opportunities for stormwater treatment practices to treat runoff from commercial properties on Buerkle Road.	Engineering	RWMWD			$50,000								SWPP Fund, grants	CIP, Kohlman Lake Total Maximum Daily Load Report	Assumes City's share of grant match. Will be considered if feasible.
	2.7	Collaborate with RWMWD to evaluate opportunities for stormwater treatment practices at Lakewood Hills Park.	Engineering, Public Works/Parks	RWMWD	$50,000										Interim Construction Fund, grants	CIP, Kohlman Lake Total Maximum Daily Load Report	Assumes City's share of grant match
Lambert Creek	2.8	Support VLAWMO projects in Lambert subwatershed	Engineering	VLAWMO			$5,000	$5,000							SWPP fund, grants	CIP, VLAWMO TMDL Implementation Plan & CWMP	
	2.9	Partner with VLAWMO to investigate the feasibility of retrofitting the Whitaker Park wetland stormwater treatment facility.	Engineering	VLAWMO				$10,000							SWPP fund, grants	CIP	Assumes City's share of match
	2.10	As per MS4 General Permit requirements, create and maintain: 1) a written or mapped inventory of potential areas and sources of bacteria, and 2) a written plan to prioritize reduction activities.	Engineering	VLAWMO	X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (22.3, 22.4)	Staff time only
Rice Creek	2.11	Continue to provide dog waste bags in public areas on White Bear Lake to encourage owners to properly dispose of pet waste. Locations include the dog beach at 7th and Lake, intersection of Clark and Lake, and other locations along the Sather Trail.	Public Works	RCWD	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	General Fund - Parks	MS4 SWPPP	
	2.12	As per MS4 General Permit requirements, create and maintain: 1) a written or mapped inventory of potential areas and sources of bacteria, and 2) a written plan to prioritize reduction activities.	Engineering	RCWD	X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (22.3, 22.4)	Staff time only
Tracking	2.13	Track load reductions of BMPs constructed within watersheds of impaired waters as a condition of the MS4 NPDES permit and TMDLs. Collaborate with WMO's to evaluate loadings annually.	Engineering	RCWD, RWMWD, VBWD, VLAWMO	X	X	X	X	X	X	X	X	X	X		MS4 TMDL Report	Staff time only
WBL	2.14	Additional treatment BMP’s as part of the City owned parking lots 1, 2, and 4 reconstruction project in the downtown area.	Engineering	RCWD		$100,000									Interim Construction Fund, grants	CIP	Assumes City's share of grant match.

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Birch Lake	2.15	Birch Lake subwatershed retrofit projects	Engineering	VLAWMO, Ramsey County, BLID				$25,000			$25,000			$25,000	SWPP Fund, grants	CIP, Raingarden study with VLAWMO	Assumes City's share of partner and grant match. Projects could include Otter Lake Road reconstruction opportunities (2024), rain gardens identified in study, private/public collaborations, other technologies
Wetland Functions and Values	2.16	Create a wetland restoration and management plan.		RCWD, RWMWD, VBWD, VLAWMO								$20,000			SWPP Fund	CIP	Consultant fees
	2.17	Collaborate with VLAWMO on a wetland restoration project at 4th and Otter.	Engineering	VLAWMO, Ramsey County, Rotary Club			$5,000								SWPP Fund, grants	CIP	Assumes City's share of grant match.
	2.18	Explore opportunities with RCWD to enhance the Long Avenue wetland (located to the north of the Center for the Arts) and provide access via a trail/boardwalk.	Engineering, Public Works/Parks	RCWD, Center for the Arts							$10,000				SWPP Fund, grants	CIP	Assumes City's share of cost. For wetland restoration only, Boardwalk costs in CIP
	2.19	Explore opportunities to enhance Willow Marsh (public wetland 62-131W) and provide access via a trail/boardwalk.	Engineering, Public Works/Parks	RWMWD										$10,000	SWPP Fund, grants	CIP	Assumes City's share of cost. For wetland restoration only, Boardwalk costs in CIP
Lake, Stream, and Wetland Management Costs			Interim Construction Fund		$50,000	$100,000									10-year total =		$150,000
			SWPP Fund		$30,000	$75,000	$130,000	$80,000	$75,000	$75,000	$50,000	$70,000	$50,000	$50,000	10-year total =		$635,000
			SWPP Fund (lower Priority)				$5,000		$50,000		$10,000			$10,000	Lower Priority 10-year total =		$65,000
			General Fund		$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	10-year total =		$18,000
Natural Resources Management and Recreation																	
Lake and Wetland Buffers	3.1	Develop a GIS database of public and private lake and wetland buffers in the City.	Engineering, Planning				X	X									Staff time only
	3.2	Conduct vegetation surveys and create a restoration and management plan for City owned shoreline buffer areas.	Engineering, Parks	RCWD, RWMWD, VBWD, VLAWMO								$10,000			SWPP Fund	CIP	Consultant fees
	3.3	Goose Lake - Collaborate with VLAWMO, Ramsey County, and volunteer groups to enhance the shorelines of east and west Goose Lake where feasible.	Engineering	VLAWMO, Ramsey County, volunteers	$5,000		$5,000		$5,000		$5,000		$5,000		SWPP Fund, project partners, grants,	CIP	City's portion of the estimated project cost and grant match. E. Goose projects may be incorporated into the ALM plan (see item #2.2)
	3.4	Enhance the shoreline vegetation on White Bear Lake at Lakeview Park, Matoska Park, and others.	Engineering, Parks	RCWD		$5,000									SWPP Fund	CIP	

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Upland Habitat Establishment	3.5	Conduct vegetation surveys and create a restoration and management plan for City owned upland areas. Identify locations for native plantings within existing landscaped areas, and consider converting little used turf areas to prairie or woodland habitats. Potential park sites for large restoration projects include Bossard, Matoska, Lakewood Hills, and Rotary Park Preserve. Priority areas should include habitats used by rare species identified in the NHIS database (table 8).	Engineering, Parks, Environmental & Park Advisory Commissions	RCWD, RWMWD, VBWD, VLAWMO		$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	SWPP Fund, grants	CIP	cost includes vegetation surveys and project installation
Vegetation Maintenance	3.6	Edgewater ROW Prairie Planting Agreement 16-03.	Engineering	RWMWD	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	SWPP Fund	SWPP Fund budget	Maintenance agreement with RWMWD
	3.7	Birch Lake Shoreline Restoration Agreement 12/2011.	Engineering	VLAWMO	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	SWPP Fund	SWPP Fund budget	
	3.8	Lions Park, Boatworks Marina, and Vets Park - Continue to maintain the native shoreline restoration along White Bear Lake.	Engineering		$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	SWPP Fund	SWPP Fund budget	$1200 for Lions, $800 for vets, $1000 for Boatworks
	3.9	Establish the newly planted Birch Lake shoreline at the Sports Center and continue long term maintenance.	Engineering		$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	SWPP Fund	SWPP Fund budget	
	3.10	4th and Otter - Continue to partner with VLAWMO to establish and maintain native vegetation on the City owned property at 4th and Otter.	Engineering	VLAWMO	X	X	X	X	X	X	X	X	X	X			Staff time only
	3.11	Vegetation maintenance for future restoration projects	Engineering				$1,500	$3,000	$4,500	$6,000	$7,500	$9,000	$10,500	$12,000	SWPP Fund		Assumes one additional restoration each year
	3.12	Varney Lake, Bossard Park, Rotary Nature Preserve - Conduct a vegetation survey and establish a maintenance plan for existing prairie plantings.	Engineering, Parks			$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	SWPP Fund, grants	CIP	Priority will be established when implementing item 3.5
Invasive Species Management	3.13	Create a GIS database of invasive species on City property and create a management plan that identifies and prioritizes management of infested areas and emphasizes early detection and response.	Engineering, Parks	Ramsey County			X	X									Staff time only
	3.14	Boatworks Marina and Lions Park - continue to manage Purple Loosestrife along the shoreline of White Bear Lake.	Engineering		$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	SWPP Fund	SWPP Fund budget	
	3.15	Heiner's Pond - continue to manage Purple Loosestrife and Knotweed on City property. Work with the contractor to assist homeowners with managing Purple Loosestrife on private property.	Engineering		$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	SWPP Fund	SWPP Fund budget	
	3.16	Rotary Wetland – Additional management of Purple Loosestrife in Rotary Wetland.	Engineering		$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	SWPP Fund		
	3.17	4th and Otter – Continue to partner with VLAWMO to manage invasive species	Engineering		X	X	X	X	X	X	X	X	X	X			staff time only
	3.18	Adopt a policy that directs staff to clean off public works equipment after use.	Administration, Public Works				X									from Ramsey County SWCD	staff time only
	3.19	Support the "New Infestation Response Plan" for aquatic invasive species. Consider committing staff time and equipment if a new infestation were to take place.	Engineering, Public Works	Ramsey County SWCD	X	X	X	X	X	X	X	X	X	X		from Ramsey County SWCD	staff time only

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					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Invasive Species Management Partnerships	3.20	Support the current Ramsey County Knotweed control project on White Bear Lake and Willow Pond, and other future County invasive species management projects within the City.	Engineering	Ramsey County SWCD	X	X	X	X	X	X	X	X	X	X			staff time only
	3.21	Support DNR, Ramsey County, Rice Creek Watershed District, and White Bear Lake Conservation District efforts to conduct aquatic plant surveys and control aquatic invasive species in White Bear Lake.	Engineering	Ramsey County, RCWD, WBLCD	X	X	X	X	X	X	X	X	X	X			staff time only
	3.22	Collaborate with Ramsey County to install boat cleaning signage and a boat cleaning station at the Matoska Park boat landing.	Parks	Ramsey County	X												staff time only
	3.23	Continue to attend Ramsey County aquatic invasive species meetings in support of the County's watercraft inspection program.	Engineering, Public Safety	Ramsey County	X	X	X	X	X	X	X	X	X	X			staff time only
Recreation	3.24	Collaborate with VLAWMO to improve lake access on the north end of Birch Lake to reduce erosion caused by foot traffic.	Engineering	VLAWMO, BLID				$5,000							SWPP Fund	CIP	
Natural Resources and Recreation			SWPP Fund		$20,000	$14,000	$20,500	$22,000	$23,500	$20,000	$26,500	$33,000	$29,500	$26,000	10-year total =		$209,000
			SWPP Fund (lower Priority)		$5,000	$15,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	10-year total =		$90,000
Groundwater Management																	
Groundwater Recharge	4.1	Collaborate with state agencies, Ramsey County, Washington County and WMO's to identify and preserve regional recharge areas.	Engineering	MDH, Counties, WMO's	X	X	X	X	X	X	X	X	X	X			Staff time only
Groundwater Withdrawl	4.2	Work with Washington County, Ramsey County and WMOs to develop a regional water conservation plan.	Engineering	Counties, WMO's	X	X	X	X	X	X	X	X	X	X			Staff time only
	4.3	Attend the North and East Metro Groundwater Management Area Plan Project Advisory Team meetings.	Engineering		X	X	X	X	X	X	X	X	X	X			Staff time only
	4.4	In collaboration with Ramsey County, Washington County, and WMO's, develop a reuse incentive program.	Engineering	Counties, WMO's		X	X										Staff time only
Groundwater Pollutants	4.5	Collaborate with WMO's, Ramsey County, Washington County, and communities to address groundwater issues identified in the City's WHPP including developing management strategies and tools in areas of vulnerability.	Engineering	Counties, WMO's, adjacent communities				X	X								Staff time only
Public Education and Participation																	

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Educational Resources	5.1	At least once per calendar year, distribute educational materials focusing on 1) illicit discharge recognition and reporting; 2) deicing salt (impacts on receiving waters, reduction methods, and proper storage); 3) pet waste (impacts on receiving waters, proper management, and regulations); and 4) at least two other stormwater related issues of high priority. Topics may include promoting raingardens and other BMP's, TMDL reduction targets, native plantings, shoreland management, invasive species (including encouraging public and staff to report invasive plants to the County Weed Management Coordinator), landscaping and lawn care, yard waste disposal, composting, hazardous waste disposal, groundwater recharge and conservation, preventing groundwater contamination, lake improvements through lake associations, and changing local business practices. This information may be distributed through City newsletters, the City website, utility bills, new resident packets, social media, the White Bear Press, and workshops/events. When developing and distributing educational materials, consideration should be given to low-income, people of color, and non-native English speaking residents.	Engineering	WD's, Ramsey & Washington Counties	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	SWPP Fund	MS4 SWPPP (16.3-16.6), TMDL implementation plans	Partial newsletter printing costs
	5.2	Review and update the City's website at least once per year. Include information about illicit discharge detection and reporting, deicing salt, pet waste, invasive species, native plants, water conservation, drinking water supply protection, lake data, Surface Water Management Plan, SWPPP document, annual public meeting, permit and review programs, Public Works operations and maintenance activities, BMP cost share incentive programs, stormwater studies and projects, links to the Watershed Management Organizations, residential and business recycling, yard waste disposal, and hazardous waste disposal.	Engineering		X	X	X	X	X	X	X	X	X	X			Staff time only
	5.3	Document the public education and outreach program in the City's SWPPP tracking table at least twice per year. Include target audiences, number of participants, quantities and description of educational materials, types of activities, dates, partnerships, and the name of the person responsible for implementation.	Engineering		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (16.7, 16.8)	Staff time only
	5.4	Distribute stormwater educational materials at the Environmental Advisory Commission's Environmental Resource Expo held annually at Marketfest. Invite WMOs to exhibit at the event.	Environmental Advisory Commission		$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	SWPP Fund	SWPP Fund budget (EAC budget)	printing costs
	5.5	Create an email distribution list for stormwater related topics. Advertise how to sign up for this service through City newsletters, the White Bear Press, and on the City's website and Facebook page.	Engineering		X	X											Staff time only

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
	5.6	Survey homeowners on the use of individual water softeners. If needed, create an educational program to educate residents about the City's water softening treatment plant and discourage the use of individual water softening units.	Engineering				X	X									Staff time only
	5.7	Conduct an annual assessment of the City's public education program to evaluate compliance with the City's MS4 General Permit and to determine how the program might be improved. Document any changes made to the program.	Engineering		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (16.9)	Staff time only
Public Participation	5.8	Hold a public meeting during the City Council meeting in April each year to report on the prior year's SWPPP activities and goals for the next year, and solicit input on the City's SWPPP. Advertise annual SWPPP meeting on the City's website and in the White Bear Press. Make proper notice in the local paper, City website, and email distribution list. Document notices of meeting, dates, location, estimated number of attendees, all relevant input, and responses to input.	Engineering		$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	SWPP Fund	MS4 SWPPP (17.3)	Publication costs
	5.9	Place a PDF of the SWPPP, annual reports, and other SWPPP supporting documents on the City's stormwater webpage. Include a comment form on the SWPPP webpage and document the activity and input received in the City's SWPPP tracking table. Consider input received.	Engineering		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (17.3)	Staff time only
	5.10	Advertise the new 'report a problem' link on the City's website and encourage the public to report illicit discharges, outdoor irrigation violations, construction site erosion control concerns, and other stormwater related problems. Communicate the procedure and contact information for notification to residents in the City newsletter and on the City's website, and new resident packets.	Engineering		X	X	X	X	X	X	X	X	X	X			Staff time only
	5.11	Continue to provide and promote at least one public involvement activity per year that includes a pollution prevention or water quality theme such as the Adopt-a-Drain program, Recycling Association of Minnesota (RAM) rain barrel distribution event, WBLCD lake clean-up event, WMO raingarden workshops, household hazardous waste collection days, City cleanup events, etc. Document event notices, dates, locations, description of activities, number of participants, etc.	Engineering		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (17.6-17.8)	Staff time only
	5.12	Start an adopt a wetland program to clean up trash and to monitor and remove invasive species.	Engineering, Parks	RCWD, RWMWD, VBWD, VLAWMO				$500	$500	$500	$500	$500					Educational materials, tools

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
	5.13	Create a database of residents and businesses interested in volunteering for stormwater related activities such as raingarden planting, native garden maintenance, shoreline cleanup events, etc.	Engineering			X											Staff time only
	5.14	Seek opportunities to partner with WMOs, Ramsey County SWCD, and local entities (e.g., religious groups, schools, and service clubs) on surface water quality improvement projects.	Engineering	WMOs, RCD, WBLASD	X	X	X	X	X	X	X	X	X	X			Staff time only
	5.15	Investigate opportunities for public engagement with water quality and habitat restoration projects near the Center for the Arts.	Engineering	RCWD, Lakeshore Players, WB Center for the Arts			X	X									Staff time only
	5.16	Conduct an annual assessment of the City's public participation program to evaluate compliance with the City's MS4 General Permit and to determine how the program might be improved. Document any changes made to the program.	Engineering		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (17.8)	Staff time only
Coordination	5.17	Coordinate/develop public education materials and outreach programs with the WMOs, counties, neighboring communities, lake conservation districts and other agencies. Programs could consist of website development, public presentations, educational materials, newsletter articles, etc. Develop procedures for coordination of educational programs with these agencies.	Engineering	WMOs, WBL Public Schools, etc.	X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (16.2)	Staff time only
	5.18	Promote WMO cost share grants, workshops, and trainings on the City's website, newsletters, and social media.	Engineering	WMOs	X	X	X	X	X	X	X	X	X	X			Staff time only
	5.19	Continue to collaborate with VLAWMO on joint educational initiatives including the storm drain stenciling program, adopt a storm drain program, trainings, and others.	Engineering	VLAWMO	$500	$500	$500	$500	$500	$500	$500	$500	$500		SWPP Fund		
	5.20	Continue to financially support the annual Ramsey Washington Metro Watershed District Waterfest event.	Engineering	RWMWD	$500	$500	$500	$500	$500	$500	$500	$500	$500		SWPP Fund	SWPP Fund budget	
Public Education and Participation Costs			SWPP Fund		$4,200	$4,200	$4,200	$4,200	$4,200	$4,200	$4,200	$4,200	$4,200	$3,100	10-year total =		$37,800
			SWPP Fund (lower Priority)					$500	$500	$500	$500	$500			10-year total =		$2,500
Regulatory Permit and Review Program																	
	6.1	Review the zoning code, subdivision code, and stormwater ordinances that regulate stormwater at a minimum after adoption of WMO plans, Watershed District rules and reissuance of the MS4 General Permit and NPDES Construction Stormwater Permit. Revise as necessary to be at least as stringent as the WMO plans and rules and MPCA permits.	Engineering, Planning		$3,000					$3,000					SWPP Fund	MS4 SWPPP (19.2, 19.3, 19.4, 20.3)	Consultant review fee, if necessary

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Official Controls	6.2	Amend the IDDE ordinance to 1) require owners of pets to remove and properly dispose of pet waste on City owned land areas; and, 2) require proper salt storage at commercial, institutional, and non-NPDES permitted industrial facilities. Proper salt storage shall include covered or indoor salt storage areas on an impervious surface, and implementation of practices to reduce exposure when transferring material in designated salt storage areas.	Engineering, Planning		X					X						MS4 SWPPP (18.5, 18.6)	Staff time only
	6.3	Review the Engineering Design Standards that regulate stormwater management every 5 years and revise as necessary. Verify that the standards are at least as stringent as the MPCA MS4 and Construction Stormwater Permit and WMO plans and rules. Consider adding stormwater reuse and soil amendment/scarification standards as an option to meet volume control requirements.	Engineering	RCWD, RWMWD, VBWD, VLAWMO	$5,000					$5,000					SWPP Fund	MS4 SWPPP (19.5-19.10, 19.12-19.15, 20.4-20.15, 20.17, 20.19, 20.20), 2016 TMDL report	Consultant review fee if needed
	6.4	Include a policy that takes wildlife into consideration in transportation and redevelopment projects. Encourage natural areas to be preserved or restored with native species after construction, taking into account wildlife habitat needs and how wildlife travels between wetland and upland areas.	Engineering	DNR	X					X							Staff time only
	6.5	Conduct an annual assessment of the City's Construction Site Stormwater Runoff Control program and Post-Construction Stormwater Management program to evaluate compliance with the City's MS4 General Permit and to determine how the program might be improved. Document any changes made to the program.	Engineering		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (19.16, 20.23)	
Plan Review	6.6	Continue to review development plans to ensure compliance with the City's Engineering Design Standards for Stormwater Management, and Zoning ordinance. Notify applicants of the NPDES Construction Stormwater Permit and Watershed District permit programs.	Engineering, Planning	RCWD, RWMWD, VBWD, VLAWMO	X	X	X	X	X	X	X	X	X	X	Plan review fees	MS4 SWPPP (19.2)	Staff time only
	6.7	Review written procedures for engineering stormwater site plan reviews and incorporate procedures into a check list. Revise as necessary to ensure compliance with the MS4 General Permit.	Engineering		X					X						MS4 SWPPP (19.6, 19.13, 20.17, 20.20)	Staff time only
	6.8	Develop a guidance document to assist applicants with understanding the City's permitting process and submittal requirements.	Engineering, Planning		X												Staff time only
	6.9	Continue to offer a pre-submittal meeting to assist applicants early in the project development process with identifying permit submittal and regulatory requirements.	Engineering, Planning		X	X	X	X	X	X	X	X	X				Staff time only

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
	6.10	Review and update engineering standard plates, guidance documents as necessary.	Engineering		X					X							Staff time only
Site Inspections	6.11	Continue to routinely inspect active construction sites to ensure compliance with NPDES permit requirements and City design standards. Periodically review the inspection checklist and standard procedure and revise if needed. Coordinate inspections with watershed districts for sites greater than 1 acre.	Engineering, Building	RCWD, RWMWD, VBWD, VLAWMO	X	X	X	X	X	X	X	X	X			MS4 SWPPP (19.2)	Staff time only
	6.12	Review written procedures and checklists for construction site inspections, receipt of construction site non-compliance complaints, and enforcement response procedures and revise as necessary to ensure compliance with the MS4 General Permit.	Engineering, Building		X					X						MS4 SWPPP (19.7, 19.8, 19.9, 19.10, 19.12, 19.15, 20.17, 20.19, 20.22)	Staff time only
	6.13	Hold preconstruction meetings for all City construction projects to discuss project specific BMP's, requirements of the NPDES construction permit/project SWPPP, City NPDES standards for erosion control monitoring, site inspections, and violations.	Engineering, Building		X	X	X	X	X	X	X	X	X				Staff time only
	6.14	Continue to send Building inspectors to the U of M Erosion and Stormwater Management Certification class and refresher courses (every 3 years following initial training).	Engineering, Building			$500			$500			$500			SWPP Fund	MS4 SWPPP (19.11, 19.14, 20.18, 20.21)	Cost for recertification class.
Permanent Stormwater Control	6.15	Continue to review development plans to ensure compliance with the City's Engineering Design Standards for rate and volume control and stormwater treatment.	Engineering,		X	X	X	X	X	X	X	X	X		permit fees	MS4 SWPPP (20.2)	Staff time only
	6.16	Require as-builts of all permanent stormwater management practices and review for compliance with the approved design. Periodically review the as-built submittal checklist and revise as necessary.	Engineering, Planning, and Building		X	X	X	X	X	X	X	X	X		permit fees		Staff time only
	6.17	Continue to require stormwater operation and maintenance agreements (SOMA's) for private stormwater practices, with annual reporting requirements. Review and update agreement language as needed.	Engineering, Planning, and Building		X	X	X	X	X	X	X	X	X		permit fees	MS4 SWPPP (20.15)	Staff time for reviewing and updating agreement
	6.18	Implement a construction inspection program for permanent stormwater management practices.	Engineering	RCWD, RWMWD, VBWD, VLAWMO	X	X	X	X	X	X	X	X	X				Staff time only
Management	6.19	Continue to review development projects to ensure compliance with the City's Floodplain Overlay District Ordinance.	Engineering, Planning		X	X	X	X	X	X	X	X	X				Staff time only

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Floodplain	6.20	Work with Watershed Districts and the DNR to update FIRMs.	Engineering, Planning	DNR, RCWD, RWMWD, VBWD, VLAWMO					X								Staff time only
Shoreland Overlay District	6.21	Continue to review development projects to ensure compliance with the City's Shoreland Overlay District ordinance.	Engineering, Planning		X	X	X	X	X	X	X	X	X				Staff time only
Wetlands Overlay District	6.22	Continue to review development projects to ensure compliance with the City's Wetlands Overlay District ordinance.	Engineering, Planning		X	X	X	X	X	X	X	X	X				Staff time only
WCA	6.23	Continue to coordinate with the WCA LGUs within the City (RCWD, RWMWD, VLAWMO, and VBWD) during development review to ensure compliance with the Wetland Conservation Act.	Engineering, Planning	RCWD, RWMWD, VBWD, VLAWMO	X	X	X	X	X	X	X	X	X				Staff time only
Regulatory Program Costs			SWPP Fund		$8,000	$500			$500	$8,000		$500			10-year total =		$17,500
Pollution Prevention, Operations, and Maintenance																	
City Facilities	7.1	Develop a map or GIS database of City owned/operated facilities. Identify facilities that have the potential to contribute pollutants to stormwater (public works facilities, snow storage areas, parks, public parking lots, etc.)	Engineering		X											MS4 SWPPP (21.3)	Staff time only
	7.2	Continue to inspect the Public Works and old Public Works facilities on a quarterly basis. This task includes locating and inspecting all exposed stockpiles and storage/material handling areas and documenting any identified erosion control or runoff issues.	Engineering		$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	SWPP Fund	MS4 SWPPP (21.4), SWPP Fund budget	Consultant fee
	7.3	Maintain storm sewer conveyance infrastructure (pipes, catch basins, manholes, ditches)	Engineering, Public Works		$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	Sewer Fund		
	7.4	Inspect 20% of outfalls each year. Record and track follow-up actions needed for maintenance. Maintain as necessary and evaluate frequency of maintenance required. Inspect for illicit discharges as part of the outfall inspections.	Engineering, Public Works		$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	SWPP Fund	MS4 SWPPP (18.7, 21.10, 21.11, 21.13)	Cost for supplies such as riprap, FES, etc.
	7.5	Inspect 20% of receiving waters each year. Record and track follow-up actions needed for maintenance. Monitor sedimentation and implement pond cleanout and dredging, when needed, as per the process outlined in the MPCA Managing Stormwater Sediment Best Management Practices guidance document. Inspect for illicit discharges as part of the receiving waters inspections.	Engineering, Public Works	Ramsey County, WMO's				$100,000	$125,000	$150,000	$100,000				SWPP Fund	MS4 SWPPP (18.7, 21.10, 21.11, 21.13, 21.14), CIP, Goose, Wilkinson Lake SLMP	Cost for pond dredging at outfalls. Includes Bossard Pond, Peppertree Pond, Heiner's Pond, Whitaker Pond, Willow Creek Wetland, Lakewood Hills Park Pond & channel, and Oak Knoll Pond, others.

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
City-owned Stormwater Facilities	7.6	Inspect all City-owned structural pollution control devices on an annual basis. Record and track follow-up actions needed for maintenance. Maintain as necessary and evaluate frequency of maintenance required.	Public Works	Ramsey County	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	SWPP Fund	MS4 SWPPP (21.9, 21.11, 21.13)	Cost for supplies
	7.7	Continue to maintain City owned raingardens each season. Maintenance includes weeding, mulching, and removing sediment from pretreatment devices.	Engineering		$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	SWPP Fund	SWPP Fund budget	Contractor. Includes Boatworks Commons, Admiral D's, Lions Park, 4th and Johnson, Matoska Park, and West Park
	7.8	Annually inspect stormwater reuse systems at Lakewood Hills and Boatworks and maintain as needed.	Public Works		$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	SWPP Fund		Includes cost for parts, electricity
	7.9	Remove sediment deltas at storm sewer outfalls in White Bear Lake. Identify outfall locations that need armoring.	Engineering, Public Works	DNR, RCWD				$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	SWPP Fund	MS4 SWPPP (21.10)	Cost to supply products such as riprap, FES, etc.
	7.10	Record inspections, follow-up actions, and completed maintenance in the City's MS4 software.	Engineering, Public Works		$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	SWPP Fund	MS4 SWPPP (21.13)	Software cost
	7.11	Develop a GIS database for inspections and maintenance which includes a mobile application for field inspections.	Engineering, Public Works		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP	Staff time only
	7.12	Update the inspection and maintenance Standard Operating Procedure (SOP) and maintenance schedule for cleaning and repairing sump catch basins, swirl separators, underground infiltration pipes, infiltration basins, and ponds. Continue to periodically review the SOP and update as needed.	Engineering		$2,000					$2,000					SWPP Fund		Consultant fee
	7.13	Develop procedures for determining treatment capacity (TSS and TP treatment effectiveness) of city-owned stormwater ponds/receiving waters.	Engineering				$3,000								SWPP Fund	MS4 SWPPP (21.8)	Consultant fee
	7.14	Conduct an annual assessment of the City's operation and maintenance program to evaluate compliance with the City's MS4 General Permit and to determine how the program might be improved. Document any changes made to the program.	Engineering, Public Works		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (21.15)	Staff time only
enance Agreements	7.15	4th and Otter iron sand filter maintenance PW2019-14.	Engineering, Public Works	VLAWMO	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	SWPP Fund	SWPP Fund budget	Contractor for plant maintenance and other maintenance as needed.
	7.16	Whitaker Pond PW2009-19.	Engineering	Ramsey County, VLAWMO, WBT	$2,000		$2,000		$2,000		$2,000		$2,000		SWPP Fund	SWPP Fund budget	Ramsey County maintains and bills the City
	7.17	County Road F Raingardens PW2002-17.	Engineering	Ramsey County	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	SWPP Fund	SWPP Fund budget	Ramsey County coordinates the maintenance and bills the City. 2020 inlet retrofit project.

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Stormwater Related Maintenance	7.18	Priebe Lake Outlet	Engineering	RCWD	$25,000										SWPP Fund	SWPP Fund budget	Outlet replacement planned for 2021. Agreement pending.
	7.19	Central Middle School stormwater BMP "Water Tracks" inspection and maintenance of sumps and underground pipe via vac truck (verbal agreement with VLAWMO).	Public Works	VLAWMO	X	X	X	X	X	X	X	X	X	X			Staff time only
	7.2	South Heights Stormwater Pond Maintenance Agreement PW2020-02M (not executed)	Public Works												SWPP Fund		
	7.21	Maintenance postcard to residents of the 2009 and 2012 raingarden projects. Consider other methods of outreach such as a neighborhood maintenance workshop.	Engineering	RCWD, RWMWD, VLAWMO	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	SWPP Fund		Staff time and printing/mailing costs
Maintenance Access	7.22	Identify receiving waters and storm sewer infrastucture with no access easements. Review possible access locations on a project by project basis. Establish permanent easements from private property owners if feasible.	Engineering, Public Works		X	X	X	X	X	X	X	X	X	X			Staff time only
PAH Contamination	7.23	Collect and test pond sediment samples to determine locations, types and concentrations of PAH contamination as per the MPCA Managing Stormwater Sediment Best Management Practices Guidance document.	Engineering				$20,000	$20,000	$20,000	$20,000					SWPP Fund	CIP	Consultant
	7.24	Secure funding to properly dispose of PAH contaminated sediment.	Engineering			X	X										Funding source dependent on the PAH lawsuit ruling
Winter Street Maintenance Program	7.25	Annually review the WBL Snow and Ice Control Policy and application practices. Consider alternative products, calibration of equipment, inspection of vehicles and staff training to reduce salt use. Revise as necessary to ensure compliance with the MS4 general Permit.	Public Works			X	X	X	X	X	X	X	X	X		MS4 SWPPP (21.5, 21.6)	Staff time only
	7.26	Document the amount of deicer applied each winter maintenance season on all City owned surfaces. Determine an effective method for tracking salt use.				X										MS4 SWPPP (22.5)	Staff time only
	7.27	Annually assess thew winter maintenance operations to reduce the amount of deicing salt applied to City owned surfaces and to determine current and future opportunities to improve BMPs. Consider utilizing the MPCA WMAt tool to assess existing practices, identify areas for improvement, and track progress.	Engineering, Public Works			X	X	X	X	X	X	X	X	X		MS4 SWPPP (22.6)	Staff time only
	7.28	Retrofit plow trucks with salt saving equipment, such as equipment that can change the rate of salt application based on driving speed.	Engineering, Public Works			$25,000	$25,000	$25,000	$25,000						Equipment Acquisition Fund	CIP	Equipment cost

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Street Sweeping Program	7.29	Continue to sweep all City streets at least once in the spring and once in the fall, with more frequent sweeping around lakes and in the downtown area and in areas where larger quantities of debris accumulate.	Public Works		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (21.4), TMDL Report	Staff time using existing equipment
	7.30	Increase the frequency of street sweeping in untreated areas that are directly tributary to an impaired waterbody. Track areas where larger quantities of debris accumulate for more frequent sweeping.	Public Works	RCWD, RWMWD, VLAWMO, VBWD				$250,000							Equipment Acquisition Fund, grants	CIP, TMDL Implementation Plans	Cost of additional street sweeper.
	7.31	Establish a sweeping schedule for the pervious pavement at Lion's Park.	Engineering, Public Works		X												Staff time only
IDDE Program	7.32	Identify and document written or mapped priority areas likely to have an illicit discharge such as business/industrial sites, storage areas with materials that could result in an illicit discharge, and areas where illicit discharges have occurred in the past. Conduct additional inspections in these areas and document all inspection and maintenance activities in compliance with the reissued MS4 permit.	Building, Engineering	RCWD, RWMWD, VLAWMO		X	X									MS4 SWPPP (18.10, 18.15)	Staff time only
	7.33	Implement BMPs that prevent or reduce pollutants in stormwater dischare from landscaping, park, and lawn maintenance, road maintenance, and ROW maintenance. Create standard operation procedures for these activities.				X	X									MS4 SWPPP (21.4)	Staff time only.
	7.34	Incorporate IDDE into all City inspection and maintenance activities and coordinate with the Engineering Department, Building Department, and Public Works Department to establish a consistent record keeping system. Document all inspections in compliance with the reissued MS4 permit.	Engineering, Building, Public Works		X	X										MS4 SWPPP (18.7, 18.15)	Staff time only
	7.35	Work with Police, Fire, Engineering, and Public Works staff to revise the standard operating procedures (SOPs) for: 1) investigating, locating, and eliminating the source of illicit discharges; 2) spill response procedures; 3) enforcement procedures, and 4) documentation, to be in compliance with the requirements of the reissued MS4 General Permit.	Building, Engineering, Public Safety, Public Works	X	X											MS4 SWPPP (18.12-18.15, 18.17)	Staff time only
	7.36	Conduct an annual assessment of the City's IDDE program to evaluate compliance with the City's MS4 General Permit and to determine how the program might be improved. Periodically review the IDDE ordinance, standard operating procedures (SOP), and enforcement response procedures and revise if necessary. Document any changes made to the program.	Engineering	X	X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (18.18)	Staff time only

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Storm Sewer Map	7.37	Annually update the storm sewer map to reflect newly constructed/modified pipes, outfalls, and structural stormwater BMP's.	Engineering		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (14.2, 18.3)	Staff time only. The map must include all pipes & flow directions, outfalls (incl ID # and geographic coordinates, structrual BMPs that are part of th City's MS4, and all receiving waters.
	7.38	Implement a GIS-based database management tool for the storm sewer system that is linked with the system map. Include ID numbers for outfalls and ponds, date installed, as-built information, inspection results, and any maintenance performed or recommended.	Engineering				X	X								MS4 SWPPP (14.2, 18.3)	Staff time only
	7.39	Develop a GIS database to track all private stormwater best management practices that have are included in Stormwater Operation and Maintenance Agreements (SOMAs). Include soil borings, record drawings, SOMAs and stormwater calculations in the database. Consider also including BMP's installed through WMO cost share programs.	Engineering		X	X										MS4 SWPPP (20.16)	Staff time only
Waste Disposal	7.40	Continue to partner with Ramsey County and WBLA School District to provide a household hazardous waste mobile site and medicine collection programs in the City.	Public Safety	Ramsey County, WB School District	X	X	X	X	X	X	X	X	X	X			Staff time only
	7.41	Promote the Washington County Environmental Center and Ramsey County year-round household hazardous waste and yard waste facilities.	Engineering	Ramsey County, WB School District	X	X	X	X	X	X	X	X	X	X			Staff time only
ning	7.42	Continue to send Public Works staff to the U of M Stormwater BMP Maintenance certification course. Document date of event, subject matter, and individuals in attendance.	Public Works			$1,200			$1,200			$1,200			General Fund - Streets	MS4 SWPPP (21.12, 21.13)	3 participants.
	7.43	Continue to send Public Works staff that perform winter maintenance activities to the MPCA Smart Salt training annually. Document date of event, subject matter, and individuals in attendance.	Public Works		$1,200	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200	General Fund - Streets	MS4 SWPPP (21.7)	4 participants.
	7.44	Continue to require at least one City parks staff member to maintain a pesticide applicator certification.	Public Works		$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	General Fund - Parks	MS4 SWPPP (21.4)	cost of recertification
	7.45	Train field staff annually on illicit discharge recognition and reporting. Field staff includes police, fire, public works, building, and engineering. This training is currently provided as part of the annual employee safety training at City Hall. Document the date, names and departments of attendees, and subject matter.	Engineering		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (18.8, 18.16) & TMDL Report	Staff time only

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
Staff Trai	7.46	Provide illicit discharge training to individuals commensurate with their responsibilities, including those responsible for investigating, locating, eliminating illicit discharges, and enforcement. Previously trained individuals shall attend a refreshed training every 3 years following the initial training. Document the date, names and departments of attendees, and subject matter.	Engineering		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (18.9, 18.16)	Staff time only
	7.47	Conduct annual spill prevention and response training sessions and review spill containment and cleanup procedures with Public Works staff. Provide training for best management practices in the handling of hazardous materials.	Engineering, Public Works		$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	SWPP Fund	MS4 SWPPP (21.4)	Consultant fee
	7.48	Provide other training as needed.	Engineering, Public Works		$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	SWPP Fund		
	7.49	Review staff training programs and literature annually and make changes as necessary. Educational material, presentations, and requests for additional information will be distributed and documented.	Engineering, Building, Public Works		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (21.15)	Staff time only
Pollution Prevention, Operations, and Maintenance Program			SWPP Fund		$64,100	$84,600	$107,600	$210,100	$235,100	$262,100	$190,100	$90,100	$90,100	$89,600	10-year total =		$1,333,900
			General Fund		$1,700	$2,900	$1,700	$1,700	$2,900	$2,200	$1,700	$2,900	$1,700	$1,700	10-year total =		$19,400
			Equipment Acquisition Fund			$25,000	$25,000	$25,000	$25,000						10-year total =		$100,000
			Equipment Acquisition Fund (lower priority)					$250,000							10-year total =		$250,000
Funding																	
Alternate Funding Sources	8.1	Review and adjust the stormwater utility fee to meet expenditure needs.	Engineering, Administration, Finance	Administration, Finance Dept	X	X	X	X	X	X	X	X	X	X			Staff time only
	8.2	Pursue grants and other funding sources to help fund activities and projects in this SWMP.	Engineering	RCWD, RWMWD, VLAWMO, VBWD	X	X	X	X	X	X	X	X	X	X			Staff time only
	8.3	Complete an annual review of the City's 10-year Capital Improvement Plan and identify priority projects and funding sources.	Engineering		X	X	X	X	X	X	X	X	X	X			Staff time only
	8.4	Fund the 2031-2040 Surface Water Management Plan.	Engineering											$40,000	SWPP Fund	CIP	Consultant fee
Partnerships	8.5	Continue to attend the RWMWD Public Works Forum and the RCWD City-County Partner Meetings to identify opportunities to partner with WMOs, Ramsey County, and other communities to meet shared objectives.	Engineering	RCWD, RWMWD	X	X	X	X	X	X	X	X	X				Staff time only
	8.6	Continue membership with the Minnesota Stormwater Coalition through the League of MN Cities.	Engineering	LMC	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	SWPP Fund	SWPP Fund budget	Cost of membership fee
	8.7	Continue membership with Watershed Partners through Hamline University.	Engineering	Hamline University	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	SWPP Fund	SWPP Fund budget	Cost of membership fee

Goal	Item No.	Objective/Implementation Item	Responsible Dept's	Potential Partners	Estimated Timeline and Cost										Potential Funding Sources	Related Plans, Studies & Reports	Notes
					2021	2022	2023	2024	2025	2026	2027	2028	2029	2030			
	8.8	Continue membership in the GreenStep Cities program and attend monthly meetings.	Engineering	League of MN Cities	X	X	X	X	X	X	X	X	X	X			Staff time only
	8.9	MS4 General Permit Fee	Engineering		$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000		SWPP Fund budget	
Funding Costs			SWPP Fund		$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$43,000	10-year total =		$63,000
Total Implementation Costs			**Fund**		**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**10-year Total Cost**		
Total Costs - Higher Priority			General Fund		$3,700	$4,900	$3,700	$3,700	$4,900	$4,200	$3,700	$4,900	$3,700	$3,700	10-year total =		$37,400
			General Fund - Staff time (Public Works, Engineering, Planning and Zoning, Building/Code Enforcement)		$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	10-year total =		$1,800,000
			SWPP Fund		$143,300	$190,300	$324,300	$328,300	$350,300	$381,300	$282,800	$209,800	$185,800	$216,700	10-year total =		$2,396,200
			SWPP Fund-staff time		$80,000	$80,000	$80,000	$80,000	$80,000	$80,000	$80,000	$80,000	$80,000	$80,000	10-year total =		$720,000
			Interim Construction Fund		$165,000	$535,000	$425,000	$410,000	$550,000	$410,000	$400,000	$410,000	$400,000	$410,000	10-year total =		$3,705,000
			Equipment Acquisition Fund		$0	$25,000	$25,000	$25,000	$25,000	$0	$0	$0	$0	$0	10-year total =		$100,000
			Sewer Fund		$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	10-year total =		$450,000
			Sewer Fund - Staff time		$30,000	$30,000	$30,000	$50,000	$50,000	$50,000	$75,000	$75,000	$75,000	$75,000	10-year total =		$465,000
			TOTAL		**$672,000**	**$1,115,200**	**$1,138,000**	**$1,147,000**	**$1,310,200**	**$1,175,500**	**$1,091,500**	**$1,029,700**	**$994,500**	**$1,035,400**	**10-year total =**		**$9,673,600**
Total Costs - Lower Priority			SWPP Fund		$0	$0	$5,000	$500	$50,500	$50,500	$10,500	$500	$50,000	$10,000	10-year total =		$177,500
			Interim Construction Fund		$0	$0	$0	$0	$0	$0	$100,000	$0	$0	$0	10-year total =		$100,000
			Equip. Acquisition Fund		$0	$0	$0	$250,000	$0	$0	$0	$0	$0	$0	10-year total =		$250,000
			TOTAL		**$0**	**$0**	**$5,000**	**$250,500**	**$50,500**	**$50,500**	**$110,500**	**$500**	**$50,000**	**$10,000**	**10-year total =**		**$527,500**

Table 27 Capital Improvement Plan

Item No.	Objective/Implementation Item	Estimated Timeline and Cost										Notes
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
SWPP Fund Totals		**$70,000**	**$84,000**	**$159,000**	**$249,000**	**$234,000**	**$254,000**	**$189,000**	**$89,000**	**$64,000**	**$124,000**	
1.7	Retrofit outfall manhole structures to White Bear Lake along Lake Avenue, and Gisella to capture trash and other floatables.	$10,000		$50,000								Gisella sump manhole in 2021. Assumes City's share of grant match.
2.1	East Goose Lake Adaptive Lake Management planning and public engagement	$30,000										City's portion of estimated costs, assuming 50% partner match. Cost at high end of range: $15,000-$30,000
2.2	East Goose Lake Adaptive Lake Management program and project implementation.		$75,000	$75,000	$75,000	$75,000	$75,000	$50,000	$50,000	$50,000	$50,000	City's portion of estimated costs, assuming 50% partner match. Cost at high end of range: $210,000-$375,000 over three to five years. Also assumes additional costs beyond five years
2.8	Support VLAWMO projects in Lambert subwatershed			$5,000	$5,000							
2.9	Partner with VLAWMO to investigate the feasibility of retrofitting the Whitaker Park wetland stormwater treatment facility.				$10,000							Assumes City's share of match
2.15	Birch Lake subwatershed retrofit projects				$25,000			$25,000			$25,000	Assumes City's share of partner and grant match. Projects could include Otter Lake Road reconstruction opportunities (2024), rain gardens identified in study, private/public collaborations, other technologies
2.16	Create a wetland restoration and management plan.								$20,000			Consultant fees
3.2	Conduct vegetation surveys and create a restoration and management plan for City owned shoreline buffer areas.								$10,000			Consultant fees

Item No.	Objective/Implementation Item	Estimated Timeline and Cost										Notes
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
3.3	Goose Lake - Collaborate with VLAWMO, Ramsey County, and volunteer groups to enhance the shorelines of east and west Goose Lake where feasible.	$5,000		$5,000		$5,000		$5,000		$5,000		City's portion of the estimated project cost and grant match. E. Goose projects may be incorporated into the ALM plan (see item #2.2)
3.4	Enhance the shoreline vegetation on White Bear Lake at Lakeview Park, Matoska Park, and others.		$5,000									
3.5	Conduct vegetation surveys and create a restoration and management plan for City owned upland areas. Identify locations for native plantings within existing landscaped areas, and consider converting little used turf areas to prairie or woodland habitats. Potential park sites for large restoration projects include Bossard, Matoska, Lakewood Hills, and Rotary Park Preserve. Priority areas should include habitats used by rare species identified in the NHIS database (table 8).		$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	cost includes vegetation surveys and project installation
3.24	Collaborate with VLAWMO to improve lake access on the north end of Birch Lake to reduce erosion caused by foot traffic.				$5,000							
7.5	Inspect 20% of receiving waters each year. Record and track follow-up actions needed for maintenance. Monitor sedimentation and implement pond cleanout and dredging, when needed, as per the process outlined in the MPCA Managing Stormwater Sediment Best Management Practices guidance document. Inspect for illicit discharges as part of the receiving waters inspections.				$100,000	$125,000	$150,000	$100,000				Cost for pond dredging at outfalls. Includes Bossard Pond, Peppertree Pond, Heiner's Pond, Whitaker Pond, Willow Creek Wetland, Lakewood Hills Park Pond & channel, and Oak Knoll Pond, others.
7.9	Remove sediment deltas at storm sewer outfalls in White Bear Lake. Identify outfall locations that need armoring.				$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	Cost to supply products such as riprap, FES, etc.
7.18	Priebe Lake Outlet	$25,000										Outlet replacement planned for 2021. Agreement pending.
7.23	Collect and test pond sediment samples to determine locations, types and concentrations of PAH contamination as per the MPCA Managing Stormwater Sediment Best Management Practices Guidance document.			$20,000	$20,000	$20,000	$20,000					Consultant
8.4	Fund the 2031-2040 Surface Water Management Plan.										$40,000	Consultant fee

Item No.	Objective/Implementation Item	Estimated Timeline and Cost										Notes
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
SWPP Fund - Lower Priority Totals		**$0**	**$5,000**	**$60,000**	**$5,000**	**$55,000**	**$55,000**	**$15,000**	**$5,000**	**$55,000**	**$15,000**	
1.3	Expand the City owned stormwater reuse system at Lakewood Hills Park to irrigate soccer field turf.									$50,000		
1.14	Assess the need to create a City-wide stormwater model. The model would be used to evaluate the City's stormwater infrastructure to determine capacity and level of future flooding risk.						$50,000					Cost of creating model
2.3	Stormwater treatment opportunities as part of the Bruce Vento trail project.					$50,000						Assumes City's share of the project implementation cost. Will be considered if feasible.
2.6	Collaborate with RWMWD to evaluate opportunities for stormwater treatment practices to treat runoff from commercial properties on Buerkle Road.			$50,000								Assumes City's share of grant match. Will be considered if feasible.
2.17	Collaborate with VLAWMO on a wetland restoration project at 4th and Otter.			$5,000								Assumes City's share of grant match.
2.18	Explore opportunities with RCWD to enhance the Long Avenue wetland (located to the north of the Center for the Arts) and provide access via a trail/boardwalk.							$10,000				Assumes City's share of cost. For wetland restoration only, Boardwalk costs in CIP
2.19	Explore opportunities to enhance Willow Marsh (public wetland 62-131W) and provide access via a trail/boardwalk.										$10,000	Assumes City's share of cost. For wetland restoration only, Boardwalk costs in CIP
3.12	Varney Lake, Bossard Park, Rotary Nature Preserve - Conduct a vegetation survey and establish a maintenance plan for existing prairie plantings.		$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	Priority will be established when implementing item 3.5

Item No.	Objective/Implementation Item	Estimated Timeline and Cost										Notes
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Interim Construction Fund Totals		**$165,000**	**$530,000**	**$430,000**	**$405,000**	**$555,000**	**$405,000**	**$405,000**	**$405,000**	**$405,000**	**$405,000**	
1.1	Install rate control and volume control practices in conjunction with municipal street and parking lot reconstruction projects.	$100,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	
1.2	Convert alleys to pervious pavement in conjunction with municipal street reconstruction projects.		$25,000	$25,000		$150,000						Tentative projects include one alley near Hisdahl's off of Hwy 96 in 2022, one near 2nd Street in 2023, and six near Division Avenue in 2025
1.8	Install water quality practices to treat runoff from City-owned parking lots at Matoska Park	$5,000										Assumes City's share of grant match
1.9	Retrofit volume control/water quality treatment practices on other City properties/parking lots if feasible (1299 Birch Lake Blvd, Lakewood Hills Park and others)	$10,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	Lakewood Hills in 2021. Assumes City's share of grant match.
2.7	Collaborate with RWMWD to evaluate opportunities for stormwater treatment practices at Lakewood Hills Park.	$50,000										Assumes City's share of grant match
2.14	Additional treatment BMP's as part of the City owned parking lots 1, 2, and 4 reconstruction project in the downtown area.		$100,000									Assumes City's share of grant match.
Interim Construction Fund - Lower Priority Totals		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$100,000**	**$0**	**$0**	**$0**	
1.12	Install a controlled outlet for the City owned infiltration basin on Gisella Boulevard.							$100,000				Cost of project implementation if feasible.

Item No.	Objective/Implementation Item	Estimated Timeline and Cost										Notes
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Equipment Acquisition Fund Totals		**$0**	**$25,000**	**$25,000**	**$25,000**	**$25,000**	**$0**	**$0**	**$0**	**$0**	**$0**	
7.28	Retrofit plow trucks with salt saving equipment, such as equipment that can change the rate of salt application based on driving speed.		$25,000	$25,000	$25,000	$25,000						Equipment cost
Equipment Acquisition Fund - Lower Priority Totals		**$0**	**$0**	**$0**	**$250,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
7.30	Increase the frequency of street sweeping in untreated areas that are directly tributary to an impaired waterbody. Track areas where larger quantities of debris accumulate for more frequent sweeping.				$250,000							Cost of additional street sweeper.

Appendix A

Water Management Organization
Local Plan Requirements

Division, the state review agencies (BWSR, DNR, MPCA, MDA, and MDH), the Metropolitan Council, and MNDOT) for review and comment, directing comments to both the RCWD and BWSR, and allowing at least 30 days for receipt of comments;

- The RCWD will hold a public meeting to explain the amendments and publish a legal notice of the meeting twice, at least 7 days and 14 days, respectively, before the date of the meeting. The RCWD will also post the notice of the public meeting on the District website (http://www.ricecreek.org) and mail the notices to each affected city, township, and county not less than 14 days before the public meeting.

6.2 Local Government Units

6.2.1 Content Requirements for a Local Water Management Plan

When required under Minnesota Rule 8410.0160, municipalities which have land use planning and regulatory responsibilities shall amend an existing Local Water Management Plan (Local Plan) to conform to the requirements of the WMP or prepare a new Local Plan which is in conformance with the WMP. The Local Plan must include all the requirements within this WMP and the legal requirements of Minnesota Rule (MR) 8410 and Minnesota Statute (MS) 103B.235. Local Plans should also address the expanded list of requirements of the "Thrive MSP 2040 Water Resources Policy Plan" by the Metropolitan Council.

Table 6-1 below lists the status and schedule of member community Local Plans at the time of plan writing. Consistent with Minnesota statute and rule, all Local Plans must be adopted not more than two years before the local comprehensive plan is due (MR 8410.0160 subp. 6). The Local Plan must be submitted to RCWD for approval, with consideration of deadlines for Comprehensive Plan approval as identified in Minnesota statute and rule. Member communities are encouraged to engage in early dialogue and coordination with the District during the development of their Local Plan, and to submit a draft plan to the RCWD at least six months prior to the date formal adoption is required.

Table 6-1: Status of Existing Member Community Local Plans

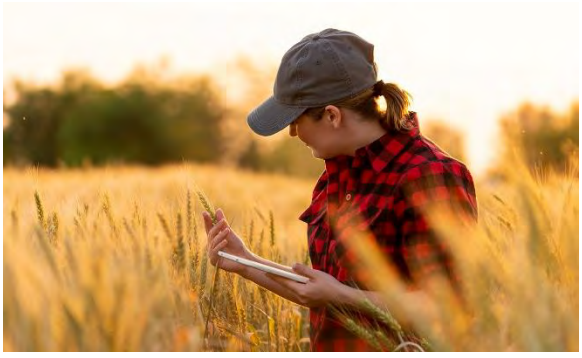
Municipality	Plan Status	Year
City of Arden Hills	RCWD Board Approved	2018
City of Birchwood Village	Draft Plan	N/A
City of Blaine	RCWD Board Approved	2018
City of Centerville	RCWD Board Approved	2018
City of Circle Pines	RCWD Board Approved	2018
City of Columbia Heights	RCWD Board Approved	2018
City of Columbus	RCWD Board Approved	2019
City of Dellwood	RCWD Board Approved	2019
City of Falcon Heights	RCWD Board Approved	2018
City of Forest Lake	RCWD Board Approved	2019
City of Fridley	RCWD Board Approved	2019
City of Grant	Draft Plan	N/A
City of Hugo	RCWD Board Approved	2018

(cont.) Table 6-1: Status of Existing Member Community Local Plans

Municipality	Plan Status	Year
City of Lauderdale	RCWD Board Approved	2018
City of Lexington	Draft Plan	N/A
City of Lino Lakes	RCWD Board Approved	2018
City of Mahtomedi	RCWD Board Approved	2018
May Township	Draft Plan	N/A
City of Mounds View	Draft Plan	N/A
City of New Brighton	RCWD Board Approved	2018
City of Roseville	RCWD Board Approved	2018
City of Saint Anthony	RCWD Board Approved	2019
City of Scandia	RCWD Board Approved	2019
City of Shoreview	RCWD Board Approved	2018
City of Spring Lake Park	RCWD Board Approved	2019
City of White Bear Lake	No Draft Received	N/A
White Bear Township	RCWD Board Approved	2019
City of Willernie	RCWD Board Approved	2019

The District recognizes that MS 103B and MR 8410 were written with the intent that each community would prepare and adopt a Local Plan that includes the regulatory requirements set out within the Watershed Management Organization (WMO) plans. Of the 28 RCWD member cities, only Hugo and Circle Pines have assumed permitting and enforcement of local official controls for stormwater (Rule C), erosion and sediment control (Rule D), floodplains (Rule E), and wetlands (Rule F). The following RCWD requirements for Local Plan content are intended to supplement Minnesota statute and rules. The District has two levels of requirements for the content of Local Plans.

- Level 1 – Level of detail is designed for those communities that do not wish to assume permitting authority from the RCWD.
- Level 2 – Level of detail is designed for communities that wish to assume all or some of the permitting authority from the RCWD. Requires additional information and detail for some of the Local Plan requirements.



The District has considerable technical resources available to address water and resource issues. The RCWD encourages communities to use or incorporate by reference these resources, including monitoring data, management studies, GIS and similar information, to meet these requirements. The RCWD also encourages communities to use District model results, however these models should not be adopted by reference. Although RCWD has completed hydrologic, hydraulic, and water quality modeling throughout the

District, communities may need to perform additional modeling in areas where they intend to assume local regulatory authority to show compliance with WMP content.

The general standards for the Local Plan which meet requirements of MR 8410.0160 Subp. 3 and MS 103B.235 Subd. 2 are as follows. Unless specifically noted, requirements apply to both Level 1 and Level 2 communities:

1. *Describe the existing and proposed physical environment and land use.* At a minimum this must include or incorporate by reference land use/zoning maps for both present and future conditions, and a land cover/classification map such as the Minnesota Land Cover Classification System (MLCCS).
2. *Define drainage areas and the volumes, rates, and paths of stormwater runoff.* All municipalities should include a map of its stormwater system that shows stormwater ponds, streams, lakes and wetlands; structural pollution control devices (e.g., grit chambers, separators); pipes and pipe sizes, ditches and any other conveyances; and outfalls and all other points of discharge from the system. An inspection and maintenance system schedule should be included. The appropriate portion of the MS4 SWPPP prepared in accordance with Permit No. MNR040000 can be incorporated by reference to satisfy this requirement.
    a. Level 1 – the Local Plan does not need to include information relating to stormwater rate and volume. Evidence of a storm water master plan or similar document is sufficient.
    b. Level 2 – the Local Plan must include information on existing and proposed stormwater rates and volumes based on full build out considering implementation of the local regulatory controls. The information should be related to those volume and rate control locations within the District.
3. *Identify areas and elevations for stormwater storage adequate to meet performance standards.* For the RCWD, this means Rule C.7, Peak Stormwater Runoff Control of the RCWD rules. This applies only to Level 2 communities.
4. *Define water quality treatment and protection methods adequate to meet performance standards* for the RCWD through identification of methods and means to achieve Rule C, Parts 6, "Water Quality Treatment" of the RCWD Rules. This applies only to Level 2 communities.
5. *Identify* [or map] *regulated areas.* These include Comprehensive Wetland Protection and Management Plan boundaries, Wetland Protection Zones, Wetland Management Corridors, and High-Quality Wetlands, areas identified as high quality by the Minnesota Biological Survey.
6. *Complete an assessment of existing or potential water resource-related problems*. This must include a summary of stormwater issues likely to result from land use changes per current zoning and municipal comprehensive plans.

Set forth an implementation program, including a description of official controls and, as appropriate, a capital improvement program. The program shall:

a. include areas and elevations for storm water storage adequate to meet performance standards or official controls established in the Local Plan;
b. define water quality protection methods adequate to meet performance standards or official controls in the Local Plan and identify regulated areas;
c. clearly define the responsibilities of the municipality and other project partners;

d. describe official controls and any changes to official controls relative to requirements of the Local Plan;
e. include a table that briefly describes each component of the implementation program and clearly details the schedule, estimated cost, and funding sources for each component including annual budget totals; and
f. include a table for a capital improvement program that sets forth, by year, details of each contemplated capital improvement that includes the schedule, estimated cost, and funding source.

In addition to the statutory requirements, these items should be addressed and conform to the requirements established in this Plan:

1. Discuss or identify approaches, methods, means, procedures, ordinances or plans being used to achieve compliance with RCWD rules or identify reliance on the RCWD for municipal review and compliance with stormwater management requirements.
    - Level 1 – communities must provide a specific statement that they request RCWD to continue to implement its rules and regulations and issue permits within the City/Town.
    - Level 2 – communities must include the specific local ordinances and demonstrate that they are in compliance with RCWD rules or include, at a minimum, a statement that the city adopts RCWD rules by reference (see Section 6.3.2).
2. Identify inter-community flow rates in and out of the municipalities as established in the RCWD District Wide Modeling. Municipalities must acknowledge and identify those locations where flows leave the City and are transferred downstream, with some assessment of increases in rate (if any) assuming full build out conditions and describe measures being implemented to reduce flows if necessary.
3. Describe the methods that will be used to control and manage post-construction stormwater associated with development and redevelopment. The appropriate portion of the MS4 SWPPP prepared in accordance with Permit No. MNR040000 may be incorporated by reference to satisfy this requirement.
4. Identify land-locked sub-watershed units and basins and strategies to manage water volumes in those land-locked areas to minimize flooding.
5. Identify impaired waters and establish policies and actions to address TMDL goals.
6. As available, include discussion of groundwater sensitivity, discharge, and recharge areas including the identification of potential land uses affecting groundwater.
7. Identify ideas and opportunities for projects and programs intended to improve resource management, which may be jointly implemented with the RCWD.
8. Describe the conformance of the municipality with NPDES requirements for MS4 permits, including TMDL and non-degradation (if applicable) requirements. The local plan must include the Stormwater Pollution Prevent Plan (SWPPP) or a summary of its contents and incorporate the plan by reference.
9. Reference erosion and sediment control ordinances.
10. Describe housekeeping practices and requirements such as street sweeping, snow plowing, salt and snow storage, and public land maintenance. The appropriate portion of the MS4 SWPPP

prepared in accordance with Permit No. MNR040000 can be incorporated by reference to satisfy this requirement.

11. A description of the Best Management Practices employed by the municipality that control or reduce pollutants. The appropriate portion of the MS4 SWPPP prepared in accordance with Permit No. MNR040000 can be incorporated by reference to satisfy this requirement.
12. Demonstration of a public information and education plan related to managing sediment and erosion control, runoff and water quality. The appropriate portion of the MS4 SWPPP prepared in accordance with Permit No. MNR040000 can be incorporated by reference to satisfy this requirement.
13. Cities within Washington County should include a groundwater protection component consistent with the county Groundwater Management Plan or method to adopt measures.
14. Discuss conflicts between infiltration requirements and well head protection.
15. Adopt and reference DNR-approved Floodplain and Shoreland ordinances where mandated by state law.
16. Identify and acknowledge future changes in peak elevation at critical road crossings for critical structure maximum water elevations (see Appendix I), describe management needs and strategies and identify necessary Rice Creek Watershed District management assistance.
17. Identify and acknowledge the impacts of future land use changes on peak water elevation changes at storage areas located near current flooding problem areas (see Appendix I), describe management needs and strategies and identify necessary RCWD management assistance.
18. Identify and acknowledge changes in floodplain elevation and regulatory floodplain boundaries (see Appendix I), describe management needs and strategies and identify necessary RCWD management assistance.
19. Identify the amount, if any, of remaining volume control debit previously incurred through the regulatory program and describe previous and future activities to ensure reasonable progress toward eliminating the volume control debit within the next plan cycle. The volume control debit is an amount of water quality treatment volume from past permit obligations that remains unfulfilled.

6.2.2 Regulatory Controls and Enforcement

The current RCWD Rules and permitting program can be found on the District website (http://www.ricecreek.org). The RCWD Board prefers to retain permitting function as the District has the technical capability to assess wide ranging and intercommunity water management issues. If communities wish to incur the additional costs of local regulatory control, the District will relinquish permit authority only following completion of an approved Local Plan with Level 2 requirements; adoption of RCWD rules and regulation by reference or demonstration that local ordinances are in compliance with RCWD rules; and implementation of inspection and administrative procedures necessary to ensure that the full regulatory standards of the District are met. At a minimum, the District will retain regulatory control for projects adjacent to and associated with the public drainage systems and the trunk conveyance systems. The District will also require that projects associated with lake outlets, or other features which can substantially alter flow patterns within the District be submitted for review and comment.

Execution of a Memorandum of Understating (MOU) with the RCWD is the final step in the process for a community that wishes to assume permitting authority. The MOU will define regulatory responsibilities

rates and volumes of stormwater runoff, the local plan will need to be amended and the amendment reviewed and approved by RWMWD.

The RWMWD reserves the right to recommend to the city that a project be denied if the District considers it to be inconsistent with the local water management plan. If the local unit of government proceeds to approve such a project, the RWMWD reserves the right to take legal action.

4.4.1 Requirements for Local Water Management Plans

Local water management plans are required to conform to Minnesota Statutes 103B.235, Minnesota Rules 8410, and the RWMWD Plan. Minnesota Rules 8410 and Minnesota Statutes 103B.235 Subd. 2 include specific requirements for local water management plan content.

The policies and goals established in each city's local water management plan must be consistent with the RWMWD plan. The Section of the local water management plan covering assessment of problems must include those problems identified in the RWMWD Plan that affect the city, including those issues identified in the Strategic Overview and individual subwatershed sections (see Section 2.0). The corrective action proposed must consider the individual and collaborative roles of the city and the RWMWD and must be consistent with the RWMWD Plan.

In general, the RWMWD expects the cities to take the lead in addressing problem areas that the RWMWD believes to be local in nature. Local plans should identify problems and corrective actions that affect District concerns stated in this Plan or require RWMWD collaboration to address.

Cities are to maintain stormwater systems (storm sewers, ponding areas, ditches, water-level control structures, etc.) under their jurisdiction in good working order to prevent flooding and water quality problems. The RWMWD requires that local plans assess the need for periodic maintenance of public works, facilities, and natural conveyance systems.

Cities are encouraged to consult with the RWMWD staff early on in their planning process to determine collaboratively the most practical approach to meeting the requirements of the RWMWD Plan and Minnesota Statute and Rules. The RWMWD will work closely with cities as needed in local plan preparation, review, and implementation. In particular, the cities are urged to review District data (e.g., hydrologic and water quality), maps, and other information available to assist local units of government in preparing their local plans with the RWMWD staff and to go over the timeline for local plan review, approval, and adoption. Furthermore, the RWMWD staff will work with city staff regarding financial considerations, implementation priorities, and programs for plan elements of mutual concern.

City ordinances, management programs, and other official controls required by the RWMWD Plan must be implemented within 2 years of RWMWD Plan adoption. Revisions to local water management plans or local controls that are potentially inconsistent with the RWMWD Plan must be submitted by the cities to the RWMWD for review.

The RWMWD's requirements for local plan content coincide with or add to the requirements of Minnesota Statutes and Rules. The RWMWD set two levels of requirements for local plans:

- **Level 1** – a shorter list of plan requirements for cities that do not wish to take over permitting authority from the RWMWD (i.e., RWMWD continues its permitting role).

- **Level 2** – a longer list of plan requirements for cities that do wish to take over all permitting authority from the RWMWD. As described in Section 4.1.2.1, if a city wishes to take over permitting authority from the RWMWD, it must first prepare a local water management plan, obtain RWMWD approval of the plan, and then adopt and enforce stormwater management and erosion control ordinances. In this situation, the local water management plan needs to meet additional requirements.

The detailed requirements are described below. In general, the RWMWD encourages the cities to use RWMWD data, modeling results, etc. as much as possible to meet these requirements. Although RWMWD has completed hydrologic, hydraulic, and water quality modeling throughout the District, cities will need to perform additional modeling in areas where more detailed analysis is needed or to fill gaps in the District's modeling.

Level 1: RWMWD Requirements for local water plan content (applies to local units of government that do not wish to take over permitting authority from the RWMWD):

1. For cities subject to NPDES MS4 permit requirements, the local water management plan must identify reference policies, goals, and actions based on their SWPPP performed in accordance with MPCA requirements and schedules. Non-degradation requirements, policies, goals, and actions, must also be included in the local water management plan, if applicable.

2. Impaired waters, TMDL studies, WRAPS studies, and SLMPs – the local plan must include a listing of any impaired waters (as included on the MPCA's 303(d) list) within the city's jurisdiction. The local plan must describe the city's role/level of participation in preparing and implementing TMDL studies. The local plan must also address issues identified in the RWMWD WRAPS study and stormwater lakes management plans (SLMPs) prepared for water bodies within the jurisdiction of the city and implementation recommendations that involve local implementation or coordination with the RWMWD.

3. The local water management plan must identify official controls and programs (e.g., ordinances, management plans) which are used to enforce the policies and requirements of the RWMWD. The local plan must reference the city's stormwater management requirements, including erosion and sediment controls for land alteration activities that do not require a RWMWD permit (e.g., projects that disturb less than 1 acre of land). The local plan must identify the city's relevant ordinances or proposed ordinances to address this. Particular attention should be paid to addressing redevelopment and reducing total suspended sediment and total phosphorus loadings from redevelopment sites.

4. The local plan must describe the city's responsibilities for maintenance, repair, etc. of "non-District-managed" public and private stormwater management systems. The local plan must address maintenance issues and identify the situations where the city needs to coordinate with RWMWD on maintenance activities

5. Local water management plans must assess the need to establish a waterbody management classification system to provide for water quality and quantity management. If a different classification system than the RWMWD classification system is used, it must be correlated to the RWMWD system and approved by the RWMWD. Local water management plans must evaluate the need for other management programs, if necessary.

6. The local plan must describe local flood control and water quality issues (including those issues discussed in the *RWMWD Plan*), and the city's responsibility for addressing these local issues.

7. The local plan must describe the city's role in wetland management (e.g., acknowledge RWMWD's role as LGU for the Wetland Conservation Act and the RWMWD wetland management standards). If a city is already the LGU (i.e., the City of St. Paul) or wishes to accept responsibility as the LGU, the city must adopt a wetland management ordinance that incorporates the RWMWD wetland management classification system and standards.

8. The local plan must include an implementation program (including funding methods) to address all of the items listed above.

Level 2: RWMWD requirements for local water plan content (applies to local units of government that do wish to take over all permitting authority):

In addition to the requirements listed for Level 1, the following **additional** requirements apply:

1. The local plan must describe existing and proposed physical environment and land use – the city's latest comprehensive land-use plan and maps, along with information from the RWMWD, can be used to meet much of this requirement. The local plan must include maps showing the MDNR public waters, the RWMWD-inventoried wetlands, and the RWMWD wetland classifications. This description must include a groundwater Section incorporating available groundwater quantity and quality information. The local plans should also include references to completed groundwater studies that affect the city.

2. The local plan must include drainage areas and the volumes, rates, and flow paths of stormwater runoff. Cities are encouraged to use the RWMWD modeling data presented in this Plan or otherwise available from the District to help meet this requirement. The following criteria apply:

    a. Design storms and storm durations shall conform to the RWMWD standards (e.g., Atlas 14).

    b. The preliminary size of future pipes or channels must be identified.

    c. Allowable runoff rates to prevent flooding must be determined.

    d. Any minor watersheds within those identified in the RWMWD Plan must be identified.

    e. Waterway locations must be identified.

    f. A storm sewer system map must be provided, if available.

    g. The local plan must demonstrate that its hydrology conforms to the hydrology in the *RWMWD Plan*.

3. The local plan must identify storage sites not identified in the *RWMWD Plan*, including wetlands. The following criteria apply:
    a. Storage volumes must be provided.
    b. Normal water level elevations and flood elevations must be provided.
    c. Outflow rates must be provided.

4. The local plan must describe the city's regulations and specific regulatory provisions in place or that need to be developed to satisfy and incorporate the RWMWD standards and RWMWD rules and regulations, as revised.

5. The local plan must acknowledge and describe the respective roles of the RWMWD and the city in managing the water quality of the District-managed water bodies. The local plan must adopt the RWMWD waterbody classification system and water quality goals for the District-managed water bodies and the RWMWD wetland classifications for the non-District-managed water bodies.

6. The local plan must identify the city's goals, objectives, policies, standards, and guidelines pertaining to water resource management.

7. The local plan must describe the city's permitting process (or proposed process) for land and wetland alteration work (if the local unit of government is or takes on the LGU role for the Wetland Conservation Act). This description should include outlining the process for:
    - Reviewing development proposals and permit applications
    - Review of preconstruction plans
    - Coordinating permit requests with other simultaneous reviewers
    - Coordinating timelines with other permitting agencies

4.4.2 RWMWD Review of Local Water Management Plans

Before a city adopts its local water management plan, the new or revised plan must be submitted to all of the affected WMOs, the Metropolitan Council, and the county in which the city is located (if the county has adopted a groundwater plan) for concurrent review. Within 60 days of receipt of the local plan, the RWMWD will review the local plan for conformance with the *RWMWD Plan*. During its review, the RWMWD will take into consideration any comments received from the Metropolitan Council and the applicable county. The RWMWD will approve or disapprove all or part of the local plan within the 60-day time frame, unless the city agrees to an extension. If the RWMWD does not complete its review or fails to approve or disapprove the plan within the allotted time and the city has not given an extension, the local plan will be considered approved (Minnesota Rules 8410 and Minnesota Statutes 103B.235, Subd. 3 and 3a).

Upon RWMWD approval of the local plan, the city must adopt and implement its plan within 120 days and amend its official controls within 180 days of plan approval. Each city must notify the RWMWD (and the other affected WMOs) within 30 days of plan adoption and implementation and adoption of necessary official controls.

If a community will not be assuming the permitting authority from the VBWD, the community may conform to the requirements of Minnesota Statutes 103B and Minnesota Rules 8410 by adopting all or part of this VBWD Plan by reference through a resolution or other VBWD-approved official means.

A community can assume as much management control as it wishes, through its approved local water management plan. If a community wishes to assume the permitting authority from the VBWD, the community must first prepare its own local water management plan and obtain VBWD approval of the local plan. Any community may prepare its own local water management plan.

For example, a community can assume the permitting authority for all land alteration activities. In this case, VBWD would require the community to adopt all of the VBWD rules by ordinance and to outline the community's permitting process, including the preliminary and final platting process, in their local water management plan. Wetland alteration activities would require a separate VBWD permit or action unless the community assumes local government unit (LGU) authority for administering the WCA and adopts all of the VBWD wetland rules and regulations. When a community assumes the permitting role, the VBWD will still require the community to submit to the VBWD for review and comment all proposed land alteration plans and associated documentation showing compliance with the VBWD and community rules and regulations. The submittal would be required prior to the community issuing a permit. The VBWD may appeal the community's approval of a project if the VBWD believes the project is not consistent with the community's local water management plan. The VBWD may decide to maintain or not relinquish all regulatory authority to the local level to avoid conflicting management philosophies and practices upon adoption and implementation of local water management plans. Section 4.5 provides additional information about ordinance requirements for local units of government that wish to assume the permitting authority from the VBWD.

Any proposed zoning changes in a community with an approved local water management plan will be reviewed by VBWD for conformance with the local plan. If the proposed zoning change will result in changes to the approved rates and volumes of stormwater runoff, the community must amend the local water management plan, and the amendment must be reviewed and approved by VBWD.

The VBWD reserves the right to recommend to the local unit of government that a project which the VBWD considers to be inconsistent with the local water management plan be denied. If the local unit of government proceeds to approve such a project, the VBWD reserves the right to take legal action.

6.3.2 Requirements for Local Water Management Plans

Local water management plans are required to conform to Minnesota law (Minnesota Statutes 103B.235), Minnesota rules (Minnesota Rules 8410) and the VBWD Plan. Minnesota Rules 8410 and Minnesota Statutes 103B.235 Subd. 2 include specific requirements for local water management plan contents.

The policies and goals established in each community's local water management plan must be consistent with the VBWD plan. The section of the local water management plan covering assessment of problems must include those problems identified in the VBWD plan that affect the community. This includes the problems identified in Section 4.1 through Section 4.9 and in Sections 5.1 through 5.38. The corrective actions proposed must consider the individual and collaborative roles of the community and the VBWD and must be consistent with the VBWD plan.

Local units of government are to maintain stormwater systems (storm sewers, ponding areas, ditches, water level control structures, etc.) under their jurisdiction in good working order to prevent flooding and water quality problems. The VBWD requires that local plans assess the need for periodic maintenance of public works, facilities and natural conveyance systems.

The VBWD also requires local water management plans to assess the need to establish a waterbody management classification system to provide for water quality and quantity management. If a different classification system than the VBWD classification system is used, it must be correlated to the VBWD system and approved by the VBWD. Local water management plans must evaluate the need for other management programs, if necessary.

The local water management plan must identify official controls and programs (e.g., ordinances, management plans) which are used to enforce the policies and requirements of the VBWD. Revisions to local water management plans or local controls that are potentially inconsistent with the VBWD Plan must be submitted by the member cities to the VBWD for review.

The VBWD's general standards for local water management plan content are as follows, and incorporate the requirements from Minnesota law (Minnesota Statutes 103B.235, Subd. 2):

1. Describe existing and proposed physical environment and land use.

2. Define drainage areas, and the volumes, rates, and paths of stormwater runoff. For VBWD, the following criteria apply:

    a. Design storms shall include the 2, 10, and 100-year events (based on Atlas 14 precipitation amounts and a VBWD-approved time distribution).

    b. Storm durations shall include ½-hour to 24-hour storms, as well as 10-day snowmelt and VBWD's annual runoff volume event (for landlocked basins) (see Section 4.7 for more information).

    c. The preliminary size of future pipes or channels must be identified.

    d. The minor watersheds within those identified in the VBWD Plan must be identified.

    e. Waterway locations must be identified.

    f. A storm sewer system map must be provided.

g. The local water management plan must demonstrate that its hydrology conforms to the hydrology in the VBWD Plan.

3. Identify storage sites, including wetlands. For VBWD, the following criteria apply:

   a. Design storms shall include the 2, 10, and 100-year frequency events.

   b. Storage volumes must be provided.

   c. Normal water level elevations and flood elevations must be provided (Section 4.7.7.4 describes the method to be used for calculating flood elevations on landlocked basins).

   d. Outflow rates must be provided.

4. Define water quality and protection methods adequate to meet performance standards established in the VBWD Plan.

5. Identify regulated areas.

6. Set forth an implementation program, including a description of official controls and, as appropriate, a capital improvement program.

7. The local government unit's permitting process for land and wetland alteration work shall be outlined in the local water management plan.

8. The local water management plan must describe the community's conformance with the U.S. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) Rules for municipal separate storm sewer systems (MS4s). The local water management plan must either include the community's Storm Water Pollution Prevention Program (SWPPP) or provide a summary of the SWPPP contents.

Other requirements for local water management plans are described in previous sections of the VBWD Plan. Section 4.1.7.1 requires the local units of government to classify waterbodies into one of the VBWD management classifications in their local water management plans. Section 4.5.7.1 states that allowable runoff rates will be determined when the local water management plan is under preparation and requires that stormwater runoff rates be kept to pre-development rates at community borders. In Section 5.0 – Subwatershed Management Plans, the community is expected to take the lead in addressing problem areas that the VBWD believes to be more local in nature.

6.3.3 VBWD Review of Local Water Management Plans

Before a local unit of government adopts its local water management plan, the new or revised plan must be submitted to all of the affected watershed management organizations, the Metropolitan Council, and to Ramsey or Washington County (provided they have an adopted groundwater plan) for concurrent review. Within 60 days of receipt of the local water management plan, the VBWD will

7 IMPACTS ON LOCAL GOVERNMENT

7.1 LOCAL WATER MANAGEMENT PLANS (LWMP)

Pursuant to Minnesota Statutes 103B, following the approval and adoption of the Plan, governmental units having land use planning and regulatory responsibility within VLAWMO are required by statute to complete and adopt a LWMP that conforms to Minnesota Statutes 103B.235 and Minnesota Rules 8410.0160 by December 31, 2018. The LWMPs must be consistent with VLAWMO's Plan and address the priority issues identified in the Plan as it pertains to their community. Each municipality must consider the VLAWMO water management policy in the development of their LWMPs. A municipality must prepare their LWMP, distribute it for comment, and have it approved by VLAWMO, before it is adopted. Each municipality shall submit its proposed LWMP to the VLAWMO Board and the Metropolitan Council for review before adoption by its governing body. The Metropolitan Council review period is 45 days and the Board review period is 60 days after plan receipt.

At a minimum, LWMPs are required to do the following:

- Update the existing and proposed physical environment and land use. Information from previous plans that has not changed may be referenced and summarized but does not have to be repeated. Local plans may adopt sections of this Plan's Inventory and Condition Assessment by reference unless the city has more recent information, such as revised figures and data.
- Explain how the goals, policies, rules and standards in this Plan will be implemented at the local level, including any necessary modifications of local ordinances, policies, and practices, and a schedule for their adoption.
- Show how the municipality will take action to achieve the load reductions and other actions identified in and agreed to in any TMDL Implementation Plans, including identifying known upcoming projects including street or highway reconstruction projects that will provide opportunities to include load and volume reduction BMPs.
- Update existing or potential water resource related problems and identify nonstructural, programmatic, and structural solutions, including those program elements detailed in Minnesota Rules 8410.0100, Subp. 1 through 6.
- Set forth an implementation program including a description of adoption or amendment of official controls and local policies necessary to implement the Rules and Standards; programs; policies; and a capital improvement plan.

TABLE 5: LAST LWMP UPDATE

Municipalities in VLAWMO	Last Update
Gem Lake	2010
Lino Lakes	2011
North Oaks	2008
Vadnais Heights	2010
White Bear Lake	2007
White Bear Township	2010

7 IMPACTS ON LOCAL GOVERNMENT

Local suppliers of public drinking water must develop a plan as part of their comprehensive plan. They must also address any expansions of that drinking water supply in the plan.

If certain water bodies have been identified then the shoreland zone must be regulated by local ordinance or other code. Similarly floodplain areas as identified by Floodplain identification maps must be regulated by local controls.

All subsurface sewage treatment systems (SSTS) must also be regulated through local ordinance or code.

7.2 TMDL RESPONSIBILITIES

For the impaired waterbodies that have a completed TMDL study, the MS4s have Total Phosphorus (TP) and bacterial waste load allocations (WLAs) for which they are responsible. Some additional information regarding the TMDL study and WLAs is located in Appendix B of the Plan. The full TMDL study and implementation plan was approved by the Environmental Protection Agency and can be found via the link in the References section.

TABLE 6: ASSIGNED TP WLAS FOR VLAWMO WATERBODIES WITH COMPLETED TMDL STUDY

			MS4s								
Lake	WLA (lbs/yr)	M-Foods Dairy	Anoka County	City of Gem Lake	City of Lino Lakes	MN DOT	City of North Oaks	Ramsey County	City of Vadnais Heights	City of White Bear Lake	White Bear Township
Gem	47.0	-	-	23.9	-	5.2	-	9.0	-	8.9	-
Goose – East	78.7	-	-	2.2	-	7.9	-	3.9	-	64.7	-
Goose – West	40.0	24.7	-	2.8	-	3.6	-	1.6	-	7.3	-
Gilfillan	17.0	-	-	-	-	-	14.7	0.5	0.1	-	1.7
Wilkinson	179.4	-	0.1	-	1.2	47.2	26.4	1.8	-	35.1	67.6

TABLE 7 : ASSIGNED BACTERIAL WLAS FOR LAMBERT CREEK

	MS4 Wasteload Allocation (Billions of org) (Daily)						
Critical Condition	City of Gem Lake	MN DOT	Ramsey County	City of Vadnais Heights	City of White Bear Lake	White Bear Township	Total Waste Load
High Flow	0.68	1.17	0.56	8.78	3.74	0.45	15.38
Wet	0.21	0.36	0.17	2.73	1.16	0.15	4.78
Mid-Range	0.10	0.17	0.08	1.28	0.55	0.07	2.25
Dry	0.04	0.06	0.03	0.45	0.19	0.02	0.79
Low Flow	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VLAWMO looks forward to continuing its strong partnerships with the MS4s as we work together to accomplish the goals of this Plan.

Appendix B

Community Survey Results

City of White Bear Lake

Water Resources Community Survey

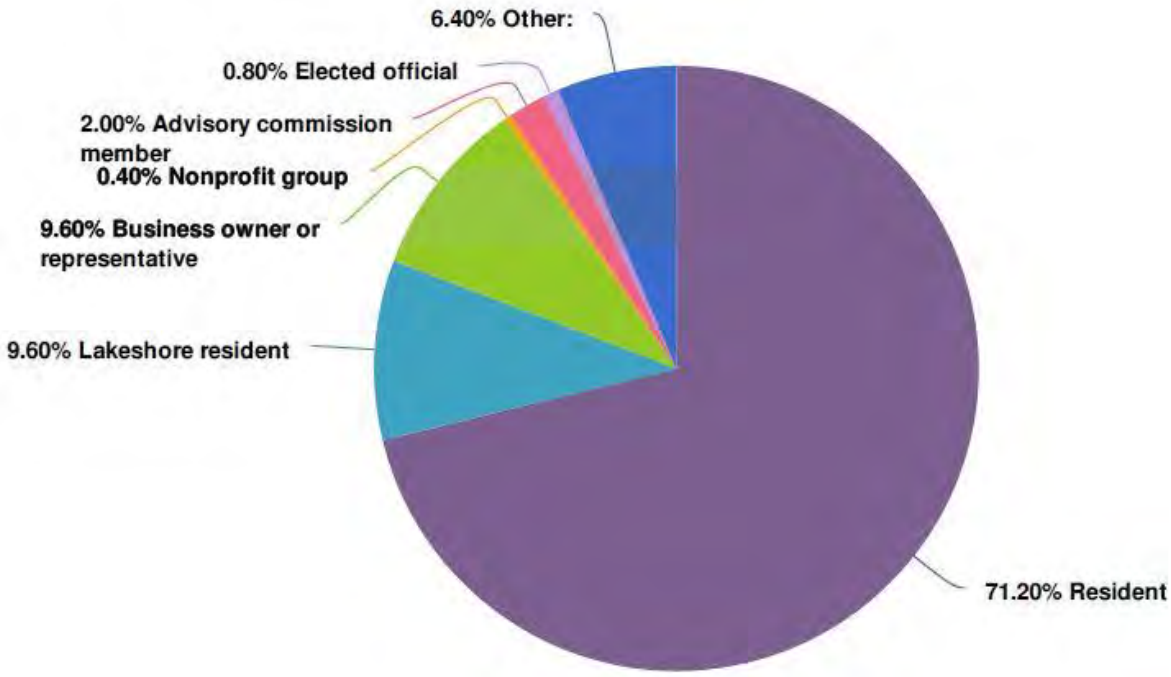
11/21/16 to 1/12/17

1/27/2017

Response Counts

Completion Rate:	**100%**		
	Complete		250
			Total: 250

1. Please tell us your affiliation(s) in the City

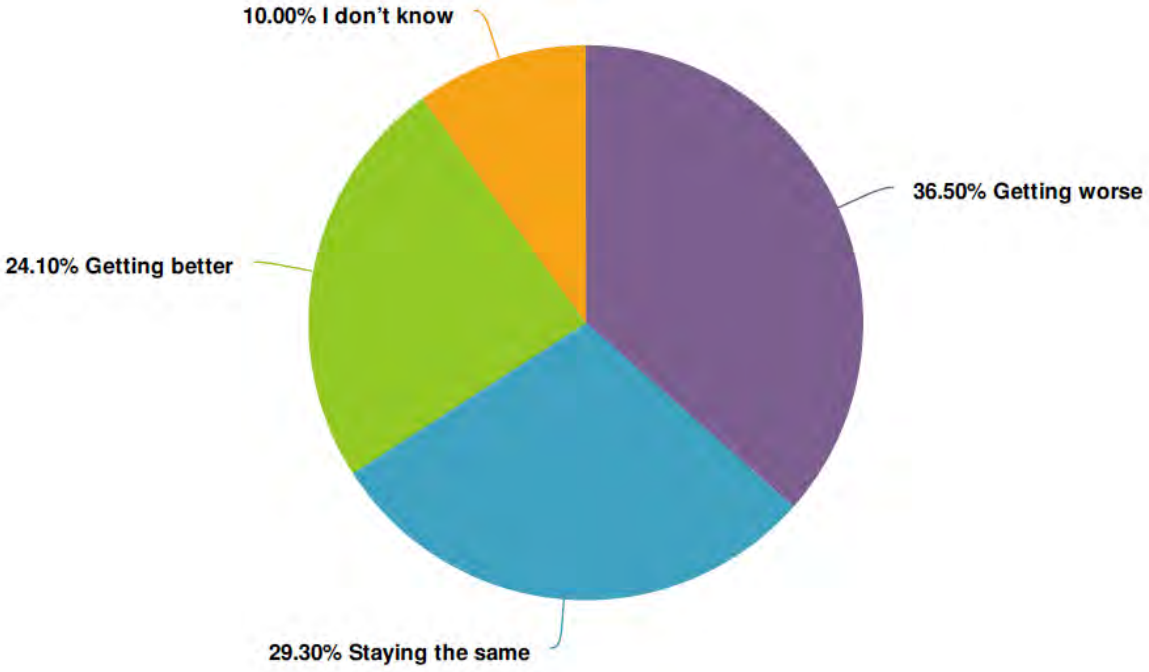


Value	Percent	Responses
Resident	71.2%	178
Lakeshore resident	9.6%	24
Business owner or representative	9.6%	24
Nonprofit group	0.4%	1
Advisory commission member	2.0%	5
Elected official	0.8%	2
Other:	6.4%	16

Total: 250

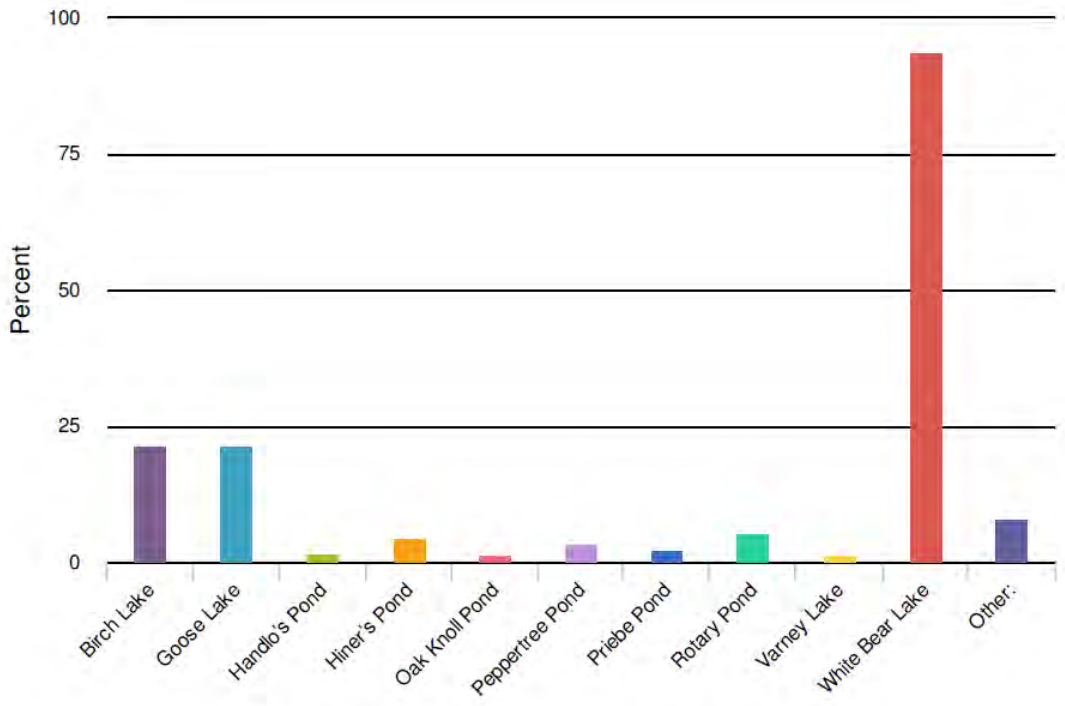
Other:	Count
Gem Lake resident. Regular fisherman on WBL piers.	2
Adjacent Resident	1
Councilperson City of Grant	1
Keep a boat in the WBBW's marina for the last 10 years. Would love to move to lakeshore on WBL. Current resident of North Oaks. My homes water comes from White Bear Township.	1
Local lake friend and surrounding community resident	1
Mayor of Grant	1
Mother of WBL resident	1
Neighbor	1
Previous resident and concerned citizen	1
Previous resident	1
Property owner	1
White Bear Township resident	1
Why is there a difference between resident and lakeshore resident? I love two blocks from the lake. Am I a resident or lakeshore resident?	1
Employee	1
Parent of a shoreline resident in WBL, however, a Maplewood shoreline resident and very active in the Ramsey Washington Metro Watershed District (RWMWD)	1
Total	16

2. In general, do you think the quality of our streams, lakes, and wetlands are:



Value	Percent	Responses
Getting worse	36.5%	91
Staying the same	29.3%	73
Getting better	24.1%	60
I don't know	10.0%	25
	Total: 249	

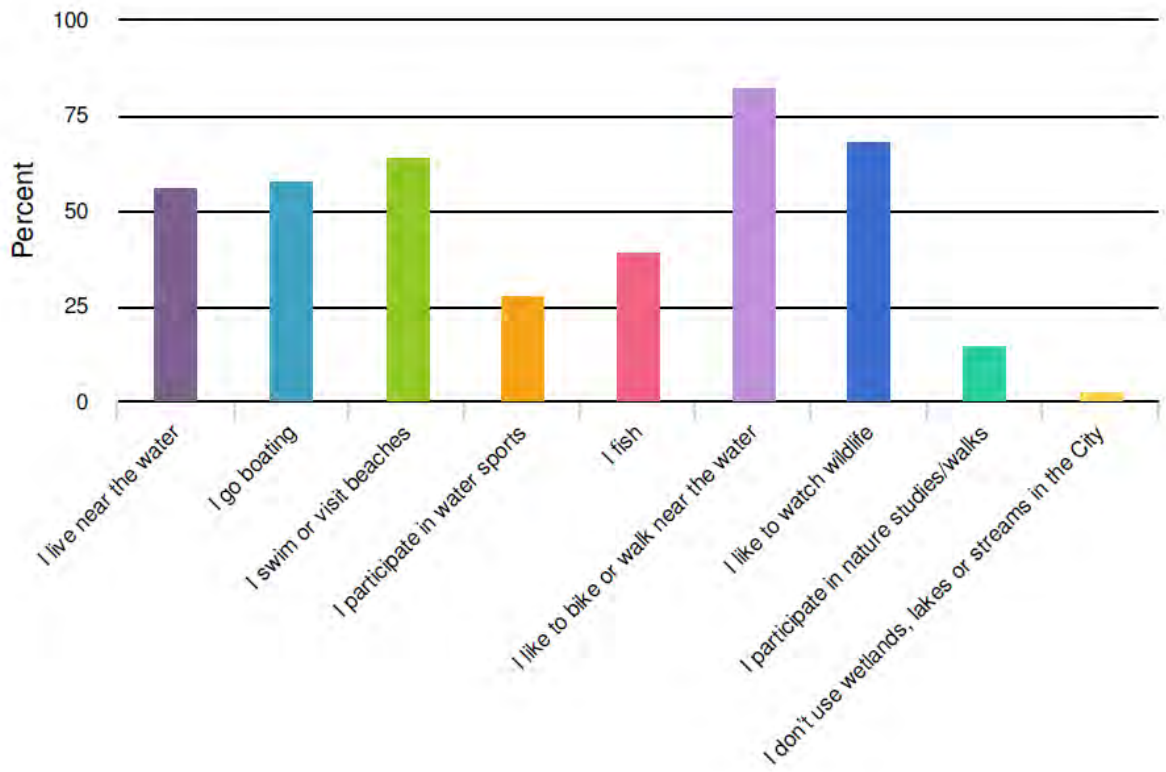
3. Do you live near or frequently use any of the following waterbodies in the City of White Bear Lake?



Value	Percent	Responses
Birch Lake	21.5%	51
Goose Lake	21.5%	51
Handlo's Pond	1.7%	4
Hiner's Pond	4.2%	10
Oak Knoll Pond	1.3%	3
Peppertree Pond	3.4%	8
Priebe Pond	2.5%	6
Rotary Pond	5.5%	13
Varney Lake	1.3%	3
White Bear Lake	93.7%	222
Other:	8.0%	19

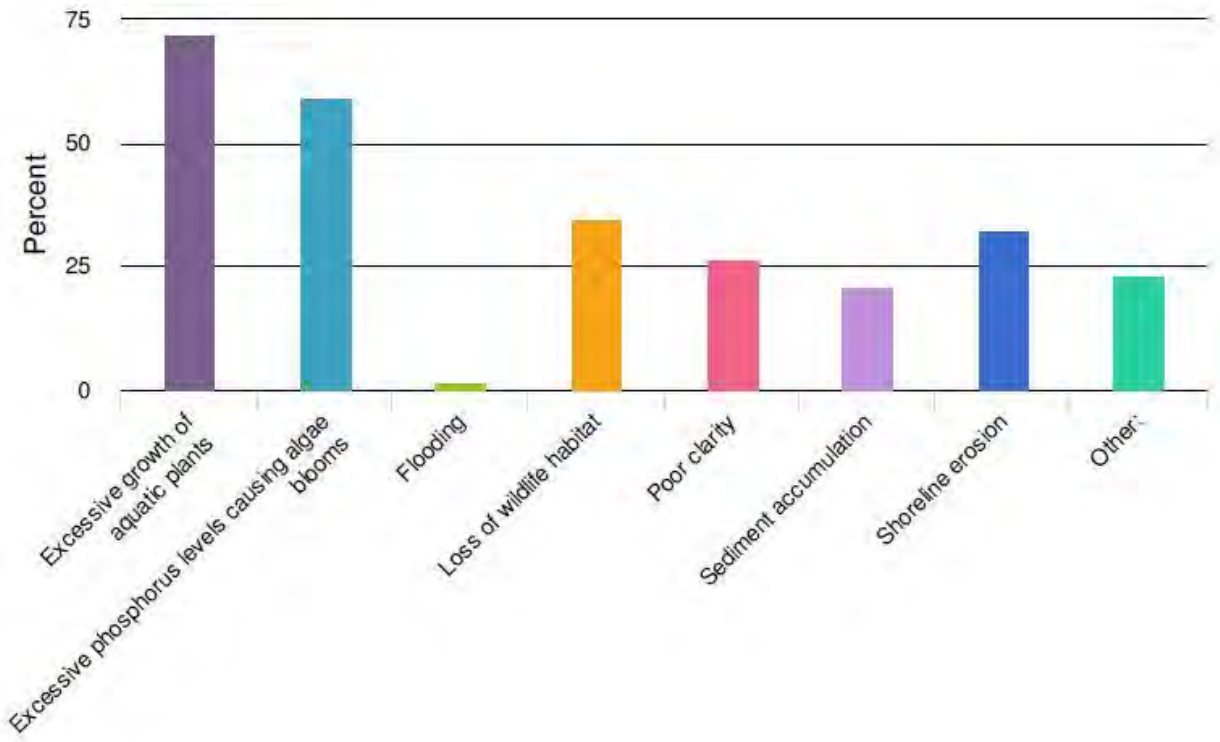
Other:	Count
Bald Eagle Lake	10
None	2
Lily Pond	1
Otter Lake	2
Sobota Slough	1
St. Croix River	1
Willow Marsh	2
Total	19

4. How do you use the City's waterbodies?



Value	Percent	Responses
I live near the water	56.5%	140
I go boating	57.7%	143
I swim or visit beaches	64.1%	159
I participate in water sports	27.8%	69
I fish	39.5%	98
I like to bike or walk near the water	82.7%	205
I like to watch wildlife	68.5%	170
I participate in nature studies/walks	14.5%	36
I don't use wetlands, lakes or streams in the City	2.8%	7

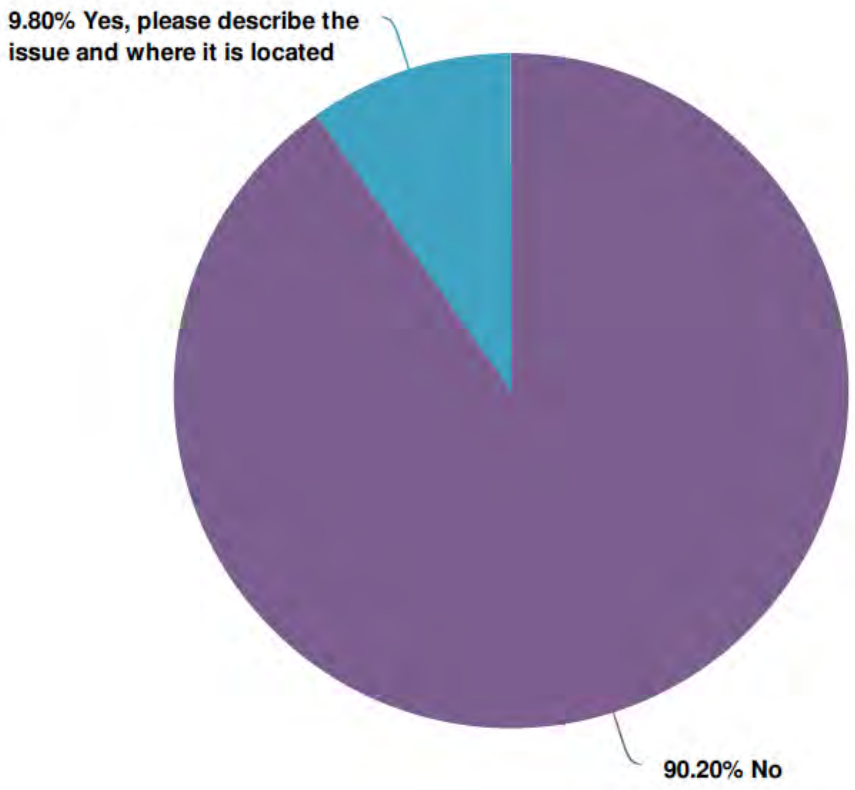
5. Do you have any of the following concerns in regards to these waterbodies?



Value	Percent	Responses
Excessive growth of aquatic plants	72.1%	165
Excessive phosphorus levels causing algae blooms	59.0%	135
Flooding	1.7%	4
Loss of wildlife habitat	34.9%	80
Poor clarity	26.6%	61
Sediment accumulation	21.0%	48
Shoreline erosion	32.3%	74
Other:	23.1%	53

Other:	Count
Zebra Mussels	6
Bohemian Knotweed hedge on Hiner's Pond	1
Elevated salt levels from streets, shoreline residences onsite septic systems	1
Excessive governmental overreach	1
I have concerns about Growth of aquatic plants and phosphorus levels causing algae blooms but not excessive. Phosphorus is well managed as a content in fertilizer but its awareness is still important to new home owners living on or near any run off areas leading into the lake.	1
Invasive Species	3
Long term health of waterbodies	1
Loss of navigable waters of White Bear Lake due to accretion of land, and tree growth in the lake bed, after an extraordinary long period of dry water.	1
Low water level of White Bear Lake	26
Mercury	1
Other contaminates entering the water	1
Pet waste	2
Recreational boaters anchoring on our swimming beaches	1
This fall we have at least 20 muskrat houses right off the shoreline from Ramsey County Beach to Hwy 61. Why? Never seen this before.	1
Access	1
Lakefront owners cutting aquatic plants, lakeshore owners grooming the sand/soil at the edge of the lake bed, and residents in neighborhoods around the lake spilling/spreading lawn fertilizer on impervious surfaces and not cleaning it up.	1
Oily deposit on top of water	1
People throwing trash	1
Augmentation	1
Total	52

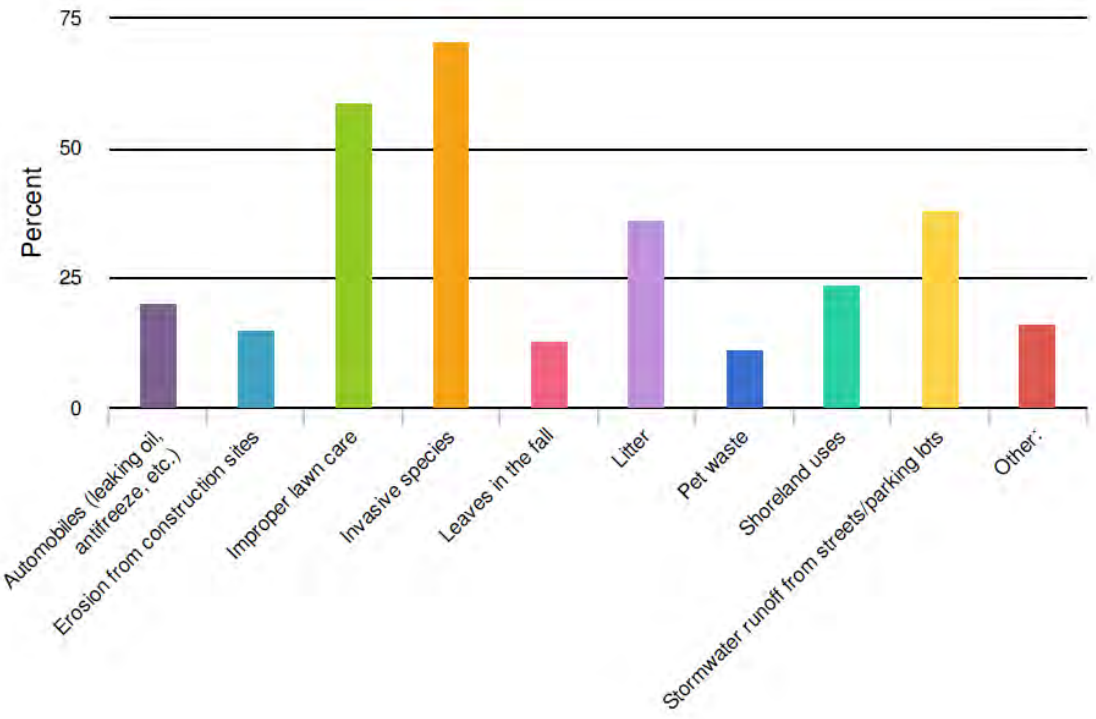
6. Are you aware of any drainage/flooding issues in the City?



Value	Percent	Responses
No	90.2%	220
Yes, please describe the issue and where it is located	9.8%	24
		Total: 244

Response:	Count
Hazel Street floods near floral during extremely heavy rains.	1
I don't know if this counts but I often see year sprinkler systems running during the rain or just after a rain. These are homeowners overwatering their yards.	1
I don't see water flow into White Bear like it use too. Especially at the end of the streets in Old White Bear.	1
I live at 4748 Otter Lake Road. After every heavy rain, there is a giant puddle that collects in my front yard that lasts about a week. I wish there was some way to drain it into Birch Lake.	1
I'm not sure if this matters or counts, but down at the other end of our alley, the 7th Street side, (we are on the 8th Street side) in between Cook Ave. & Stewart, that whole end of the alley is always flooded with water, whenever it rains or snow melts. The house on the Stewart Ave. Side gets its basement flooded because of it so they have to use their own pump to pump the water away from the alley. Also, since my son's bus stop is all the way on the other corner of our block, on Stewart & 7th, that's the way we walk to the bus stop, so we have to walk through it regularly, trying to walk around it, which is hard to do, and causes us to walk up into the neighbors driveways and yards.	1
In front of ice arena on Division and 96 and Stewart.	1
Junction of Lakeview Ave and Cottage Park Road. Street floods curb to curb in moderate to heavy rain.	1
Right on the bottom of my driveway. 4810 Sandra Lane it floods every time it rains or snow melts.	1
Runoff from streets flows directly into Hiner's Pond	1
Spruce park. Major renovations were completed only on part of the park.	1
The alleys between Cook and Stewart between 6th and 8th Streets	1
The entry point is 2nd Street and Lake. This used to have a bubbling brook feel and sound, cat tails and it was from the rain run off etc. After the walkways were redone this area dried up. Shortly after the lake levels were significantly dropping. – Contributing not the source of water level concerns.	1
There's a house for sale/foreclosed 2324 Lakeridge Dr. that has a sewer drain in front of it. It seems to get clogged with debris, especially in the Spring and Fall. Neighbors help when they notice it, but it's at the bottom of 3 inclines coming from the west, east, and north.	1
Only minor issues with heavy rains or when sewer grates are frozen.	1
The ditch across the street from my house on Whitaker Street, drains into swamp which leads all the way to the Mississippi River.	1
Water covering the road during heavy rain on Bellaire between County Road E and 120.	1
Total	16

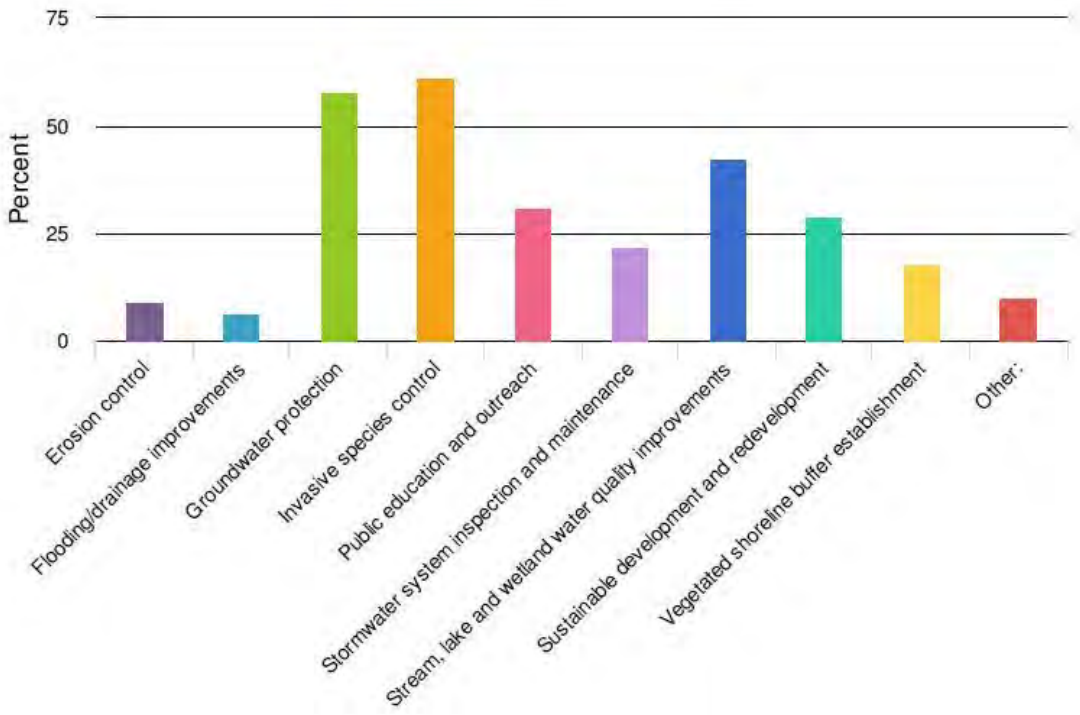
7. In your opinion and experience, which of the following are the biggest threats to the City's streams, lakes, and wetlands?



Value	Percent	Responses
Automobiles (leaking oil, antifreeze, etc.)	20.0%	48
Erosion from construction sites	15.0%	36
Improper lawn care	58.8%	141
Invasive species	70.8%	170
Leaves in the fall	12.9%	31
Litter	36.3%	87
Pet waste	11.3%	27
Shoreland uses	23.8%	57
Stormwater runoff from streets/parking lots	37.9%	91
Other:	16.3%	39

Other:	Count
Aquifer level decreasing	6
Diverting runoff water into pond structures	1
Dog Beach is disgusting. Dog waste on the shore and the dogs run all over.	1
Fertilizers and aquifer maintenance	1
General pollution from those that will always contaminate the lake while we provide adequate clean up methods.	1
Global climate change.	1
Groundwater depletion	2
Herbicides and fertilizers on lawns	1
Lack of rain	1
Overbuilding/overuse of limited resources. Watershed maintenance education.	1
Pollution from boat motors.	1
The litter left from ice houses.	1
The run off from the city streets.	1
Water management regards to the City's utility	1
Watering lawns with lake water	1
We need to open the pump houses to fill WBL or stop drainage to Goose Lake and Bald Eagle Lake	1
White Bear Lake water level	1
Witnessed goose die from Avian Botulism (Limberneck Disease) and called DNR	1
Excessive ground water use for watering lawns.	1
Fertilizers and herbicides used in lawn care	1
Human waste	1
Lack of proper water management by City and State of MN	1
Lake water not being replenished by runoff	1
Residential water consumption	1
Should have more runoff from streets	1
The push to supplement WB Lake with lower-quality water from other sources.	1
Water supply table still don't have a public answer	1
City Planners who are not being properly trained on the impact of decisions by environmental engineers	1
Total	34

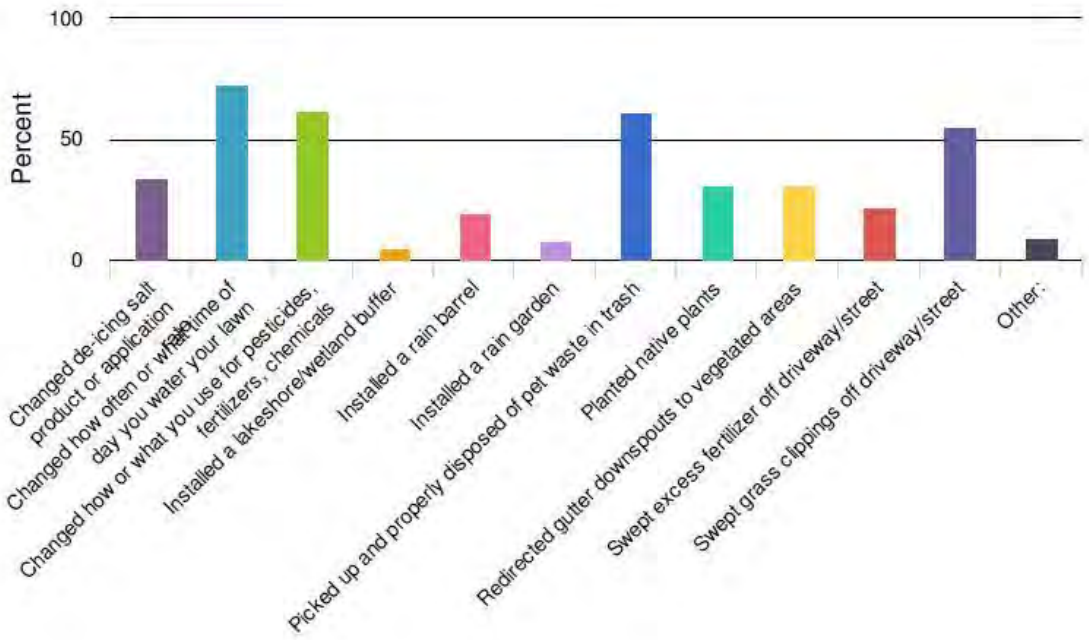
8. Looking at the list below, which do you think should be the TOP 3 priorities in terms of water resources management for the City of White Bear Lake?



Value	Percent	Responses
Erosion control	9.0%	22
Flooding/drainage improvements	6.5%	16
Groundwater protection	57.6%	141
Invasive species control	61.2%	150
Public education and outreach	31.0%	76
Stormwater system inspection and maintenance	22.0%	54
Stream, lake and wetland water quality improvements	42.4%	104
Sustainable development and redevelopment	29.0%	71
Vegetated shoreline buffer establishment	17.6%	43
Other:	9.8%	24

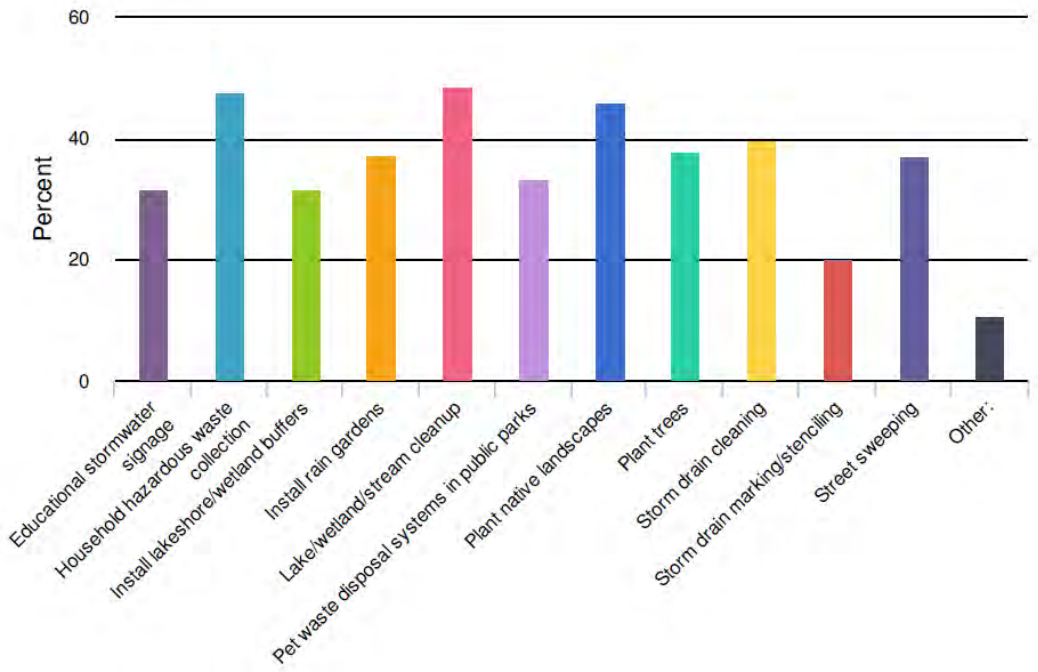
Other:	Count
Augmentation of WBL because of the combined impact of reduced watershed, increased evaporation from longer ice free periods, and depletion of the aquifer from groundwater pumping.	1
Augmentation to maintain lake level	6
Bringing water in from other places where there is waste or excess water	1
Get rid of the dog beach	1
I believe that our storm water drainage can be directed to the lake to supplement the lack of water shed flowing into the lake and with proper management that water can benefit the lake and help to sustain it.	1
Increasing lake levels by enforcing watering restrictions	1
Open the beaches	1
Open the public beach at Optimist park to swimmers again	1
Restricting dog beaches	1
We must educate our residents to properly care for our bodies of water and our drinking water. Scarcity is real.	1
We need to restore WBL to its normal level. Also there is no reason not to open Ramsey County Beach with proper signage. Stop people allowing their dogs to poop on the beaches where our children use the water. The city and County have enough funds to fix the lake! The Lake is the brand for our City and we will be s sorry if we don't stop the water levels.	1
Whatever the scientists say would have the most benefit to surface water quality and groundwater quality, which could include some of the above options… but trust them, not our laymen's instincts please.	1
Enforcement of lawn watering rules and resident education (and perhaps a phosphorus ban) about lawn chemicals	1
Groundwater recharge	1
Limiting use of lawn fertilizers, actually enforcing the watering timeline bans on homes and businesses	1
Septic system inspections in Dellwood	1
Total	21

9. Which of the following have you done on your property to help protect lakes, streams and wetlands from pollution?



Value	Percent	Responses
Changed de-icing salt product or application rate	34.3%	80
Changed how often or what time of day you water your lawn	72.5%	169
Changed how or what you use for pesticides, fertilizers, chemicals	62.2%	145
Installed a lakeshore/wetland buffer	4.7%	11
Installed a rain barrel	19.3%	45
Installed a rain garden	7.7%	18
Picked up and properly disposed of pet waste in trash	61.4%	143
Planted native plants	31.3%	73
Redirected gutter downspouts to vegetated areas	31.3%	73
Swept excess fertilizer off driveway/street	21.9%	51
Swept grass clippings off driveway/street	55.4%	129
Other:	9.0%	21

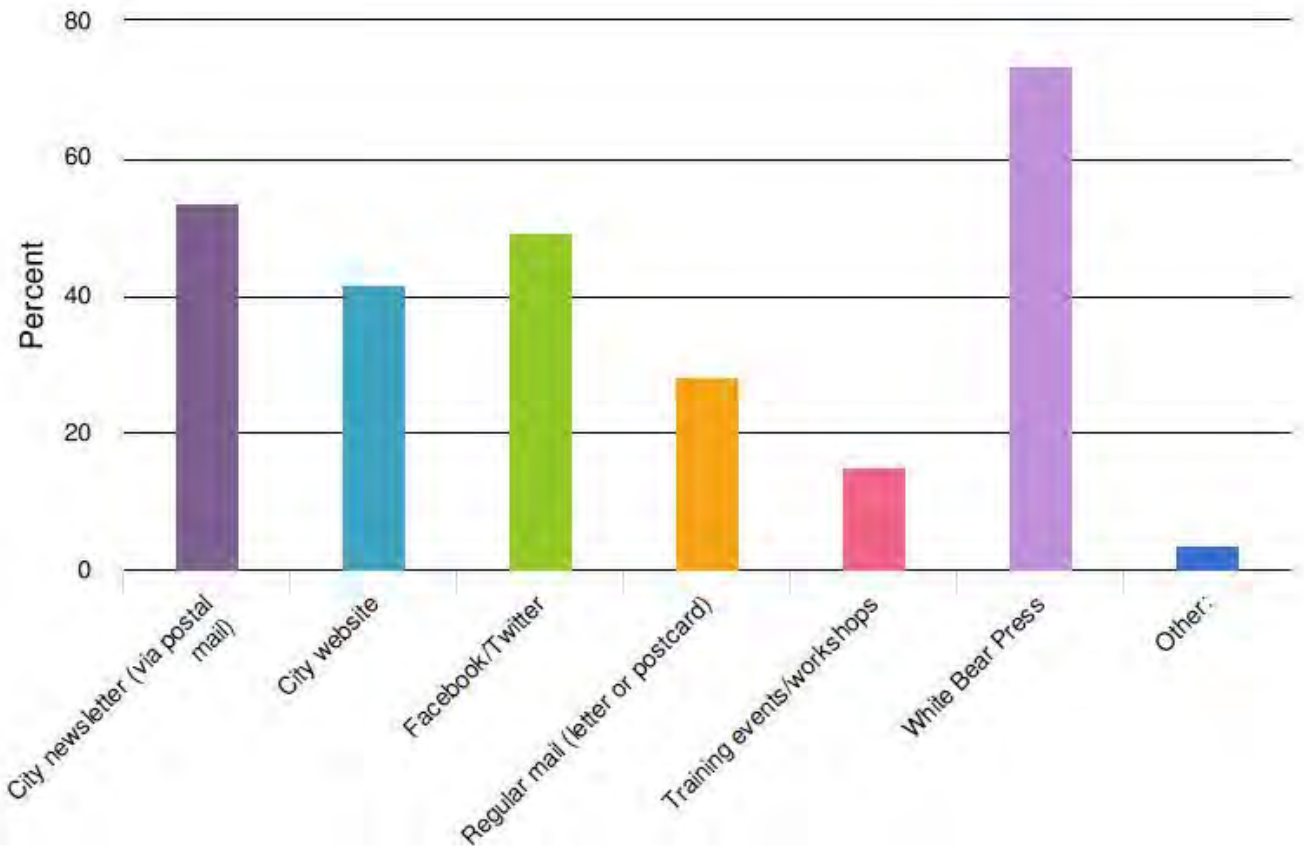
10. What projects or actions would you like to see implemented in your area?



Value	Percent	Responses
Educational stormwater signage	31.5%	74
Household hazardous waste collection	47.7%	112
Install lakeshore/wetland buffers	31.5%	74
Install rain gardens	37.4%	88
Lake/wetland/stream cleanup	48.5%	114
Pet waste disposal systems in public parks	33.2%	78
Plant native landscapes	46.0%	108
Plant trees	37.9%	89
Storm drain cleaning	39.6%	93
Storm drain marking/stenciling	20.0%	47
Street sweeping	37.0%	87
Other:	10.6%	25

Other:	Count
Augmentation to maintain lake level	5
Divert stormwater to ponds that then lead back to our lakes after a settling period	1
Do not allow the street water to dump right into the lake. The blue plastic from the street sweepers are continuously found in the lake due to the street run off	1
Education on toxic effects of glyphosate/roundup	1
Explaining to people how toxic all of the chemicals they are using on their laws are and how bad it is for our animals and the water	1
Get rid of dog beach or move it south of the Manitou bridge where it's not competing with boaters and swimmers	1
Lawn irrigation enforcement	3
Remove curbs that trap leaves and plant material in gutters draining to lakes and wetlands	1
Stop lake owners from watering lawns with lake water	1
Sustainable "seventh generation" public policy	1
WBL has little cover for fish. I'd like to cut down a few trees and lay them in the lake.	1
Whatever has the best cost/benefit effectiveness for improving water quality – ask the experts what this would be	1
Enforcement of lawn watering rules and resident education (and perhaps a phosphorus ban) about lawn chemicals	1
Filter/clean runoff and have it go back into the lake instead of sewer lines	1
Incentives to install and maintain rain gardens	1
Increase the cost of water used to irrigate lawns	1
Total	22

11. What are the best ways to provide you more information?



Value	Percent	Responses
City newsletter (via postal mail)	53.3%	130
City website	41.4%	101
Facebook/Twitter	49.2%	120
Regular mail (letter or postcard)	28.3%	69
Training events/workshops	14.8%	36
White Bear Press	73.4%	179
Other:	3.7%	9

Other:	Count
E-mail	4
I don't think enough people use the resources, so in order to reach them I think you'll need to send newsletters or mailings. Workshops would be great too.	1
Online saves money and is most frequently used by new homeowners	1
Sales meetings	1
Would like to get very periodic e-mails from the City. Would be easier to stay informed if the information is sent to me rather than me seeking it out.	1
Total	8

12. Please describe any other specific issues, concerns, thoughts or suggestions you feel the City of White Bear Lake should address in regards to water resources management planning efforts.

Other:	Count
1. Please be a little more science minded in discussions of the water levels of WBL. The lake is ancient; showing only 10 years of water measurements is like judging a human by one second of his life. Show the entire span of data, pointing that even that is an extremely tiny portion of the life of the lake. 2. I live two blocks from the lake, and I am out walking at least once a day. There is rarely a day in the spring, summer, and fall that I don't come across lawn chemicals on the sidewalk or in the street somewhere in my neighborhood, and the professional lawncare companies are just as bad as the homeowners.	1
1st AUGMENT! 2ND HOOK UP ALL WATER TOWERS TO THE ST PAUL SYSTEM.	1
Apparently, you have not noticed the instability of water levels. There were no answers selectable regarding the water height on White Bear Lake.	1
Are there any changes in what is being done about water level in WBL? Is it continuing to return to past level?	1
At Optimist Park at the SW end of the lake there used to be a canoe entry point. I miss that. Parking is close by so I can carry the canoe to the lake there.	1
Ban the use of Roundup/Glyphosate. Ban selling it in WBL. Come up with alternatives and educate the public.	1
City of WBL should realize that switching to the SPWRS for water supply is the long term and responsible answer for water supply. I understand the City makes money by charging for aquifer water which is all of ours, free and depleting. Hard to give up that income stream. Sometimes the best answer is not the easy one.	1
Communities north and west of White Bear need to reduce their water usage to keep from causing and using so much water from the aquifer.	1
Demand residents start conserving water. Ramp up enforcement of existing laws and regulations that protect our water.	1
Discuss do we want to go back to enforcing lawn watering bans if the GS study concludes that there is an over utilization of the aquifer.	1
Don’t cater to the few that would benefit from your actions. Plan for the benefit of the community as a whole.	1
Educate children at school on how precious	1
Financial help for homeowners to install rain gardens.	1
Generally doing a good job, but there are some structural changes (e.g., stormwater sewers draining directly to Lake, high impervious surface downtown) that should be addressed over time.	1
Get rid of high water consumption toilets in private residences.	1
Get the Ramsey Beach open again. Augmentation for consistent water levels in White Bear Lake.	1
Goose Lake is also an important amenity to the City. I would love to see more efforts	1

to improve the condition of the lake and allow more access via trails and fishing.	
Great survey, thank you!	1
Historically WBL has been low many times and has always risen. I would hope good engineering of storm water could contribute to the levels in WBL.	1
How to return water pathway under bridge and into bay in front of Fillebrown house. Bulldoze it open, dredge it.	1
I am pleased to say that I have stopped using my in ground sprinkler system for the past six years, my lawn is green, healthy and has a fantastic root base. I have not placed any city water onto the lawn, nature has taken care of it completely. Many more people could do this to conserve and still enjoy a beautiful green lawn.	1
I am pleased with efforts of the city in recent years. And I think you have to toot your own horn. Tell everyone what you are going to do, tell 'em what you did, over and over again.	1
I don't know why we have a de facto dog beach. Attracting multiple dogs to our main lake seems irresponsible. On a number of occasions I have witnessed animal feces in and around the lake. It just seems we should utilize a smaller lake or perhaps build something specifically for dogs (if we in fact decide we want that). There is no way this improves the water quality.	1
I don't want the city to support the water augmentation plan for White Bear Lake. It's an irresponsible use of tax dollars that could be better spent improving water quality that would benefit many more people. Thanks for doing this survey. Good idea!	1
I feel there should be restrictions placed on the use of fertilizers and other chemicals in lawn care. Encourage and reward organic methods.	1
I frequently see businesses and homeowners running sprinkler systems too frequently, during the wrong hours, and even while it's raining outside or when we've had more than adequate rainfall. I really think residents need to be better educated and/or water use needs to be enforced during summer water restriction times.	1
I grew up next to the water treatment plant on Orchard Ln. When I visit my dad I can see how it has really gone downhill. It is an eyesore and seems very disorganized. I don't see anything done there to improve it. My heart breaks for my dad who has to look at this every day.	1
I have an Earth Science background and we must let USGS finish its study regarding White Bear's lake level, but all indications I have seen point towards aquifer drawdown and, therefore, I see groundwater protection as the top priority. White Bear's water quality remains quite good, it would be even better if we could get the Eurasian Milfoil mitigated. The small lakes and ponds within city limits are in dire straits with regard to water quality, primarily, clarity. I took Sechhi disc readings for several years on Priebe Lake for the PCA and I must tell you that Priebe and nearly all water bodies in its class, including Goose Lake, are hypereutrophic. Their water quality is stable, but it's at, or near, the bottom of rating scales due to excessive algae blooms. By August, the clarity of the small water bodies is reduced to 6 inches and at its best, it's less than 3 feet - I'd really like to see some kind of algae mitigation program instituted. Thank you.	1
I haven't watered my yard in years and it's just as green as the guy that does. Yeah, it might brown at times but comes right back. Why does the city continue to install automated watering systems? Waste of money and maintenance. Sends the wrong	1

message of water conservation especially when they're on in the morning and it's raining (along Clark).	
I live on Peppertree pond and it needs to be dredged. The street runoff has gradually filled the pond. When I first moved in it was up to 15 ft deep. Now it runs about 4-6 ft of mucky bottom.	1
I see a lot of litter in the lakes, which can hopefully be addressed. We love the city of White Bear Lake and the water amenities and resources we have here. I'm happy the city is looking into strategic planning around this topic.	1
I think it unnecessary to water lawns right in down town WBL when it is raining or rained last night. I see it all the time. These are old outdated underground sprinklers who's owners seem to be unaware of	1
I would love to see a community effort to end the use of herbicide and pesticides. Encourage homeowners and businesses to plant native plants and grasses thereby reducing the need to water turf lawns. I would also ask those residents along Shore Drive to stop seeding lawn grasses in areas that were once under water. This group seems to be doing the most complaining about the loss "our lake" and making the worst decisions about wetland maintenance.	1
I'd like to see more home owners held accountable for cleaning leaves from their driveways and roads. Lots of regulations seem to be targeted to homeowners. What are you doing to make businesses/business owners more environmentally friendly? Educate city residents on how the responsibility is spread to all WBL city occupants.	1
I'm a little concerned about a popularity contest to guide public program development of unknown cost to solve technical problems. So, if people all say that leaves are the biggest threat to water quality, does that make it true? If people say they want trees planted, do we allocate $100,000 a year to it even if street sweeping funded at half that amount provided a greater water quality benefit? This survey should have been limited to questions 1, 3, 4, 5, 6, and 11.	1
In the long term, consider using St. Paul water supply to take pressure off the aquifer.	1
Increase the cost of water for those who use excessive amounts caused by lawn irrigation. Compare winter use to summer use and charge fold for usage over winter average.	1
Is there not enough run off rain water from the streets around White Bear lake with the installation of the streets and walking paths that are raised up?	1
It appears that the water conservation program has been successful. How about rallying the residents around ways to Clean up the water going into our lake and ponds?	1
It is unconscionable that lakeshore owners and WBL homeowners water their lawns the way they do, with little regard to restrictions. There is simply too much stress on groundwater resources. Start enforcing watering bans!	1
It would be informative to see a map showing the different points where water enters the system and where it ends up. Separate description of volume, make-up of water quality entering the system at different entrance points would be helpful.	1
Keep more runoff in White Bear Lake. Some systems that will treat runoff and then move that water into the ground, rain gardens and or into the bodies of water (Lakes).	1
Keep water prices competitive	1

Lake level! Although it is up from record rainfall this year, it will go back down without fixing it. We need money to build a system to fix this ASAP.	1
Lake levels.	1
Let the lake recover naturally. It is almost back to normal without any augmentation. Lake residents should not expect constant lake levels with this type of lake it is part of nature's course. Look at all of the new buffer vegetation!!	1
Let white bear lake use nature to return its lake level not taxpayer dollars	1
Level of water on WB lake.	1
Manage an equitable use of the waters of White Bear Lake and the local aquifer with respect to all users. Require rain switches on residential irrigation systems. Sell toilet tank bricks to reduce water use and finance public education on water use.	1
My daughter lives on Peppertree Pond and we take walks in the area. I am passionate about our environment. My current concern is about the HUGE Bohemian Knotweed hedges that are on Hiner's Pond. I don't think many of the people realize how invasive that is and what they can do about it. Since it is so invasive and already on a shoreline, I think concerted efforts should be made to eradicate it. If you would like some additional advice, connect with David Nelson, who is a MN Master Naturalist for North Metro Chapter. He's been involved in eradicating Japanese Knotweed in N. St. Paul and is a wealth of knowledge. He told me that he'd be happy to help and you could reach him at north2020@yahoo.com or his cell is 612.201.2142 I live on a small lake in Maplewood and restored our entire shoreline 15-20 years ago. I've been a volunteer on the RWMWD for 15 on the Landscape Ecology Awards Program committee that gives awards to landowners who practice good water management practices. I'm a professional photographer and donate a lot of my time and images. You can reach me at anita@anitajader.com	1
Open Ramsey County beach.	1
People littering at parks and lakes. People using too much lawn care products and deicer.	1
People who live on lakes should not be able to use fertilizer on their lawns, which has a direct effect on water clarity and algae growth. Also should have natural vegetation buffer.	1
Please educate residents that it's okay to NOT have green lawns in the summer. As a former Seattle resident, where summer droughts are "normal", residents are used to brown lawns that ALWAYS become green again. If the brown lawns are offensive, there are native plant options that can be used instead of a lawn. Our lake is important ---so important that our town is named after it!	1
Please focus on sustainability and allowing the general public access to use or see the water. As a middle class person, I do not want more shoreline to be taken up with developments or houses only for those with money. I really like the public sitting area and dock next to the VFW. I would like to have inexpensive kayak or canoe rentals for WBL. We cannot afford to live on the lake or to have a boat, and it's a shame that we are so close to the lake yet cannot actually afford to go out on it unless invited by others. Thank you!	1
Pretty soon we won't be able to see lake by Matoska because so many trees have	1

grown. My fear is that the vegetation will block all our views on this side of lake.	
Price Lake needs to be drained and dredged. The quality is horrendous and gets worse every year.	1
Primarily concerned with water levels in WBL. Miss going to beach there to swim n enjoy the sun.	1
Protect our limited public swimming beaches from anchored party boats too near the beach and people trying to swim.	1
Protect the lakes and streams for public use. Stop developing adjacent land unless for public use. Hold businesses accountable for their use and misuse of water resources	1
Put the storm water back into the lake. Do more passive rerouting of excess water run off to WBL to increase the volume to allow more "room" for the lake to fluctuate without wide swings in levels.	1
Raise city fees to pay for city improvements. It's time to start acting like a third ring suburb of a Major metropolitan area instead of a trailer park.	1
Saw a large amount of zebra mussels on docks in the fall.	1
Second Street dumps right into the lake it is horrible as there is no buffering after Manitou days all the plastic garbage from the street is dumped right into White Bear Lake.	1
Signage at the public boat ramps educating the general public to not litter. I would also like to see an area marked off limits for all motorized boats to protect nesting Common Loons.	1
Stop selling water to excessive users for so cheap.	1
Stop the golf courses from using the water. More planting and habitat restoration. Decrease impervious surfaces throughout city. Less cement and asphalt. More plants. Shoreline development in the city needs more plantings and fewer hard surfaces....landscape developers LOVE to add hard surfaces, but they are wrong in their approach. Planting more trees and plants will help the water. Eliminate storm water drains to the lake all together and increase retention ponds. Do not augment the lake with water from other lakes or the Mississippi, it is too expensive and impractical. OPEN RAMSEY BEACH!!!!!	1
Storm sewer runoff from Banning into WBL contains lots of trash (cigarette butts, paper bags, wrappers, etc.) Anything that can be done to improve will be appreciated.	1
Stress water conservation. Stop running sprinklers in all but new sod applications. Conservation education. And we really appreciated the grants to replace our toilets. But must educate; no one else knows about things like the toilet replacement program.	1
Team up with surrounding constituents to agree on a comprehensive plan to manage water levels on the lake so we don't have these yo-yo fluctuations which hurt lake quality and hinder opportunities to use the lake for recreation.	1
Thank you for asking for our opinions!	1
The diversion of water away from White Bear Lake through development over the past few decades has been a part of the issue with the lake level variances. White Bear Lake needs rain runoff due to its minimal watershed area. Providing clean runoff to the lake is the challenge. Developing holding areas, rain gardens, etc...should be	1

strongly considered as streets are reconstructed in the future.	
The lake is beautiful. I don't see any problems and I don't think there really are any problems. I think pet owners do need to be more responsible in picking up their dog waste.	1
This survey is a fantastic step in the right direction. My suggestion is to keep on this path, and involve the community as much as possible in decision making.	1
This survey is biased in that it is seeking negative views on the water quality. So, it won't be surprising when your results show you that everyone is concerned and wants you to do something (since those are the only choices). I would like to point out that many of us think there is a bit too much overreach.	1
Too late but more info on invasive species and how to minimize transport to other waters specific to lake property home owners. And more boat launch inspections.	1
Too many people in the neighborhood use sprinklers to water their lawn whenever they want, however long they want, however often they want. Some people are half spraying the sidewalk too! It's a waste of water just because it's so important to them how their grass & lawn looks, when really, that's not even important.	1
Use incentives or regs to reduce lawn watering and use of lawn chemicals	1
Use shallow ditches rather than curbs and gutters to avoid the accumulation of pollutants on streets.	1
WBL has a historic opportunity to lead the process of restoring and protecting its namesake lake. Despite the combined three wettest years in recorded history the lake is still over two feet below ordinary high water. If we do not address the systemic water imbalance of WBL with clean water augmentation, it will be further degraded. Look at the very early photographs of the lake from the 1800s, we are losing large areas of the lake to accretion of land. It has been almost 15 years since we have had ordinary high water despite above average rainfall during this timeframe.	1
WBL looks great. Yes, it changes over the years. I am sorry the lake residents are affected. However I don't want to pay for them to have the lake back to the condition it was years ago.	1
Water level of WBL.	1
We have all learned a lot about water in the last 5 years the awareness is much greater which is necessary. We only have our natural resources one time around, its crucial we don't screw it up. This survey is excellent.	1
We must repair WBL. I have only lived in White Bear Lake the last 10 years and the lake levels are so low we are about to lose the leg all together. My kids used to swim in the lake now it’s so dirty, shallow, lake is drying up.	1
We need more areas for beaches. Clean up the vegetation from Ramsey Park.	1
We need more water conservation.	1
We need to be aware that we have a small watershed . The action of the city and surrounding suburbs have affected the lake level. Modifying the water shed in the past years has affected the lake level which in turn has allowed milfoil and other weeds to over take the lake. We had over forty inches of rain this year . The lake only came up roughly two feet. Rain gardens are killing the lake!!!	1
We should not rob Peter to pay Paul. Reconstruction of storm sewer assets will be a	1

costly expense in the near future. Inspect, maintenance and repair public works infrastructure before it fails and we have to replace it. It is important to protect the water, but the Utility Budget and enterprise funds should be protected from over reach and over reaction to a temporary problem with the lake.	
We still need a solution to the lake level.	1
White Bear Lake needs to have Lake augmentation.	1
White Bear Lake water level resolution.	1
Ban lawn watering. The rain does a fine job.	1
Find where the leak in our lake is, and do something, not just sue the state or county. Get the state to turn the pump house back on.	1
Total	93

Appendix C

25 by 25 Community Water Meeting Responses

White Bear Lake Area Community Water Meeting
September 21, 2017

Group A

Question 1 – what are your Top 3 water improvement goals?

1. Agricultural runoff, or non-point source pollution, should be controlled by permits.
2. We need to prioritize sustainable groundwater consumption.
3. Road salt should be better managed.

Question 2 – What barriers will your goals face?

1. Confusion about who is responsible among stakeholders
2. Minnesota legislature
3. Special interests, such as pesticide and fertilizer companies, and consumers
4. People don't want their taxes raised and they aren't always willing to pay for fixes.

Question 3 – What actions should be taken to address each goal and/or barrier?

1. The Met Council should be in charge of drinking water supply for the seven-county metro area. They should direct consumers to use more surface water, conserve water better, and they should provide incentives to reduce private wells.
2. The state should provide money for a road salt alternative (which will likely be more expensive). We need to focus on not using salt anymore.
3. The MPCA should issue permits for all agricultural operations. A related idea is that farmers should be required to have buffer zones. Absolutely required.

Group B

Question 1 – what are your Top 3 water improvement goals?

1. Hold residents responsible for keeping sewers clean, perhaps through city ordinance
2. Flushing drugs needs stop.
3. Incorporate area clean-up into development plans
4. More cooperation with buffers/buffer requirements

Question 2 – What barriers will your goals face?

1. Lack of funding, and lack of enough public awareness and political will to ensure support for funding.
2. Competing funding priorities: too much competition for limited funds.
3. Unanswered question of: how do we calculate the value (savings) of clean water and cleaning up water sources?

Question 3 – What actions should be taken to address each goal and/or barrier?

1. Local governments should bring pressure to those [*unknown word*] above to keep with funding and education.
2. Enforce laws that exist
3. PAH's need more attention.

Group C

Question 1 – what are your Top 3 water improvement goals?

1. Total number of boat drain plug violations is reduced annually.
2. Enact and maintain a stormwater drain stencil program.
3. Promote more native plantings and buffers.

Question 2 – What barriers will your goals face?

1. Not enough engagement, education, and program participation
2. Partisan politics is a barrier. Politics, not government, gets in the way.
3. Money is limited and it is difficult to get consensus on projects to spend money on.

Question 3 – What actions should be taken to address each goal and/or barrier?

1. We need to educate ourselves, personally.
2. We need to educate youth through curriculum.
3. We need to raise funding (or designate higher amounts toward water programs).

Group D

Question 1 – what are your Top 3 water improvement goals?

1. Reduce dependence on groundwater for drinking water.
2. We need to reduce nutrient contamination and reduce stormwater runoff through better shoreline vegetation and decreasing impervious surfaces.
3. Control the spread of invasive species.

Question 2 – What barriers will your goals face?

1. Funding and water clean-up costs.
2. The watershed is large and there is so much interconnectedness between shallow lakes and lakes with internal nutrient loading problems.
3. Cultural traditions, aesthetic preferences, and a lack of education about other plants and lawns.
4. There [seems to be] a lack of a technical approach.

Question 3 – What actions should be taken to address each goal and/or barrier?

1. To reduce our dependence on groundwater, we need: alternative landscaping to lawns (drought-resistant grasses); to increase the cost of water; more education [on water conservation]; to investigate/build infrastructure to use surface water, such as using gray water for sprinkling.
2. To reduce nutrient loading into bodies of water, we need: to promote Best Management Practices (BMPs) for shoreline vegetation; more pervious pavement; to examine and then mitigate nutrient runoff sources.
3. We need more education on invasive species.

Group E

Question 1 – what are your Top 3 water improvement goals?

1. More water awareness
2. More personal (and positive) actions taken

Question 2 – What barriers will your goals face?

1. People don't know the issues. There is a lack of uniform education around these issues.
2. People have expectations for how to use their private property that are not in sync with water improvement goals (e.g. people don't want buffers or think they can remove a buffer for land use or aesthetics).
3. Lack of analytics on who's using what water. Who exactly are the high water users? We need more data to identify and address "bad actors."

Question 3 – What actions should be taken to address each goal and/or barrier?

1. Collect more data, particularly on water usage and pollution sources from farms.
2. Offer more water use efficiency incentives.
3. Sustainable, "water smart" developments and planning.

Group F

Question 1 – what are your Top 3 water improvement goals?

1. Protect wetlands, especially through buffering
2. No net loss of healthy/unimpaired lakes
3. Limit agricultural runoff
4. Switch to surface water (from groundwater) as a drinking water and irrigation source.
5. Ensure that groundwater recharge exceeds withdrawal/consumption.
6. Reduce individual water overuse (from leaving the faucet on, overwatering lawns, etc.)

Question 2 – What barriers will your goals face?

1. It is difficult for the everyday person to become (and stay) engaged.
2. There is a lack of broad education around these issues.
3. Funding (lack of it).
4. There are multiple layers and units of government involved in these issues, making it complicated to engage with and making the communication of science and measurements difficult to access and communicate.
5. Folks assume that since our state has an abundant amount of water, that we are OK [and don't need to take further water protection actions].
6. There is a lack of authority/regulation to require improvement.

Question 3 – What actions should be taken to address each goal and/or barrier?

1. Give incentives to homeowners (possibly through "conservation rates").
2. Enforcement should be used.
3. There should be city involvement to give incentives to residents/homeowners for replacing a high water-use appliance with a higher-efficiency one. (e.g. a rebate program for large appliances).
4. We need to restore waters that have the greatest prospect of restoration (i.e. those barely below the threshold). Do not invest in heavily degraded waters. [Perhaps in

heavily degraded water areas, spend more time communicating and working with polluters, versus implementing water clean-up].

Group G

Question 1 – what are your Top 3 water improvement goals?

1. Infrastructure:
    a. when you must replace, take the time and investment to use BMP. Example, replace sewer pipes with 2 separate lines, one for graywater.
    b. start to make the change to convert to surface water
    c. rather than just replace or repair existing WW plants, make changes to design and build plants to reuse water, vs. just treat and release
2. Improve conservation education on all the ways to conserve water
    a. start young
    b. make material/information more readily available and consumable
3. Encourage behavior change
    a. through reward/recognition systems (too difficult to educate everyone)
    b. make people pay for their actual water usage. Water is valuable, make people pay for it.
4. Put pressure on elected officials to make policy changes AND don't go backwards, such as getting rid of the Clean Water Act.
5. Make design changes (such as building codes for low flow, impervious surfaces, etc.), so that behavior of people is changed based on new products/processes.

Question 2 – What barriers will your goals face?

1. Agriculture, use of all the pesticides
2. Not enough rewards or consequences for people to change their behavior
3. Media is not interested in covering the topic since it's long term and not a headline grabber
4. Politicians: no focus on the topic, the topic does not rank high when you ask people what they care about more, so politicians rarely campaign on environmental issues.
5. It is a challenge to get education material out to the broader public.
6. [lack of] funding
7. Community boundaries [and coordination]

Question 3 – What actions should be taken to address each goal and/or barrier?

1. Design solutions, policy solutions, rewards, consequences, tax
2. Use of Best Management Practices (make it policy for governing bodies to have to seek out BMPs)
3. Keep pressure on elected officials
4. Increase/improve education on water health and conservation

Appendix D

Water Resource Related Agreements

JOINT POWERS AGREEMENT
TO PROTECT AND MANAGE THE
VADNAIS LAKE AREA WATERSHED

THIS AGREEMENT, made and entered into as of the last date of execution, by and between the participating units of local government of the Cities of Gem Lake, Lino Lakes, North Oaks, Vadnais Heights, and White Bear Lake and the Township of White Bear, hereafter referred to as "Members" and individually as "Member", agree to continue the Vadnais Lake Area Water Management Organization, as a public agency.

SECTION I
GENERAL PURPOSE

The Vadnais Lake Area Water Management Organization (VLAWMO), created pursuant to Minnesota Statutes, Section 471.59, is dependent upon the sincere desire of each Member to work cooperatively to meet the requirements of the Metropolitan Surface Water Management statute, Minnesota Statutes, Section 103B.201 et seq. (and Chapter 103D - Watershed Law), hereafter collectively referred to as the "Act".

It is the general purpose of the parties to this Agreement to establish an organization to:

1) Continue the Vadnais Lake Area Water Management Organization;

2) Develop and amend a water management plan; and

3) Operate appropriate programs including those to:

   a) protect, preserve and use natural surface water and groundwater storage and retention systems;
   b) minimize capital expenditures necessary to correct flooding and water quality problems;
   c) identify and plan for means to effectively protect and improve surface and groundwater quality;
   d) establish more uniform local policies and official controls for surface and groundwater management;
   e) prevent erosion of soil into surface water systems;
   f) promote groundwater conservation and recharge; and
   g) protect and enhance fish and wildlife habitat and water recreational facilities and secure other benefits associated with the proper management of surface and groundwater, and be in accordance with the Act.

SECTION II
VADNAIS LAKE AREA WATERSHED

VLAWMO shall manage a watershed area in northern Ramsey County and southeastern Anoka County shown on the map set forth on Appendix A.

SECTION III
DEFINITIONS

For purposes of this Agreement, the following terms shall have the meanings as defined in this Section.

"Agreement" – This Agreement pursuant to Minnesota Statutes, Section 471.59 reconstituting the Vadnais Lake Area Water Management Organization (VLAWMO).

"Area" – The boundaries of the Vadnais Lake Area Watershed as set forth on the map set forth on Appendix A and hereafter referred to as the "Area".

"Board of Directors" or "Board" – The governing board of VLAWMO consisting of one elected official from each of the Members which are parties to this Agreement.

"Capital Improvement Program" – An itemized program for at least a five-year prospective period, and any amendments to it, subject to at least biennial review, setting forth the schedule, timing, and details of specific contemplated capital improvements by year, together with their estimated cost, the need for each improvement, financial sources, and the financial effect that the improvements will have on the local government unit or watershed management organization.

"City Council or Town Board" – The governing body of a governmental unit which is a Member to this Agreement.

"City Staff" – Persons hired by units of local government whether as an employee or an independent contractor.

"Commissioner" – A person appointed by each Member to the Technical Commission.

"Comprehensive Plan" or "comprehensive plan" – The meaning given it in Minnesota Statutes, Section 473.852, Subdivision 5.

"Director" – An elected official appointed by each Member as a representative to the Board of Directors.

"Governmental Unit" – Any city, town, township, county, school district, or other political subdivision or an "instrumentality of a governmental unit" as described in Minnesota Statutes, Section 471.59, Subdivision 1.

"Local Government Unit" – Cities, counties and towns, not including school districts, as described in Minnesota Statutes, Section 473.852, Subd. 7.

"Local Water Management Plan" - A plan adopted by the each of the members pursuant to Minnesota Statutes, Section 103B.235.

"Member" – Each local governmental unit that is a party to this Agreement.

"Technical Commission" – A commission composed of a technically skilled person appointed by each Member.

"Vadnais Lake Area Watershed" – The area contained within a line drawn around the extremities of all terrain whose surface drainage is tributary to Vadnais Lake or as described in Appendix A.

"VLAWMO" – The abbreviated name of the organization created by this Agreement, the full name of which is the "Vadnais Lake Area Water Management Organization".

"Watershed Management Plan" - A plan adopted by VLAWMO pursuant to Minnesota Statutes, Section 103B.231.

SECTION IV
ORGANIZATION OF VLAWMO; RESPONSIBILITIES OF MEMBERS

Subdivision 1. Board of Directors. The governing body of the VLAWMO shall be its Board of Directors.

Subdivision 2. Appointment of Directors. Each Member shall appoint one representative, who must be an elected official, to the Board, and said representative shall be called a "Director". The appointment process shall follow Minnesota Statutes, Section 103B.227, Subdivisions 1 and 2.

Subdivision 3. Term of Office. Each Director shall serve at the will and consent of the Member making the appointment and for a three-year term of office as follows:

1) The Directors appointed by the Cities of Lino Lakes and White Bear Lake and the Township of White Bear shall be appointed for three-year terms, the beginning date of which was January 1, 2013 and every three years there after.

2) The Directors appointed by the Cities of North Oaks, Gem Lake and Vadnais Heights shall be appointed for a term of three years, the beginning date of which is January 1, 2014 and every three years there after.

The term of office of each Director shall commence from the date of their appointment and will continue until their successors are selected. A Directors appointed to fill a vacancy shall serve out the remainder of the term of the Director the person succeeded.

Subdivision 4. Eligibility to Serve. Each Member shall determine the eligibility or qualification standards for its Director appointment. Eligible appointees must be elected officials and compliant with Minnesota Statutes, Section 103B.227, which, among other things, provides that local units of government staff may not serve as a Director.

Subdivision 5. Record of Appointment. Each governmental unit shall, within thirty (30) days following the appointment of a Director or Successor Director, file a written notice of such appointment with the Secretary-Treasurer of the Board.

Subdivision 6. Appointment of Alternate Director. One Alternate Director shall be appointed by each of the Members to this Agreement. The Alternate may attend the meetings of the Board of Directors, but only the appointed Director, or the Alternate Director in the absence of the Director, shall be allowed to vote on any matters before the Board.

Subdivision 7. Appointment of Technical Commission Representative. Each Member to this Agreement shall appoint one commissioner and may appoint one alternate to serve on the Technical Commission.

Subdivision 8. Compensation. Directors shall serve without compensation and without expense allowance from VLAWMO. A Director may be reimbursed for out-of-pocket expenses incurred on VLAWMO business with the approval of the Board. A Member may compensate its Director or Alternate for his/her service, in the discretion of the Member.

SECTION V
ORGANIZATION OF THE BOARD OF DIRECTORS

Subdivision 1. Annual Meeting; Election of Officers. At a meeting of the Board held no later than April of each calendar year, also known as the Annual Meeting, the Board shall elect from among the Directors a Chair, Vice Chair, and a Secretary-Treasurer, and such other officers as it deems necessary to conduct its meetings and affairs ("Officers"). An Alternate Director may not serve as an officer of VLAWMO.

Subdivision 2. Duties of Officers.

1) **The Chair** shall preside over meetings of the Board, and in the absence of the Chair, the Vice Chair shall perform this duty. In the absence of the Chair or Vice Chair, the Treasurer shall preside. The Chair shall retain all rights of a Director to speak, make motions and vote.

2) **The Vice Chair** shall preside at meetings when the Chair is absent and shall automatically be promoted to complete the annual term of the Chair if the then current Chair resigns or is removed from the Board.

3) **The Secretary-Treasurer** shall maintain a record of the proceedings of the Board, be responsible for the custody of the records of the Board, see that notices are duly given and complete such other duties as the Board may assign. The Secretary-Treasurer shall also be responsible for all monies of VLAWMO and shall periodically report the fiscal condition of VLAWMO to the Board. If the duties of the Secretary-Treasurer are delegated to a VLAWMO employee, the Secretary-Treasurer shall supervise the performance of those duties.

Subdivision 3. Quorum. A majority of the Members present shall constitute a quorum at all Board meetings. No business or decision may be made without a quorum.

Subdivision 4. Meetings. Regular meetings of the Board shall be held at least bi-monthly on a day and time selected by the Board. All meetings of the Board are subject to the Minnesota Open Meeting Law. Notice of the time and place of each meeting shall be sent to all Members,

provided to the public requesting this information, and follow notice requirements outlined in Minnesota Statutes, Section 13D.04. Meetings shall be conducted in accordance with rules adopted by the Board.

Subdivision 5. Voting. Each Director shall have one (1) vote in all matters, as follows:

1) approval of the proposed annual VLAWMO operating budget shall require approval of a simple majority of all Directors;

2) approval of capital improvement projects will require approval of two-thirds (2/3) of all Directors; and

3) approval of all others matters will be determined by a simple majority of Directors present and voting.

Subdivision 6. Committees. The Board may appoint such committees and subcommittees as it deems appropriate. At least one Board member shall be the appointed as the Chairperson of each committee and all committees shall regularly report their activities to the Board.

Subdivision 7. Public Participation. The Board may appoint such committees and subcommittees composed of citizens as needed to provide for public participation and input in watershed activities and the responsibilities of VLAWMO. Such citizen committees shall be advisory.

SECTION VI
RESPONSIBILITIES AND DUTIES OF THE BOARD OF DIRECTORS

Subdivision 1. Policies and Procedures. The Board shall adopt rules and regulations as it deems necessary to carry out its duties and the purpose of this Agreement. Such rules and regulations may be amended from time to time in either a regular or special meeting of the Board provided that notice of such proposed amendment has been given to each Director at least ten (10) days prior to the meeting at which the proposed amendment will be considered. These rules and regulations, after adoption, shall be recorded in the VLAWMO policy book.

Subdivision 2. Watershed Management Plan (Plan). The Board shall adopt a water management plan, as required by the Act. The Plan shall be subject to the appropriate governmental unit review as required by the Act.

Subdivision 3. Data. The Board, in order to give effect to the purposes of the Act may:

1) Acquire and record appropriate data within the Area; and

2) Establish and maintain devices for acquiring and recording hydrological or other data within the Vadnais Lake Area Watershed.

Subdivision 4. Local Studies. Each Member reserves the right to conduct separate or concurrent studies on any matter under study by VLAWMO. The Member shall make every effort to coordinate its studies with the VLAWMO in order to maximize the use of resources.

Subdivision 5. Transfer of Drainage System. VLAWMO shall have the authority of a watershed district under Minnesota Statutes, Chapter 103B, Chapter 103E, and other applicable law to accept the transfer of drainage systems in the watershed, to repair, improve, and maintain the transferred drainage systems, and to construct all new drainage systems and improvements of existing drainage systems in the watershed. All such activities and projects shall be carried out in accordance with the powers and procedures set forth in Minnesota Statutes, Chapters 103B and other applicable law, and must be in conformance with the Watershed Management Plan adopted pursuant to Minnesota Statutes, Chapters 103A through103H.

Subdivision 6. Capital Improvement. Each Member agrees to contribute its proportionate share of all approved capital improvement expenditures, which includes engineering, planning, legal and administrative costs, based on the benefit to be received by each Member or other entity from the improvement or management project. The Board shall submit, in writing, a statement to each Member or other entity, setting forth in detail the expenses incurred by VLAWMO for each project.

Capital improvement projects may be initiated either by: (1) recommendation of the VLAWMO Board to the governmental unit(s) affected; or (2) petition to the Board by the affected governmental unit. In either case, and after study and approval by two-thirds (2/3) of the Directors, the Board shall provide the affected governmental units with estimated costs and a description of the benefits to be realized by those affected and the costs to be borne based on benefit.

Subdivision 7. Water Conveyances. The Board may order any local governmental unit to construct, clean, repair, alter, abandon, consolidate, reclaim or change the course of terminus of any ditch, drain, storm sewer, water course, natural or artificial, that affects the Vadnais Lakes Area Watershed in accordance with its adopted plans.

Subdivision 8. Watershed Operations. The Board may order any local government unit to acquire, operate, construct or maintain dams, dikes, reservoirs and appurtenant works in accordance with adopted plans.

Subdivision 9. Storm and Surface Waters. The Board shall regulate, conserve and control the use of storm and surface water within the Vadnais Lakes Area Watershed pursuant to its Watershed Management Plan.

Subdivision 10. Entrance upon Land. To the extent permitted by Minnesota Statutes, the Board or its designated representatives may enter upon lands within or outside the Vadnais Lakes Area Watershed to make surveys and investigations to accomplish the purposes of VLAWMO and the Act.

Subdivision 11. Legal and Technical Assistance. The Board may obtain and provide legal and technical assistance in connection with its on-going operations and projects, as well as in matters of litigation or other proceedings between one or more of its Members and any other political subdivision, commission, board or agency relating to the planning or construction of facilities to drain or pond storm waters within the Area.

Subdivision 12. Permits. VLAWMO shall cooperate with appropriate local, state, and federal agencies in obtaining required permits and shall review permits issued by local units of government to accomplish the purposes identified in Section I of this Agreement.

Subdivision 13. Office. VLAWMO shall maintain an office within the Area. All notices to VLAWMO shall be mailed or delivered to such office.

Subdivision 14. Insurance. VLAWMO may contract for or purchase such insurance as the Board deems necessary for its protection.

Subdivision 15. Financial Records. The Board shall maintain the books and accounts of VLAWMO consistent with generally accepted accounting principles and provide the separate accounting of operations and capital improvement projects.

Subdivision 16. Audit. The Board shall annually cause an independent certified audit of the books and accounts of VLAWMO.

Subdivision 17. Claims. To the extent required by Minnesota Statutes, VLAWMO shall be responsible for damages caused by it. All Minnesota Statutes governing notices of claims and limits on municipal liability shall be applicable to VLAWMO. To the extent permitted by Minnesota Statutes, VLAWMO shall be treated as a single municipal entity for municipal liability purposes.

Subdivision 18. Employees. The Board may employ or subcontract to persons or entities to fulfill defined responsibilities of VLAWMO with the approval of a majority of the Board.

Subdivision 19. Contracts. The Board may make such contracts and enter into such agreements as necessary to fulfill its obligations under this Agreement. Any such contract or agreement shall be in accordance with the Uniform Municipal Contracting Law, Minnesota Statutes, Section 471.345, the Joint Powers Act, Minnesota Statutes, Section 471.59, and other applicable laws.

Subdivision 20. Annual Report to Members. The Board shall make and file a report to all of the Members at least once each year including the following information:

1) the financial condition of VLAWMO;

2) the status of all VLAWMO projects and work; and

3) the business transacted by VLAWMO and other matters which affect the interests of VLAWMO.

Copies of said report shall be transmitted to the administrator of each Member.

Subdivision 21. Records. VLAWMO's books, reports and records shall be available for and open to inspection at reasonable times.

Subdivision 22. Other Powers. The Board may exercise such other powers necessary and incidental to the implementation of the purposes set forth herein as authorized by the Members.

Subdivision 23. Amendments to this Agreement. The Board may recommend changes in this Agreement to the Members. This Agreement may be amended only by the Agreement of each of its members.

SECTION VII
RESPONSIBILITIES AND DUTIES OF TECHNICAL COMMISSION

Subdivision 1. Duties and Responsibilities. The Board shall establish a Technical Commission (Commission) that will provide technical expertise for the planning and operation of VLAWMO programs and projects. This Commission through the VLAWMO Administrator and other VLAWMO employees shall administer the day-to-day operations of VLAWMO. The VLAWMO Administrator shall serve as a non-voting member of the Commission. Each Member shall appoint a representative, who will be known as Commissioner, and an alternate to the Commission.

Subdivision 2. Eligibility to Serve. Each Member shall determine the eligibility or qualification standards for its Commission appointment, following guidelines promulgated by the Board.

Subdivision 3. Technical Commission Officers. The Board shall annually appoint a Chair from among the Commissioners. At the first meeting of the Commission each calendar year, the Commission shall elect from among the Commissioners a Vice Chair and Secretary, and such other officers as it deems necessary to conduct its meetings and affairs. An Alternate Commissioner may not serve as an officer of the Commission.

Subdivision 4. Meetings. Regular monthly meetings of the Commission shall be held on a day and time selected by the Commissioners. All meetings of the Commission are subject to the Minnesota Open Meeting Law. Notice of the time and place of each meeting shall be sent to all commissioners, and provided to the public requesting this information, and follow notice requirements outlined in Minnesota Statutes, Section 13D.04. Meetings shall be conducted in accordance with the latest version of Roberts Rules of Order. Each Commissioner shall have one vote.

A majority of the Commissioners present shall constitute a quorum at all Commission meetings. In the absence of a quorum, a scheduled meeting shall be opened, re-scheduled and adjourned.

Subdivision 5. Watershed Management Plan (Plan). The Commission shall prepare and/or update a water management plan, as required by the Act. The Plan, either a new one or an updated one, shall be recommended to the Board of Directors for approval. The Plan shall be compliant with Minnesota Statutes, Ch. 103B as it may be amended and applicable Minnesota Rules. The Plan shall be subject to the appropriate governmental unit review as required by the Act.

Subdivision 6. Local Water Management Plan. After the adoption of a new or revised watershed management plan, each Member and any other local government unit within the Area shall review its local water management plan for changes needed for it to be consistent with the new or revised Watershed Management Plan. Each local water management plan shall include shall be consistent with state law. After consideration, but before adoption of a new or revised local water management plan by the governmental unit, each Member or any other governmental

units in the Area shall submit its water management plan to the Board. The Board shall within sixty (60) days approve or disapprove the plan or parts thereof. If the Board fails to complete its review within the prescribed period, and unless an extension is agreed to by the Member or other local governmental unit, the local plan shall be deemed approved consistent with applicable state laws.

Subdivision 7. Appeals of Decisions and Recommendations of the Commission. Members shall comply with Commission's determinations as to the force and effect of the Watershed Management Plan, the Local Water Management Plans and any cost allocations for improvements initiated pursuant to these plans.

Any governmental unit which disputes a determination of the Commission as to force and effect of the Watershed Management Plan, any Local Water Management Plan, or the cost allocations for improvements, initiated pursuant to these plans, may appeal the recommendation or decision to the Board within thirty (30) days of receipt of such written notice of such determination.

Should the appeal not be completed to the satisfaction of all parties, a party may submit the dispute to arbitration. Arbitration shall be conducted in the following manner:

1) A governmental unit shall have thirty (30) days from receipt of the written decision on the appeal by the Board to submit a dispute to arbitration by giving written notice to an officer of the Board;

2) The Board of Arbitration shall consist of three Members, one appointed by the governmental unit initiating the arbitration, one appointed by the Board and one appointed by the Chief Administrative Law Judge of the State of Minnesota, if willing to do so and if not, by the Chief Judge of the Ramsey County District Court. The third member so appointed shall preside at the arbitration hearing;

3) The arbitration cost of the neutral arbitrator shall be divided equally between VLAWMO and the government unit initiating the arbitration; and

4) Arbitration shall be conducted in accordance with the Uniform Arbitration Act (Minnesota Statutes, Chapter 572), except as modified above.

Subdivision 8. Other Duties. The Commission shall exercise such other duties necessary and incidental to the implementation of the purposes set forth herein as authorized by the Board.

SECTION VIII
FINANCING VLAWMO

Subdivision 1. Annual Operating Budget. On or before September 1st of each year, the Board shall prepare a proposed annual operating budget for the following calendar year. The budget shall provide funds to operate VLAWMO for the next calendar year. The proposed operating budget and the sources for these funds shall be recommended for approval to the Members.

The annual operating budget may be funded by one or more of the following:

1) An authorized special tax levy authorized by the State of Minnesota for an amount approved by the Members;

2) VLAWMO operates Storm Water Utility authorized by the State of Minnesota and approved by the Members;

3) Annual payment from each governmental unit party to this agreement and other entities based on an annual assessment as determined in Subdivision 2 in this Section; and

4) Service fees, grants, interest or other funding sources as available.

Each Member shall pay its annual assessment in the following manner:

1) The entire amount shall be due by January 31st of the year due; or

2) One-half (1/2) of each Members entire amount shall be due by January 31 of the year due and the second one-half (1/2) of the entire amount shall be due by August 31 of the year due.

Failure to pay the required amounts by the due dates will cause a one percent (1%) per month service fee to be added to the unpaid amount due.

Subdivision 2. Budget Meeting and Approval. The proposed annual Operating and Capital Improvement budget for the next calendar year shall be prepared by September 1 each calendar year.

Subdivision 3. Annual Assessment for Services.

The annual contribution of each Member or other entity shall be calculated upon the following formula:

1) Forty percent (40%) based upon the assessed valuation of all real property of each government unit within the Area;
2) Forty percent (40%) based upon the total area of the property within each governmental unit with the Area; and
3) Twenty percent (20%) based upon the population of each governmental unit within the Area.

Subdivision 4. Capital Improvement Projects Program and Funding. On or before July 1 of each year the Board shall prepare a capital improvements program and budget for projects to be started or completed in the following year as described in the Water Plan. Each proposed project shall be described and its estimated cost and time for completion shall be provided. Only projects described in the Watershed Management Plan or its amendments may be included in the capital improvement budget. Funding in the capital improvement budget shall be calculated as follows:

1) If money raised by the Special tax levies to be used for Capital Projects, the Members shall be provided the opportunity to review and approve the amount of the tax levy that will be

used for Capital Projects within sixty (60) days of receipt of the Board's Capital Improvement Budget;

2) If a capital project is to be funded wholly or in part by one or more governmental unit(s), they will be provided the opportunity to review and approve or disapprove the capital improvement budget within sixty (60) days of receipt of the Board's Capital Improvement Budget; and

3) If service fees, grants, interest or other funding sources are available the source and amounts of such funds shall be shown.

If the capital improvement budget is approved, as provided above, each governmental unit shall contribute its budgeted share of the cost of constructing said capital improvement projects.

Subdivision 5. Governmental Unit Financing. Members may establish a watershed management tax district in the Area for the purpose of paying costs of the engineering and planning required to develop a watershed management plan for the Area. After the plan is adopted and approved, a tax district may be established for the purpose of paying capital costs of projects described in the plan (including normal and routine maintenance of projects). If required, the tax district shall be established by ordinance adopted after a hearing by a local government unit, following provisions of Minnesota Statutes, Chapter 103B.

Subdivision 6. Reserve Funds. The Board may accumulate reserve funds for the purposes herein mentioned and may invest funds of the Board not currently needed for its operations in the manner and subject to the laws of Minnesota applicable to statutory cities. Any and all reserve funds must be clearly indicated on the annual financial audit provided to the Members.

Subdivision 7. Gifts; Grants; Loans. VLAWMO may, within the scope of this Agreement, accept gifts, apply for and use grants or loans of money or other property from the United States, the State of Minnesota, a unit of government or other governmental unit or organization or any person or entity for the purposes described herein; may enter into any reasonable agreement required in connection therewith, shall comply with any laws or regulations applicable thereto, and may hold, use and dispose of such money or property in accordance with the terms of the gift, grant, loan or agreement related thereto.

Subdivision 8. Disbursements. All VLAWMO disbursements shall be sent to the Secretary-Treasurer of the Board and the finance officer of the Technical Commission for review. Checks issued by VLAWMO shall have two signatures. Officers and the VLAWMO Administrator may be authorized to sign checks. An Officers bond shall be maintained by VLAWMO in the amount of at least $10,000. VLAWMO will be responsible for paying the premium on said bond.

SECTION IX
DURATION OF THIS JOINT POWERS AGREEMENT

Subdivision 1. Duration of Agreement. Each Member agrees to be bound by the terms of this Agreement until December 31, 2026, and that it may be continued thereafter at the option of the Members. This Agreement shall be in full force and effect upon the filing of certified copy of the resolution approving said Agreement by each governmental unit.

Subdivision 2. Termination of Agreement. This agreement may be terminated prior to January 1, 2025, by the unanimous consent of the parties. If the agreement is to be terminated, a notice of the intent to dissolve the VLAWMO shall be sent to the Board of Water and Soil Resources and to Ramsey and Anoka Counties at least 90 days prior to the date of dissolution.

Subdivision 3. Dissolution. In addition to the manner provided in Subdivision 2 for termination, any member may petition the Board of Directors to dissolve the agreement. Upon 90 days' notice in writing to the clerk of each member governmental unit and to the Board of Water and Soil Resources and to Anoka and Ramsey County, the Board shall hold a hearing and upon a favorable vote by a majority of all eligible votes of then existing Board members, the Board may by Resolution recommend that the VLAWMO be dissolved. Said Resolution shall be submitted to each member governmental unit and if ratified by three-fourths of the councils of all eligible members within 60 days, said Board shall dissolve the VLAWMO allowing a reasonable time to complete work in progress and to dispose of personal property owned by the VLAWMO.

Subdivision 4. Assets. Upon a set of findings and order for dissolution of VLAWMO by the State Board of Water and Soil Resources, all property of VLAWMO shall be transferred, either jointly or severally, to the governmental units of VLAWMO. Such transfer of VLAWMO assets may be made in proportion the total contribution of each Member as required by the last annual operating budget.

The transfer of real estate property of VLAWMO pursuant to this section shall not affect the benefits or damages for any improvement previously constructed by VLAWMO before dissolution. The real estate property affected shall remain liable for its proper share of any outstanding indebtedness of VLAWMO applying to the property before the dissolution, and levies assessment for the indebtedness continue in force until the debt is paid off.

SECTION XI
EFFECTIVE DATE

Subdivision 1. Adoption of Agreement. This agreement shall be in full force and effect upon the filing of a certified copy of the resolution approving said agreement by all six members. Said resolution shall be filed with the Chair of the existing VLAWMO who shall notify all members in writing of its effective date and shall set the date for the next meeting to be conducted under this amended Joint Powers Agreement.

IN WITNESS WHEREOF, the undersigned governmental units, by action of their governing bodies, have caused this agreement to be executed in accordance with the authority of Minnesota Statutes, Sections 103B. 211 and 471.59.

the intent to dissolve the VLAWMO shall be sent to the Board of Water and Soil Resources and to Ramsey and Anoka Counties at least 90 days prior to the date of dissolution.

Subdivision 3. Dissolution. In addition to the manner provided in Subdivision 2 for termination, any member may petition the Board of Directors to dissolve the agreement. Upon 90 days' notice in writing to the clerk of each member governmental unit and to the Board of Water and Soil Resources and to Anoka and Ramsey County, the Board shall hold a hearing and upon a favorable vote by a majority of all eligible votes of then existing Board members, the Board may by Resolution recommend that the VLAWMO be dissolved. Said Resolution shall be submitted to each member governmental unit and if ratified by three-fourths of the councils of all eligible members within 60 days, said Board shall dissolve the VLAWMO allowing a reasonable time to complete work in progress and to dispose of personal property owned by the VLAWMO.

Subdivision 4. Assets. Upon a set of findings and order for dissolution of VLAWMO by the State Board of Water and Soil Resources, all property of VLAWMO shall be transferred, either jointly or severally, to the governmental units of VLAWMO. Such transfer of VLAWMO assets may be made in proportion the total contribution of each Member as required by the last annual operating budget.

The transfer of real estate property of VLAWMO pursuant to this section shall not affect the benefits or damages for any improvement previously constructed by VLAWMO before dissolution. The real estate property affected shall remain liable for its proper share of any outstanding indebtedness of VLAWMO applying to the property before the dissolution, and levies assessment for the indebtedness continue in force until the debt is paid off.

SECTION XI
EFFECTIVE DATE

Subdivision 1. Adoption of Agreement. This agreement shall be in full force and effect upon the filing of a certified copy of the resolution approving said agreement by all six members. Said resolution shall be filed with the Chair of the existing VLAWMO who shall notify all members in writing of its effective date and shall set the date for the next meeting to be conducted under this amended Joint Powers Agreement.

IN WITNESS WHEREOF, the undersigned governmental units, by action of their governing bodies, have caused this agreement to be executed in accordance with the authority of Minnesota Statutes, Sections 103B. 211 and 471.59.

CITY OF GEM LAKE By _____
Mayor

Dated 5/17/16 Attest _____
City Clerk

CITY OF LINO LAKES By _____

CITY OF GEM LAKE By _____
Mayor

Dated ___/___/___ Attest _____
City Clerk

CITY OF LINO LAKES By _____
Mayor

Dated ___/___/___ Attest _____
City Clerk

CITY OF NORTH OAKS By _____
Mayor

Dated ___/___/___ Attest _____
City Clerk

CITY OF VADNAIS HEIGHTS By _____
Mayor

Dated ___/___/___ Attest _____
City Clerk

CITY OF WHITE BEAR LAKE By _____
Mayor

Dated ___/___/___ Attest _____
City Clerk

WHITE BEAR TOWNSHIP By _____
Chair

Dated ___/___/___ Attest _____
City Clerk

(VLAWMOJPA2007)

CITY OF GEM LAKE

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

CITY OF LINO LAKES

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

CITY OF NORTH OAKS

By _____
Mayor

Dated 8/12/2016

Attest _____
City Clerk

CITY OF VADNAIS HEIGHTS

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

CITY OF WHITE BEAR LAKE

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

WHITE BEAR TOWNSHIP

By _____
Chair

Dated ___/___/___

Attest _____
City Clerk

(VLAWMOJPA2007)

CITY OF GEM LAKE

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

CITY OF LINO LAKES

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

CITY OF NORTH OAKS

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

CITY OF VADNAIS HEIGHTS

By _____
Mayor

Dated 6/1/16

Attest _____
City Clerk

CITY OF WHITE BEAR LAKE

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

WHITE BEAR TOWNSHIP

By _____
Chair

Dated ___/___/___

Attest _____
City Clerk

(VLAWMOJPA2007)

CITY OF GEM LAKE By _____
Mayor

Dated ___/___/___ Attest _____
City Clerk

CITY OF LINO LAKES By _____
Mayor

Dated ___/___/___ Attest _____
City Clerk

CITY OF NORTH OAKS By _____
Mayor

Dated ___/___/___ Attest _____
City Clerk

CITY OF VADNAIS HEIGHTS By _____
Mayor

Dated ___/___/___ Attest _____
City Clerk

CITY OF WHITE BEAR LAKE By Jo Emerson
Mayor

Dated 6/23/16 Attest Kara Coustry
City Clerk

WHITE BEAR TOWNSHIP By _____
Chair

Dated ___/___/___ Attest _____
City Clerk

(VLAWMOJPA2007)

CITY OF GEM LAKE

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

CITY OF LINO LAKES

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

CITY OF NORTH OAKS

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

CITY OF VADNAIS HEIGHTS

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

CITY OF WHITE BEAR LAKE

By _____
Mayor

Dated ___/___/___

Attest _____
City Clerk

WHITE BEAR TOWNSHIP

By Robert J. Kramer
Chair

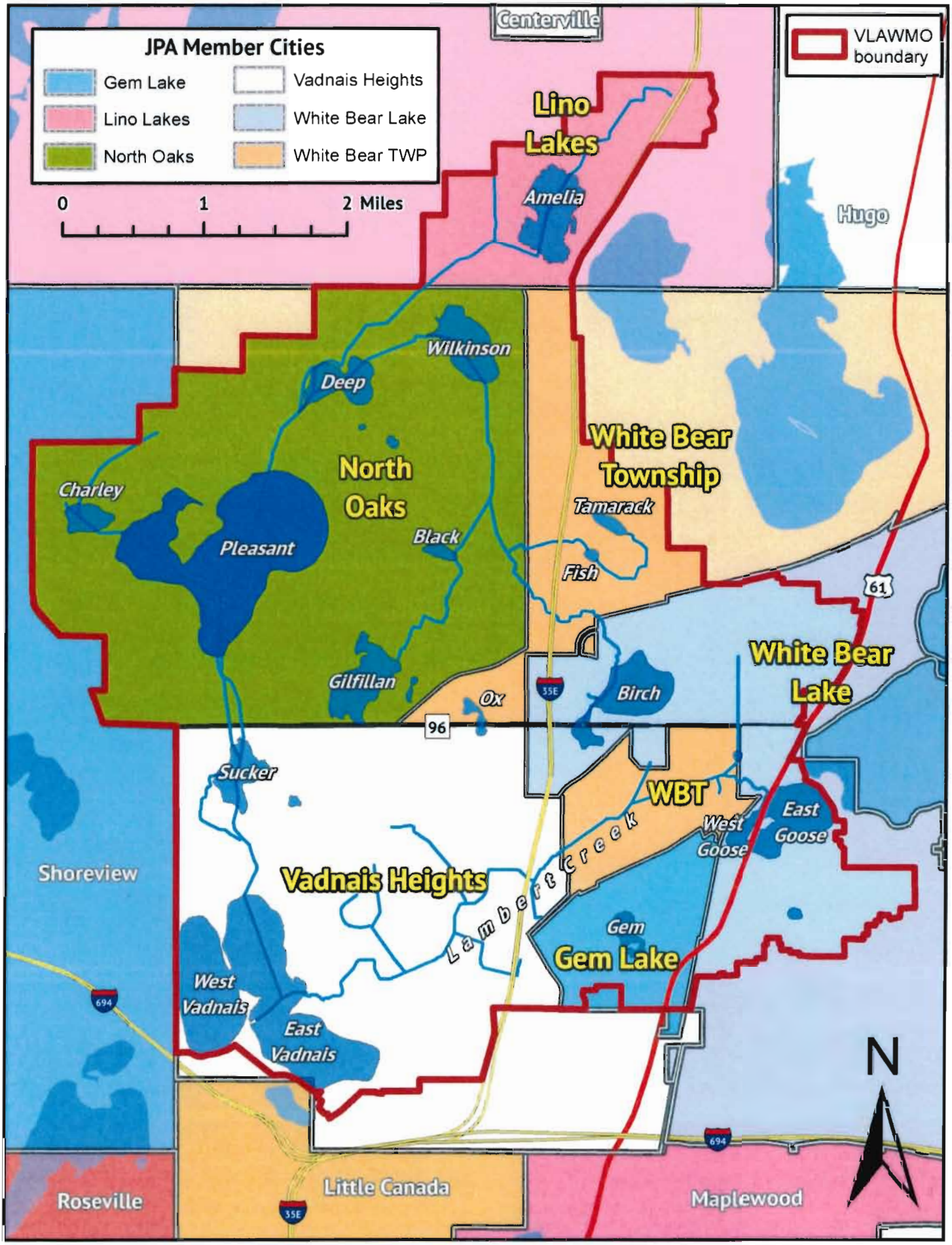
Dated 6/20/16

Attest _____
Town ~~City~~ Clerk

(VLAWMOJPA2007)

Appendix A

Map of the Vadnais Lake Area Water Management Organization


JPA Member Cities
Gem Lake
Lino Lakes
North Oaks
Vadnais Heights
White Bear Lake
White Bear TWP
0
1
2 Miles
VLAWMO boundary
Centerville
Lino Lakes
Amelia
Hugo
Wilkinson
Deep
Charley
North Oaks
Pleasant
Black
White Bear Township
Tamarack
Fish
61
White Bear Lake
Birch
Gilfillan
Ox
35E
96
Sucker
WBT
West Goose
East Goose
Lambert Creek
Shoreview
Vadnais Heights
Gem
Gem Lake
West Vadnais
East Vadnais
694
N
Roseville
Little Canada
Maplewood

REQUEST FOR SIGNATURE FORM

Request for Signature	County Manager
1. Type of document	Cooperative Agreement
2. Aspen PO, contract or document number	PW2019-14
3. Original contract number	
4. Contractor or grantor name	VLAWMO, White Bear Lake and BLID
5. Contractor Aspen ID # and CERT SVN and/or DUN #	
6. Requesting business unit	PUBW
Additional business unit	
7. Authority (required - DO NOT leave blank)	Admin Code:
	Resolution Number: B2020-071
8. Program/project/service/grant name	
9. Brief description of goods, services or grant duties (will be used for the County Board monthly contract report)	Construction and Maintenance Agreement for Stormwater Treatment Facility located on Otter Lake Road and 4th Street
10. Original contract start date	
11. Original contract end date	
12. Amendment number and amendment start date	
13. Amendment end date	
14. Contract type	Fixed Price
15. Original contract amount	$ 10,000.00
16. Previous amendment(s) total	
17. Amendment amount	
18. New total contract value	$ 10,000.00
19. Funding string	2020 17305 550480 00000 443201 P033370
Funding source	
20. Revenue agreement budgeted amount	
21. County contact and phone number	Molly Churchich 651-266-7159
22. Signatures	
Department Preparer	Tina Westling Date: 10/20/2020
Department Director	Ted Schoenecker Date: 10/16/20
Finance Analyst	Melody Santana-marty Date: 10/22/20
Attorney	James A Mogen Date: Oct. 21, 2020

REVIEWED
By TONY LUTGEN at 11:12 am, Oct 20, 2020

RAMSEY COUNTY

RAMSEY COUNTY
CONSTRUCTION AND MAINTENANCE AGREEMENT
WITH THE VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION, CITY OF WHITE BEAR LAKE, AND BIRCH LAKE IMPROVEMENT DISTRICT FOR
Construction of Stormwater Treatment Facility
on Otter Lake Road and 4th Street

Total Project Cost: $111,292.25
VLAWMO Cost: $ 81,192.25
City of White Bear Lake Cost: $20,000.00
Ramsey County Cost: $10,000.00
BLID Cost: $100.00

Attachments:
A – Project Location Map
B – Parcel Exhibit
C – Birch Lake Pump Site No. 8 Description
D – Engineer's Estimate
E – Storm Sewer Ownership
F – Inspection and Maintenance Plan

This Construction and Maintenance Agreement ("Agreement") is by and among Vadnais Lake Area Water Management Organization ("VLAWMO"), Birch Lake Improvement District ("BLID"), the City of White Bear Lake, a municipal corporation ("City"), and Ramsey County, a political subdivision of the State of Minnesota, ("County") for the construction of a stormwater treatment facility northeasterly of Otter Lake Road and 4th Street in White Bear Lake, MN ("Project"). The VLAWMO, BLID, City, and County may hereinafter be referred to individually as a "Stakeholder" or collectively as the "Stakeholders."

RECITALS

1. The Project is located on the northeast quadrant of Otter Lake Road and 4th Street as shown in Attachment A.

2. The Project is identified in the Vadnais Lake Area Water Management Organization's Comprehensive Watershed Management Plan 2017-2026, Section 4.3.

3. Otter Lake Road, in the area affected by construction, is designated County State Aid Highway (CSAH) 60.

4. The Project has been designated by the Minnesota Board of Water & Soil Resources (BWSR) as eligible for Clean Water Funds (CWF) through the 2018 Competitive Grants Program.

5. The subject road segment is located within the City and within the boundaries of the VLAWMO.

6. The Project location receives stormwater from a total watershed of 85 acres, of which 95% is City and 5% is County contributing drainage area.

7. VLAWMO has convened meetings with the County, City, and BLID to identify Project cost participation and maintenance responsibilities.

8. VLAWMO has been awarded CWF grant funding of $97,000 to cover engineering and construction costs for the Project.

9. Stakeholders agreed that Project construction costs will be split between VLAWMO, the City, and the County according to cost participation identified in this Agreement. The BLID will contribute a one-time payment of $100.00 to the Project costs to establish stakeholder status.

10. Stakeholders agreed that the cost distribution for future routine and major maintenance is 85% City, 10% VLAWMO, and 5% County.

11. This Agreement has been prepared to establish the cost participation and responsibilities of the County, City, VLAWMO, and BLID for the Project construction, maintenance activities, and associated elements.

AGREEMENTS

1. Responsibility for Design Engineering

   1.1. VLAWMO shall prepare plans, specifications, and proposals and distribute these documents for review to the designated project representative from each Stakeholder.

2. Responsibility for the Easement Plan and Property Acquisition

   2.1. VLAWMO will prepare plans showing easements and other property interests required for construction of the Project and will provide copies to Stakeholders for their review.

   2.2. The City will manage and perform property acquisition services for PID 153022420114. The parcel is shown in Attachment B.

   2.3. The County will issue the VLAWMO a County Right-of-Way permit for access in perpetuity through the parcel on the northeast quadrant of Otter Lake Road and 4th Street. The parcel is shown as Attachment C Birch Lake Pump Site #8 Description Exhibit.

3. Procurement and Award of Contract

3.1. VLAWMO shall advertise and receive construction bids for the Project.

3.2. VLAWMO shall distribute a summary of construction bids received, and recommendation for contract award, to each of the Stakeholders for review and comment. VLAWMO shall consider comments from the Stakeholders and shall award the construction contract in accordance with applicable laws.

4. Responsibility for Construction Administration

4.1. VLAWMO shall administer the construction contract for the Project, including authorization to begin work, construction inspection, approval of change orders, certification of work completed and partial and final payments to the contractor.

5. Project Construction Costs

5.1. VLAWMO will assume costs for design engineering. The City, County, and BLID will contribute to construction costs as identified in this Agreement. VLAWMO will assume the remaining construction costs less the Stakeholders' contributions.

5.2. Design Engineering Costs

5.2.1. VLAWMO assume the costs for design engineering of the Project.

5.3. Property Acquisition and Easement Costs

5.3.1. Property acquisition costs including payment to owners, appraisal fees, and other related costs of acquiring property and easements for the Project will be shared by VLAWMO and the City in such amounts as VLAWMO and the City agree to outside of this Agreement.

5.4 Project Construction Contributions

5.4.1. The Stakeholders agree to contribute the following amounts to the construction of the Project ("Construction Contribution"). The Stakeholders shall make their contributions to VLAWMO as provided herein. VLAWMO shall be responsible for paying the contractor as part of administering the Project contract.

- BLID will contribute $100.00.
- City will contribute $20,000.00.
- County will contribute $10,000.00.
- VLAWMO will contribute $81,192.25.

5.4.2 The Project construction costs are shown in Attachment D Engineer's Estimate.

6. Payment Schedule

6.1. VLAWMO shall prepare and submit invoices to the Stakeholders for the total amount of their Construction Contribution at the time of contract award.

6.2. Stakeholders shall remit final payment of their Construction Contribution to VLAWMO within 30 days of receipt of the invoice.

7. Ownership and Maintenance Responsibility for Project Elements

7.1. VLAWMO shall be responsible for the inspection of the Project facility. Inspection activities and frequency of inspections are shown in Attachment F Inspection and Maintenance Plan. VLAWMO shall keep inspection records and provide a copy of the inspection records to the other Stakeholder representatives for review annually. The records shall also identify any needed routine maintenance or major maintenance work.

7.2. Routine maintenance of the Project facility is referenced in Attachment F Inspection and Maintenance Plans. The lead Stakeholder responsible for the identified routine maintenance activity shall estimate all costs associated with routine maintenance activities to be completed and distribute to each Stakeholder for review.
Eligible costs include contractor bids, inspection, maintenance or construction personnel, equipment, equipment rental, laboratory analysis, and materials. All Stakeholders required to contribute to maintenance costs shall agree upon the need for the identified routine maintenance work. The total cost of routine maintenance work shall be divided as follows: City 85%, VLAWMO 10%, and County 5%. The lead Stakeholder initiating the routine maintenance work shall prepare invoices according to this cost-share distribution and submit them to the remaining Stakeholders. The lead Stakeholder shall keep routine maintenance records and provide to other Stakeholders upon request.

7.3. Major maintenance work of the Project facility is referenced in Attachment F Inspection and Maintenance Plans. The Stakeholders shall coordinate major maintenance work for the Project facility. The Stakeholder identifying a major maintenance need shall convene a meeting of the remaining Stakeholders to discuss the effectiveness and operating condition of the Project facility. All Stakeholders required to contribute toward maintenance costs shall agree upon the need and scheduling for major maintenance work. The total cost of major maintenance work shall be divided as follows: City 85%, VLAWMO 10%, and County 5%. The lead Stakeholder initiating the major maintenance work shall prepare invoices according to this cost-share distribution and submit them to the

remaining Stakeholders. The lead Stakeholder shall keep major maintenance records and provide to other Stakeholders upon request.

7.4. Stakeholders who have received invoices shall remit payment to the lead Stakeholder within 30 days of receipt of the invoice.

7.5. The City and County shall own the Project elements, as identified in Attachment E Storm Sewer Ownership. The City and County, as the property owners, grant to each other and VLAWMO all necessary access to the Project facility and associated elements for performance of inspection and maintenance activity.

7.6. Stakeholders may update Attachment F Inspection and Maintenance Plan periodically. All Stakeholders shall approve of any changes.

7.7. In the event Otter Lake Road is turned back to the City, the County will no longer be a Project Stakeholder, and its ongoing obligations under this agreement shall discontinue, and shall be assumed by the City.

8. The City and the County grant VLAWMO temporary construction permits over all City and County owned rights-of-way and property within the limits of the Project for use during construction at no cost.

9. The City, County, and VLAWMO shall indemnify, defend, and hold each other harmless against any and all liability, losses, costs, damages, expenses, claims, or actions, including attorney's fees, which the indemnified party, its officials, agents, or employees may hereafter sustain, incur, or be required to pay, arising out of or by reason of any act or omission of the indemnifying party, its officials, agents, or employees, in the execution, performance, or failure to adequately perform the indemnifying party's obligation pursuant to this Agreement. Nothing in this Agreement shall constitute a waiver by the County, City, or VLAWMO of any statutory or common law immunities, limits, or exceptions on liability.

10. This Agreement, including the recitals and attachments which are incorporated herein, shall remain in full force and effect until the year 2045. No amendment to this Agreement is effective unless: (a) prior to completion of Project construction it is executed by the Stakeholders; or (b) after Project construction it is executed by the City, County, and VLAWMO.

THE REMAINDER OF THIS PAGE IN INTENTIONALLY BLANK.

RAMSEY COUNTY, MINNESOTA

D dW

Ryan O'Connor, County Manager

Date: 10/26/2020

Approval recommended:

Ted Schoenecker, Director
Public Works Department

Approved as to form:

Assistant County Attorney

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

Jim Lindner, Chair

Date: 8-26-20

Phil Belfiori, Administrator

Date: 8/26/20

CITY OF WHITE BEAR LAKE, MN

Jo Emerson, Mayor

Date: August 25, 2020

Ellen Hiniker, City Manager

Date: August 25, 2020

RECOMMENDED FOR APPROVAL:

Paul Kauppi, City Engineer

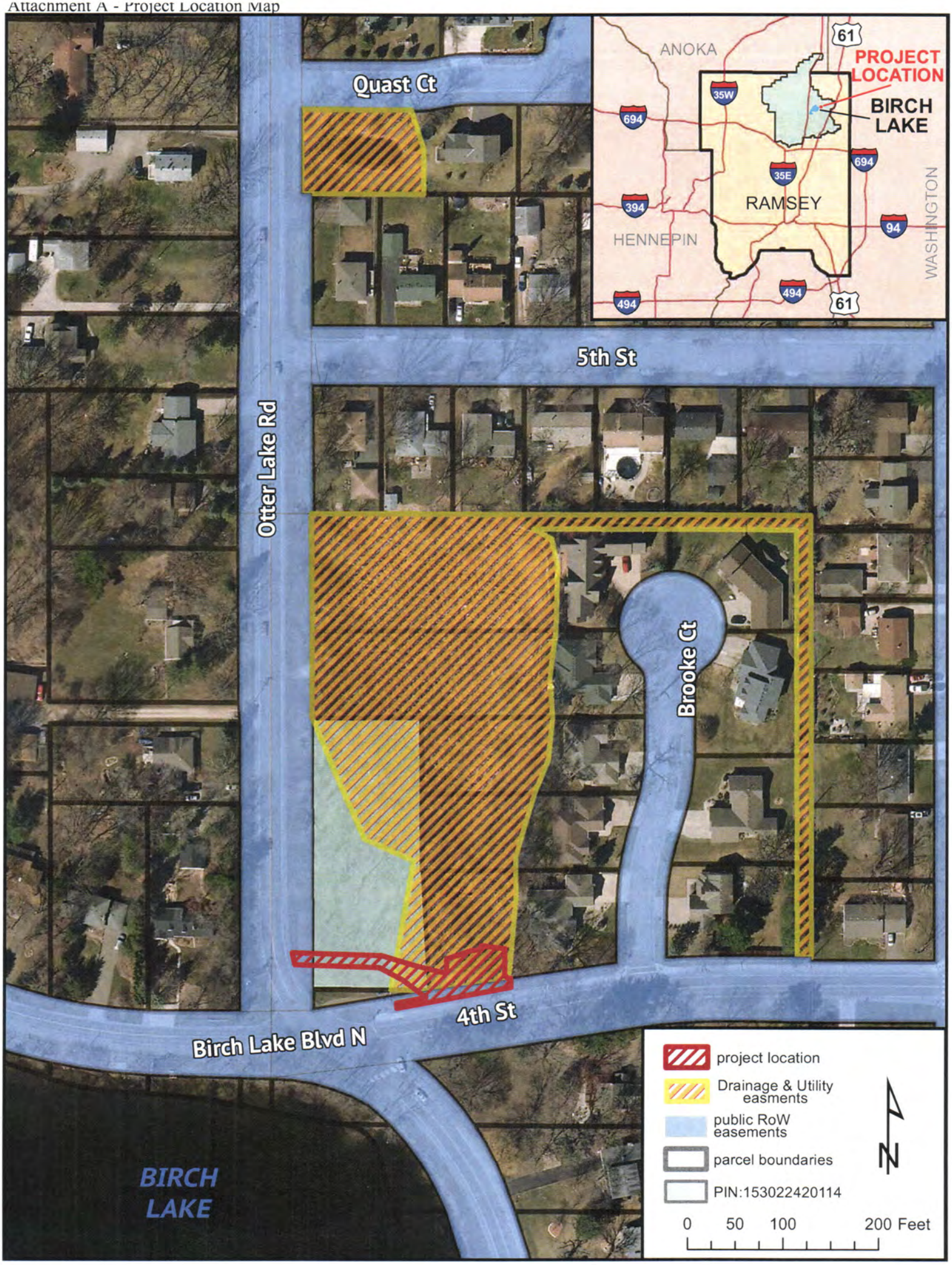
Date: August 25, 2020

BIRCH LAKE IMPROVEMENT DISTRICT
BOARD OF DIRECTORS

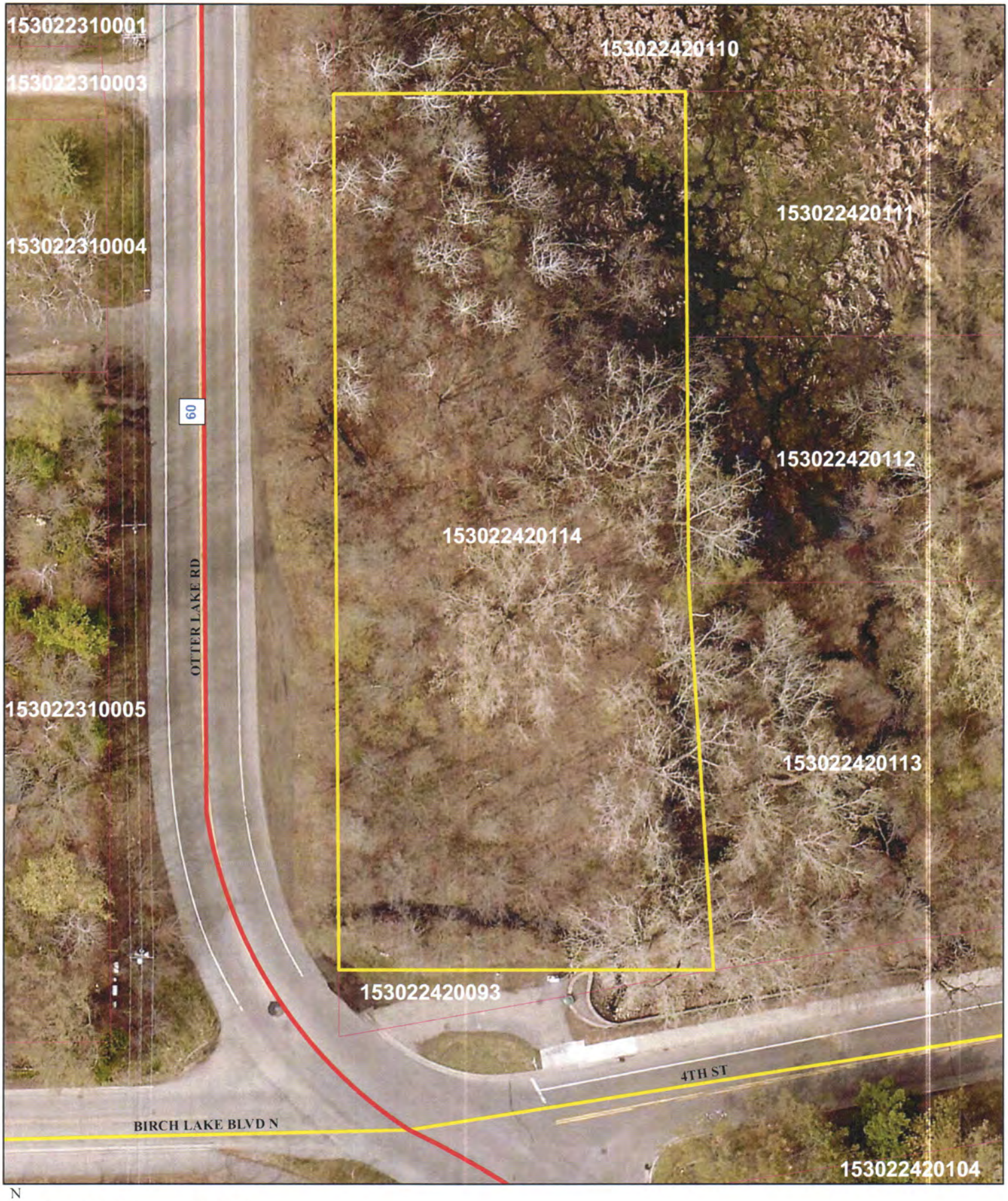
Steve Laliberte, Chairman

Date: 10/13/20

Attachment A - Project Location Map



Attachment B - Parcel Exhibit



N

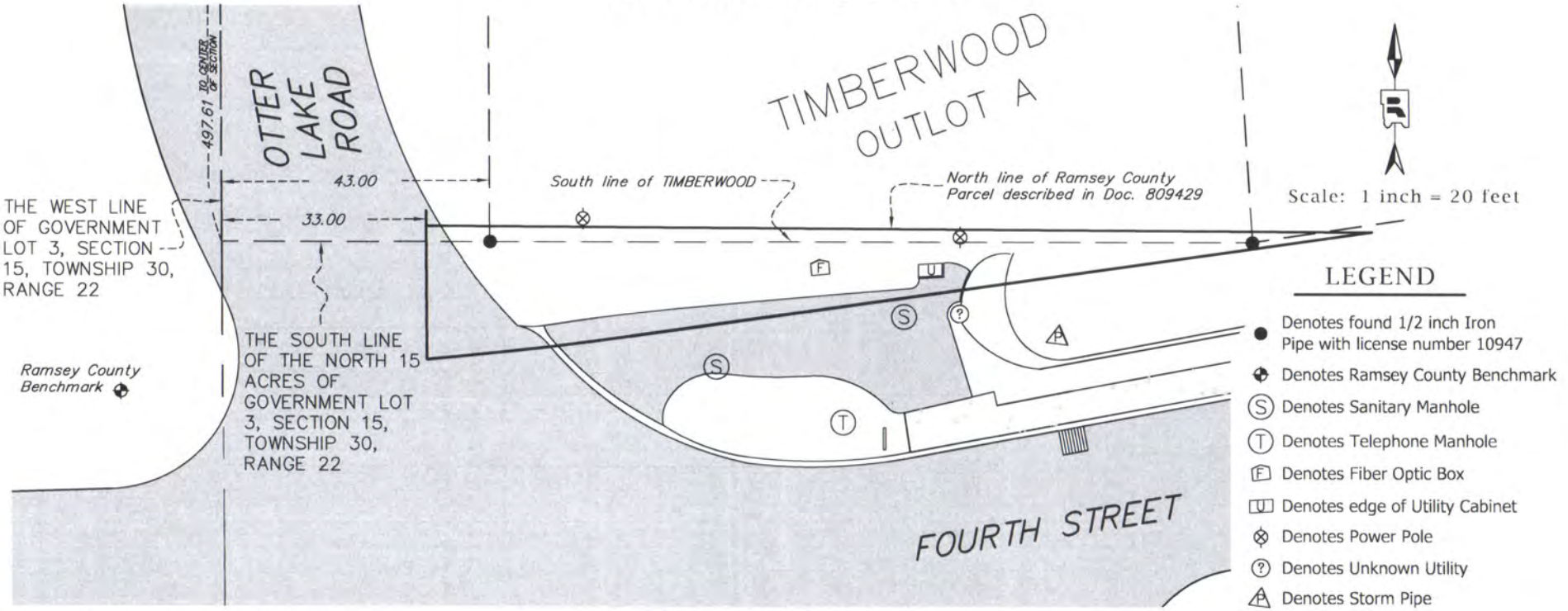
0 12.5 25 50 Feet

3/12/2020

Attachment C

Description Exhibit

Birch Lake Pump Site #8



LEGEND

- Denotes found 1/2 inch Iron Pipe with license number 10947
- Denotes Ramsey County Benchmark
- Denotes Sanitary Manhole
- Denotes Telephone Manhole
- Denotes Fiber Optic Box
- Denotes edge of Utility Cabinet
- Denotes Power Pole
- Denotes Unknown Utility
- Denotes Storm Pipe
- Denotes Sign
- Denotes Catch Basin

I hereby certify that this survey, plan or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Craig W. Hinzman, L.S. Date
Ramsey County Surveyor
Minnesota License No. 20261

Project No. 2018-017
Prepared By: Chris Johnson

Description

A parcel of land in the S.E. 1/4 of Sec. 15, Twp. 30N., Rge. 22W., more specifically described as follows: Beginning at a point which is 495.00 feet south and 33.00 feet east of the center of Sec. 15, Twp. 30N., Rge. 22W.; thence south 89°40' east a distance of 151.40 feet; thence south 81°54' west a distance of 119.95 feet; thence southwesterly following a curve right (with a radius of 604.27 feet and a central angle of 9°02') a distance of 32.95 feet; thence north a distance of 23.90 feet to the point of beginning, and containing 0.043 acres.

RAMSEY COUNTY PUBLIC WORKS
LAND SURVEY DIVISION
1425 PAUL KIRKWOLD DRIVE
ARDEN HILLS, MN 55112-3933
651-266-7100

Attachment D

Birch Lake Iron Enhanced Sand Filter (IESF)
Vadnais Lake Area Water Management Organization
Bid Opening: Thursday, January 30, 2020 at 10:00 a.m. CDT

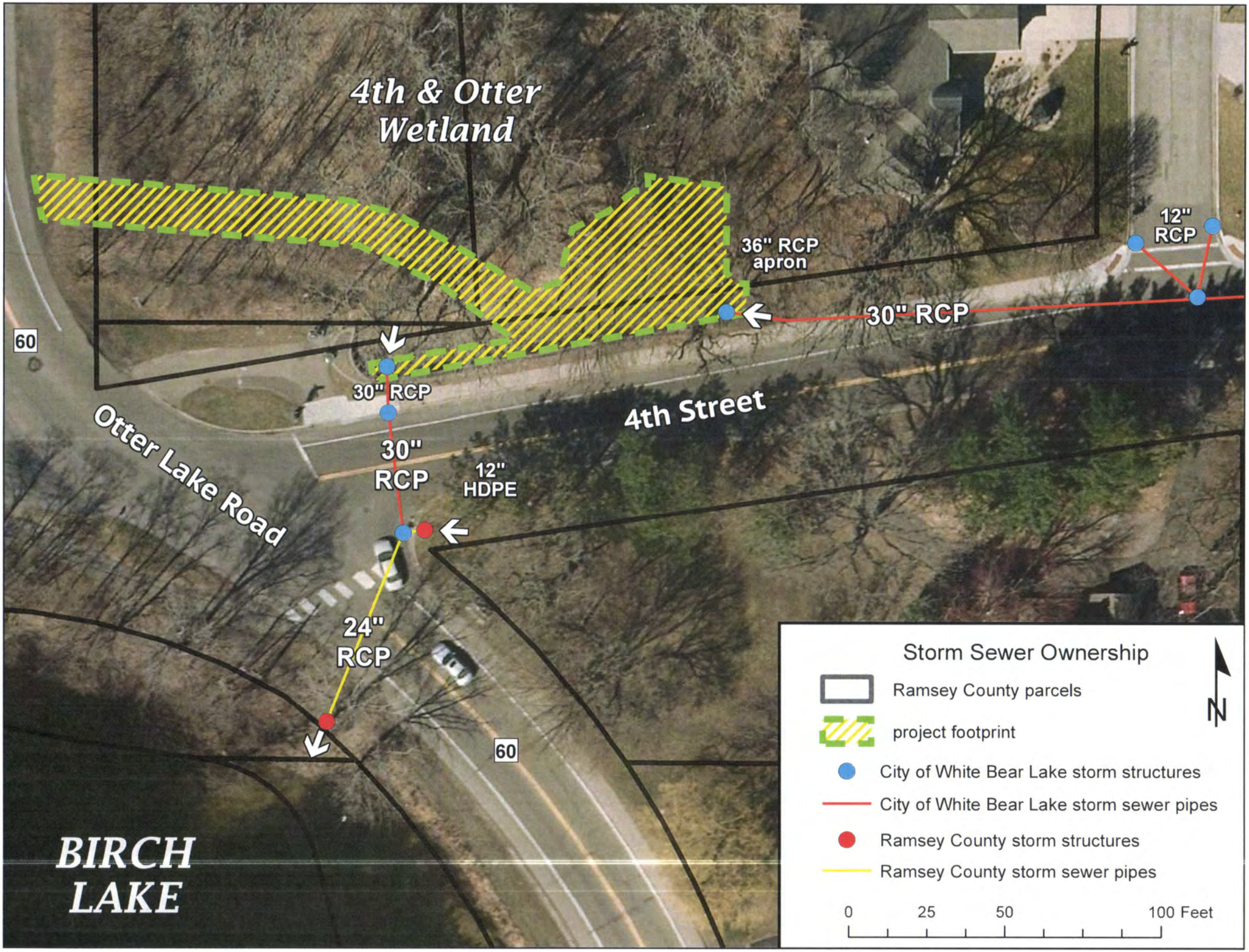
				Engineer's Estimate			Blackstone Contractors LLC		Minger Construction Co., Inc.		Lametti & Sons, Inc.		G.F. Jedlicki, Inc.		Meyer Contracting, Inc.	
Item	Description	Unit	Estimated Quantity	Unit Price	Extension	Average Unit Prices	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension
1.04.A	Mobilization/Demobilization	L.S.	1	10,000.00	10,000.00	20,404.10	9,500.00	9,500.00	6,000.00	6,000.00	5,000.00	5,000.00	2,500.00	2,500.00	7,000.00	7,000.00
1.04.B	Control of Water	L.S.	1	5,500.00	5,500.00	12,699.20	2,500.00	2,500.00	3,750.00	3,750.00	14,000.00	14,000.00	3,450.00	3,450.00	6,610.00	6,610.00
1.04.C	Traffic Control	L.S.	1	2,500.00	2,500.00	4,380.80	5,500.00	5,500.00	5,000.00	5,000.00	2,500.00	2,500.00	2,700.00	2,700.00	4,500.00	4,500.00
1.04.D	Construction Entrance (Wood Chip)	EACH	1	2,500.00	2,500.00	3,279.20	2,000.00	2,000.00	1,900.00	1,900.00	8,000.00	8,000.00	3,000.00	3,000.00	2,842.00	2,842.00
1.04.E	Clear and Grub; Removal of Trees, Brush, and Debris (Disposal Off Site)	L.S.	1	10,000.00	10,000.00	15,091.20	15,000.00	15,000.00	11,000.00	11,000.00	13,000.00	13,000.00	11,500.00	11,500.00	9,000.00	9,000.00
1.04.F	Silt Fence	L.F.	416	4.00	1,664.00	3.98	6.00	2,496.00	3.25	1,352.00	5.00	2,080.00	4.00	1,664.00	2.50	1,040.00
1.04.G	Sediment Log (9-inch Diameter)	L.F.	50	5.50	275.00	5.80	6.00	300.00	3.25	162.50	6.00	300.00	6.00	300.00	4.00	200.00
1.04.H	Inlet Protection	EACH	2	350.00	700.00	214.00	200.00	400.00	165.00	330.00	300.00	600.00	215.00	430.00	125.00	250.00
1.04.I	Erosion Control Blanket	S.Y.	304	3.50	1,064.00	3.91	4.00	1,216.00	3.25	988.00	8.00	2,432.00	4.55	1,383.20	2.00	608.00
1.04.J	Access Mud Mats Through Wetland	L.S.	1	2,300.00	2,300.00	8,088.00	5,000.00	5,000.00	2,900.00	2,900.00	4,500.00	4,500.00	11,400.00	11,400.00	12,305.00	12,305.00
1.04.K	Salvage and Replace Existing Top Soil (P)	C.Y.	25	35.00	875.00	101.68	90.00	2,250.00	215.00	5,375.00	250.00	6,250.00	18.00	450.00	99.00	2,475.00
1.04.L	Common Excavation (P)	C.Y.	60	30.00	1,800.00	53.37	45.00	2,700.00	28.00	1,680.00	50.00	3,000.00	44.00	2,640.00	47.25	2,835.00
1.04.M	Construct Control Berm Embankment (P)	C.Y.	25	50.00	1,250.00	75.39	125.00	3,125.00	78.00	1,950.00	80.00	2,000.00	12.00	300.00	86.50	2,162.50
1.04.N	Reinforced Concrete Wall	L.S.	1	20,000.00	20,000.00	26,554.10	12,500.00	12,500.00	17,500.00	17,500.00	20,000.00	20,000.00	31,020.00	31,020.00	23,021.00	23,021.00
1.04.O	Stop Logs and Rails	L.S.	1	4,000.00	4,000.00	4,640.10	4,000.00	4,000.00	2,600.00	2,600.00	2,000.00	2,000.00	4,500.00	4,500.00	2,815.00	2,815.00
1.04.P	Disposal of Excess Excavated Materials	C.Y.	35	65.00	2,275.00	54.86	55.00	1,925.00	35.00	1,225.00	30.00	1,050.00	65.00	2,275.00	76.00	2,660.00
1.04.Q	Geotextile Fabric Sand Filter Liner, Mn/DOT Type V	S.Y.	150	4.50	675.00	5.35	5.00	750.00	1.75	262.50	13.00	1,950.00	5.00	750.00	2.80	420.00
1.04.R	Iron Aggregate (Filings)	TON	3.5	1,040.00	3,640.00	1,264.50	1,500.00	5,250.00	1.00	3.50	2,000.00	7,000.00	600.00	2,100.00	1,370.00	4,795.00
1.04.S	Clean Washed Filter Sand	TON	70	80.00	5,600.00	106.28	65.00	4,550.00	236.00	16,520.00	80.00	5,600.00	185.00	12,950.00	194.00	13,580.00
1.04.T	Connect to Existing 30" RCP, Core Drill and Install Inserta-Tee Water Tight Fitting for 10" CPEP	EACH	1	2,750.00	2,750.00	3,763.20	3,500.00	3,500.00	3,800.00	3,800.00	1,500.00	1,500.00	3,650.00	3,650.00	4,064.00	4,064.00
1.04.U	10" Dual Wall CPEP-WT with 45 Degree Bend	L.F.	60	70.00	4,200.00	68.38	30.00	1,800.00	69.00	4,140.00	35.00	2,100.00	58.00	3,480.00	68.00	4,080.00
1.04.V	8" Slotted PVC Underdrain Pipe	L.F.	38	60.00	2,280.00	64.08	55.00	2,090.00	40.50	1,539.00	45.00	1,710.00	47.00	1,786.00	88.75	3,372.50
1.04.W	10" Backflow Preventer	EACH	1	5,000.00	5,000.00	5,318.10	4,000.00	4,000.00	4,600.00	4,600.00	5,000.00	5,000.00	5,330.00	5,330.00	6,731.00	6,731.00
1.04.X	30" PVC Nyloplast™ Control Structure with Locking Dome Grate	EACH	1	3,500.00	3,500.00	3,671.90	4,500.00	4,500.00	2,810.00	2,810.00	2,600.00	2,600.00	3,350.00	3,350.00	4,054.00	4,054.00
1.04.Y	12" PVC Nyloplast™ Cleanout Structure with Locking Dome Grate	EACH	1	1,500.00	1,500.00	1,853.80	2,000.00	2,000.00	1,115.00	1,115.00	1,200.00	1,200.00	2,800.00	2,800.00	1,257.00	1,257.00
1.04.Z	Remove and Dispose of Existing Rip Rap	C.Y.	20	65.00	1,300.00	61.39	75.00	1,500.00	45.00	900.00	60.00	1,200.00	38.00	760.00	118.50	2,370.00
1.04.AA	Rip Rap Mn/DOT Class III and Filter Materials	TON	15	125.00	1,875.00	128.75	145.00	2,175.00	105.00	1,575.00	100.00	1,500.00	150.00	2,250.00	166.50	2,497.50
1.04.AA	Rip Rap Mn/DOT Class II and Filter Fabric	TON	18	125.00	2,250.00	125.50	145.00	2,610.00	97.00	1,746.00	100.00	1,800.00	150.00	2,700.00	168.00	3,024.00
1.04.AB	Gravel Surface Driveway	S.Y.	122	25.00	3,050.00	26.38	20.00	2,440.00	45.00	5,490.00	32.00	3,904.00	17.50	2,135.00	18.75	2,287.50
1.04.AC	Seed Area	S.Y.	405	3.50	1,417.50	3.70	3.65	1,478.25	1.10	445.50	2.00	810.00	2.00	810.00	3.00	1,215.00
1.04.AD	Wet Prairie, BWSR Seed Mix 34-262	LBS.	1.12	90.00	100.80	152.90	100.00	112.00	168.00	188.16	85.00	95.20	80.00	89.60	100.00	112.00
1.04.AE	Mesic Prairie Southeast, BWSR Seed Mix 35-641	LBS.	1.25	90.00	112.50	139.10	100.00	125.00	168.00	210.00	80.00	100.00	80.00	100.00	50.00	62.50
1.04.AF	Site Restoration and Clean-up	L.S.	1	4,000.00	4,000.00	4,604.10	2,000.00	2,000.00	4,000.00	4,000.00	2,000.00	2,000.00	3,900.00	3,900.00	6,600.00	6,600.00
			TOTAL BASE BID		109,953.80			111,292.25		113,057.16		126,781.20		128,452.80		140,845.50

Bid Form reads:
Actual:
Difference:

Attachment D

Birch Lake Iron Enhanced Sand Filter (IESF)
Vadnais Lake Area Water Management Organization
Bid Opening: Thursday, January 30, 2020 at 10:00 a.m. CDT

				Peterson Companies, Inc.		Urban Companies		Veit & Company		Vinco, Inc.		Rosti Construction	
Item	Description	Unit	Estimated Quantity	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension
1.04.A	Mobilization/Demobilization	L.S.	1	7,791.00	7,791.00	33,000.00	33,000.00	49,250.00	49,250.00	9,000.00	9,000.00	75,000.00	75,000.00
1.04.B	Control of Water	L.S.	1	3,682.00	3,682.00	2,000.00	2,000.00	16,000.00	16,000.00	20,000.00	20,000.00	55,000.00	55,000.00
1.04.C	Traffic Control	L.S.	1	7,108.00	7,108.00	2,000.00	2,000.00	5,000.00	5,000.00	6,000.00	6,000.00	3,500.00	3,500.00
1.04.D	Construction Entrance (Wood Chip)	EACH	1	1,650.00	1,650.00	2,500.00	2,500.00	3,600.00	3,600.00	5,300.00	5,300.00	2,000.00	2,000.00
1.04.E	Clear and Grub; Removal of Trees, Brush, and Debris (Disposal Off Site)	L.S.	1	11,812.00	11,812.00	20,000.00	20,000.00	14,600.00	14,600.00	40,000.00	40,000.00	5,000.00	5,000.00
1.04.F	Silt Fence	L.F.	416	5.50	2,288.00	7.00	2,912.00	1.50	624.00	2.00	832.00	3.00	1,248.00
1.04.G	Sediment Log (9-Inch Diameter)	L.F.	50	7.74	387.00	10.00	500.00	6.00	300.00	5.00	250.00	4.00	200.00
1.04.H	Inlet Protection	EACH	2	165.00	330.00	400.00	800.00	170.00	340.00	150.00	300.00	250.00	500.00
1.04.I	Erosion Control Blanket	S.Y.	304	5.00	1,520.00	5.00	1,520.00	2.25	684.00	2.00	608.00	3.00	912.00
1.04.J	Access Mud Mats Through Wetland	L.S.	1	2,775.00	2,775.00	2,500.00	2,500.00	9,500.00	9,500.00	15,000.00	15,000.00	15,000.00	15,000.00
1.04.K	Salvage and Replace Existing Top Soil (P)	C.Y.	25	84.80	2,120.00	60.00	1,500.00	150.00	3,750.00	15.00	375.00	35.00	875.00
1.04.L	Common Excavation (P)	C.Y.	60	86.40	5,184.00	100.00	6,000.00	23.00	1,380.00	15.00	900.00	95.00	5,700.00
1.04.M	Construct Control Berm Embankment (P)	C.Y.	25	42.40	1,060.00	65.00	1,625.00	190.00	4,750.00	20.00	500.00	55.00	1,375.00
1.04.N	Reinforced Concrete Wall	L.S.	1	54,900.00	54,900.00	35,000.00	35,000.00	16,600.00	16,600.00	30,000.00	30,000.00	25,000.00	25,000.00
1.04.O	Stop Logs and Rails	L.S.	1	1,386.00	1,386.00	7,000.00	7,000.00	6,100.00	6,100.00	1,000.00	1,000.00	15,000.00	15,000.00
1.04.P	Disposal of Excess Excavated Materials	C.Y.	35	59.60	2,086.00	60.00	2,100.00	28.00	980.00	15.00	525.00	125.00	4,375.00
1.04.Q	Geotextile Fabric Sand Filter Liner, Mn/DOT Type V	S.Y.	150	3.90	585.00	10.00	1,500.00	5.00	750.00	2.00	300.00	5.00	750.00
1.04.R	Iron Aggregate (Filings)	TON	3.5	2,524.00	8,834.00	1,600.00	5,600.00	1,050.00	3,675.00	1,500.00	5,250.00	500.00	1,750.00
1.04.S	Clean Washed Filter Sand	TON	70	65.80	4,606.00	45.00	3,150.00	67.00	4,690.00	70.00	4,900.00	55.00	3,850.00
1.04.T	Connect to Existing 30" RCP, Core Drill and Install Inserta-Tee Water Tight Fitting for 10" CPEP	EACH	1	1,818.00	1,818.00	4,000.00	4,000.00	5,800.00	5,800.00	2,000.00	2,000.00	7,500.00	7,500.00
1.04.U	10" Dual Wall CPEP-WT with 45 Degree Bend	L.F.	60	25.75	1,545.00	60.00	3,600.00	93.00	5,580.00	150.00	9,000.00	95.00	5,700.00
1.04.V	8" Slotted PVC Underdrain Pipe	L.F.	38	42.50	1,615.00	100.00	3,800.00	62.00	2,356.00	115.00	4,370.00	45.00	1,710.00
1.04.W	10" Backflow Preventer	EACH	1	4,700.00	4,700.00	7,500.00	7,500.00	8,820.00	8,820.00	4,000.00	4,000.00	2,500.00	2,500.00
1.04.X	30" PVC Nyloplast™ Control Structure with Locking Dome Grate	EACH	1	3,365.00	3,365.00	6,000.00	6,000.00	4,540.00	4,540.00	3,000.00	3,000.00	2,500.00	2,500.00
1.04.Y	12" PVC Nyloplast™ Cleanout Structure with Locking Dome Grate	EACH	1	1,466.00	1,466.00	2,500.00	2,500.00	2,200.00	2,200.00	1,500.00	1,500.00	2,500.00	2,500.00
1.04 Z	Remove and Dispose of Existing Rip Rap	C.Y.	20	72.40	1,448.00	60.00	1,200.00	75.00	1,500.00	15.00	300.00	55.00	1,100.00
1.04.AA	Rip Rap Mn/DOT Class III and Filter Materials	TON	15	88.00	1,320.00	150.00	2,250.00	123.00	1,845.00	110.00	1,650.00	150.00	2,250.00
1.04.AA	Rip Rap Mn/DOT Class II and Filter Fabric	TON	18	71.00	1,278.00	150.00	2,700.00	114.00	2,052.00	110.00	1,980.00	150.00	2,700.00
1.04.AB	Gravel Surface Driveway	S.Y.	122	23.50	2,867.00	17.00	2,074.00	25.00	3,050.00	20.00	2,440.00	45.00	5,490.00
1.04.AC	Seed Area	S.Y.	405	10.00	4,050.00	5.00	2,025.00	2.25	911.25	3.00	1,215.00	5.00	2,025.00
1.04.AD	Wet Prairie, BWSR Seed Mix 34-262	LBS.	1.12	175.00	196.00	500.00	560.00	166.00	185.92	100.00	112.00	55.00	61.60
1.04.AE	Mesic Prairie Southeast, BWSR Seed Mix 35-641	LBS.	1.25	92.00	115.00	500.00	625.00	166.00	207.50	100.00	125.00	55.00	68.75
1.04.AF	Site Restoration and Clean-up	L.S.	1	2,541.00	2,541.00	3,000.00	3,000.00	2,500.00	2,500.00	15,000.00	15,000.00	4,500.00	4,500.00
			TOTAL BASE BID		148,428.00		173,041.00		184,120.67		187,732.00		257,640.35
			Bid Form reads:								188,732.00		257,633.48
			Actual:								187,732.00		257,640.35
			Difference:								1,000.00		-6.87


4th & Otter
Wetland
36" RCP
apron
12"
RCP
30" RCP
60
30" RCP
4th Street
Otter Lake Road
30"
RCP
12"
HDPE
24"
RCP
60
BIRCH
LAKE
Storm Sewer Ownership
Ramsey County parcels
project footprint
City of White Bear Lake storm structures
City of White Bear Lake storm sewer pipes
Ramsey County storm structures
Ramsey County storm sewer pipes
N
0
25
50
100 Feet

Attachment F: Inspections and Maintenance Plan

Inspections	Lead Agency
Monthly	
Check that the project site is stabilized and vegetation is established.	VLAWMO
Check that the surface of the IESF is not clogged with sediment, trash, or debris.	VLAWMO
Check that the inlet weir, stop log, cleanout structure ST-1, 6-inch PVC underdrain, 10-inch CPEP underdrain, outlet manhole structure ST-2, and 30-inch RCP outlet pipe for damage and sediment, trash, and debris accumulation.	VLAWMO
Check for soil erosion at the project site, including the storm sewer outfall swale, filter sand media, berm, and downstream of the stop log.	VLAWMO
Check for noticeable odors (may be an indication of an illicit discharge).	VLAWMO
When in the area: Check for illicit discharges in the contributing drainage area. Report illicit discharges to the applicable MS4 for enforcement (City or County)	All
Annually	
Check the depth of sediment in cleanout structures ST-1 and ST-2.	VLAWMO
Check the concrete wall, manholes, and other concrete structures for evidence of deterioration, spalling or cracking.	VLAWMO
Conduct a post rainfall inspection after a 1" or great storm event. Check to ensure that flow is not bypassing the IESF, normal pool level is retained, and the structures do not leak.	VLAWMO
Maintenance [1]	**Lead Agency**
Routine, as needed	
3-year initial native vegetation establishment [2].	VLAWMO & CITY
Ongoing native vegetation maintenance (after the 3-year establishment period)[2].	VLAWMO & CITY
Remove minor trash and debris from the surface of the IESF.	VLAWMO primary
Remove sediment from sump manholes when accumulated.	City
Remove sediment, trash, and debris from inlet weir, stop log, cleanout structure ST-1, underdrains, outlet manhole structure ST-2, and outlet pipe[3].	City
Major, as needed	
If surface of the filter bed is clogged or partially clogged, remove top few inches of media, roto-till/cultivate media surface, and replace media.	County
Stabilize any eroded areas.	TBD
Repair or replace any damaged structural parts.	TBD
Every 3 to 5 years: Remove & replace the top 2-5 inches of media for low sediment applications - sooner for areas of high sediment, or high oil & grease yield. Replace geotextile fabric if needed.	County

Notes:

(1) Costs for routine and major maintenance work shall be divided as follows (unless noted otherwise): City 85%, VLAWMO 10%, County 5%

(2) Costs for routine vegetation establishment and long term vegetation maintenance shall be divided as follows: City 50%, VLAWMO 50%

(3) Storm sewer outfall inspection and maintenance activities are completed as part of the City's MS4 Permit.

Revised:March 12, 2020

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

BIRCH LAKE IRON ENHANCED SAND FILTER

WHITE BEAR LAKE, MINNESOTA

LOCATION MAP

VICINITY MAP

LIMITS OF SECTION CUT
SECTION IDENTIFIER
SECTION REFERENCES
SECTION VIEW CALL OUT

SECTION IDENTIFIER (TYP.)
SECTION GRAPHICS STANDARDS
SECTION REFERENCES (TYP.)
SECTION VIEW TITLE

DETAIL IDENTIFIER
DETAIL REFERENCES
DETAIL VIEW CALL OUT

DETAIL IDENTIFIER (TYP.)
DETAIL GRAPHICS STANDARDS
DETAIL REFERENCES (TYP.)
DETAIL VIEW TITLE

SHEET NO.	TITLE
	GENERAL DRAWINGS
G-01	COVER SHEET AND DRAWING INDEX
	CIVIL DRAWINGS
C-01	EXISTING CONDITIONS AND EROSION CONTROL
C-02	EROSION CONTROL DETAILS
C-03	SITE GRADING AND STORM SEWER
C-04	SITE GRADING AND WALL SECTIONS
C-05	STORM AND DRIVEWAY SECTIONS & DETAILS
	STRUCTURAL DRAWINGS
S-01	REINFORCED CONCRETE WALL SECTIONS

ABBREVIATIONS

CJ	CONTROL JOINT
CONC	CONCRETE
CMP	CORRUGATED METAL PIPE
CPEP	CORRUGATED POLYETHYLENE PIPE
DIA	DIAMETER
DS	DOWNSTREAM
DTR	DECIDUOUS TREE
EL	ELEVATION
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
HDPE	HIGH DENSITY POLYETHYLENE
NWL	NORMAL WATER LEVEL
HWL	HIGH WATER LEVEL
ID	IDENTIFIER
INV	INVERT
RCP	REINFORCED CONCRETE PIPE
TO	TOP OF
TYP	TYPICAL
US	UPSTREAM

PROJECT COORDINATE SYSTEM

HORIZONTAL: MnDOT RAMSEY COUNTY, US FOOT, NAD83 DATUM
VERTICAL: NAVD88 DATUM

RELEASED FOR BID

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: GREGORY J. WILSON

CLIENT	4/11/19	6/20					
BID				8/5/19	12/20		
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3

BARR

BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
Suite 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
www.barr.com

Scale	AS SHOWN
Date	4/1/2018
Drawn	GGN
Checked	GJW
Designed	GGN
Approved	GJW

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

COVER SHEET AND DRAWING INDEX

BARR PROJECT No. 23/62-1274.00
CLIENT PROJECT No. -
DWG. No. G-01
REV. No. 1

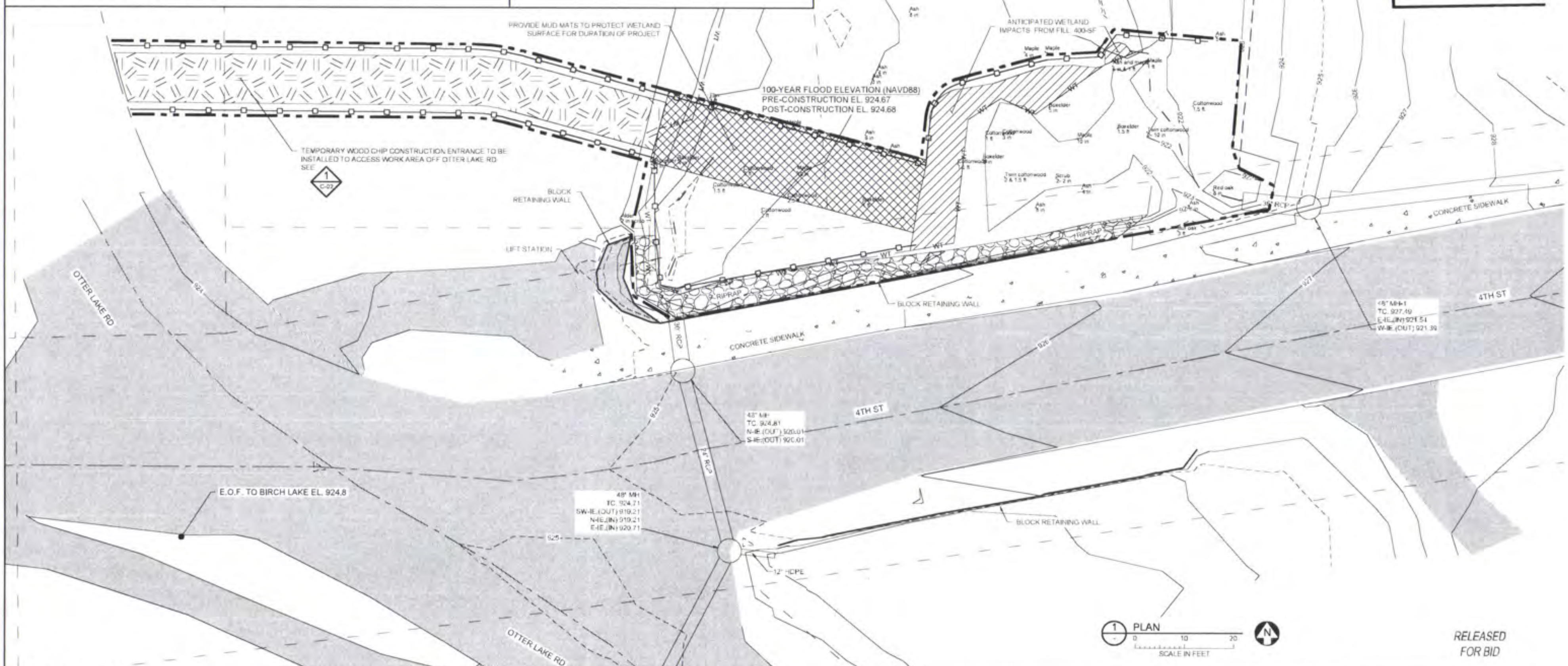
REVISION DESCRIPTION

NOTES:

1. THE CONTRACTOR IS EXPECTED TO MINIMIZE THE AMOUNT OF DISTURBED AREA TO THE EXTENT POSSIBLE.
2. NATURAL TOPOGRAPHY AND SOIL CONDITIONS MUST BE PROTECTED, INCLUDING RETENTION ONSITE OF NATIVE TOPSOIL TO THE GREATEST EXTENT POSSIBLE.
3. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 CALENDAR DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED.
4. FINAL SITE STABILIZATION MEASURES MUST PROVIDE FOR AT LEAST 6-INCHES OF TOPSOIL OR ORGANIC MATTER BE SPREAD AND INCORPORATED INTO THE UNDERLYING SOIL DURING FINAL SITE RESTORATION.
5. SOIL SURFACES COMPACTED DURING CONSTRUCTION MUST BE DECOMPACTED THROUGH SOIL AMENDMENT AND/OR RIPPING TO A DEPTH OF 18-INCHES WHILE TAKING CARE TO AVOID UTILITIES, TREE ROOTS AND OTHER EXISTING VEGETATION PRIOR TO FINAL REVEGETATION OR OTHER STABILIZATION.
6. ALL DISTURBANCE AREAS SHALL BE RESTORED WITH NATIVE SEED AND EROSION CONTROL BLANKET TO PROVIDE ADEQUATE STABILIZATION. SURFACE TO BE RESTORED SHALL BE RAKED TO REMOVE ALL PARTICLES AND DEBRIS 1-INCH OR GREATER IN SIZE.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND VEGETATION IS ESTABLISHED SUFFICIENTLY TO ENSURE STABILITY OF THE SITE.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE REMOVED UPON FINAL STABILIZATION AND AS DIRECTED BY THE OWNER/ENGINEER.
9. DO NOT STOCKPILE SOIL OR MATERIALS WITHIN THE WETLAND PROTECTION AREA INSIDE CONSTRUCTION LIMITS.
10. CONSTRUCTION SITE WASTE SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITTER AND SANITARY WASTE MUST BE PROPERLY MANAGED.
11. ANY DAMAGE TO PROPERTY WITHIN THE STREET RIGHT OF WAY BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE CITY OF WHITE BEAR LAKE AND RAMSEY COUNTY AT THE CONTRACTOR'S EXPENSE.

LEGEND

- △ GPS CONTROL POINT
- ⊕ VERTICAL BENCHMARK
- □ EXISTING SIGN
- ⊠ EXISTING CABINET
- ○ EXISTING HYDRANT
- ⋈ EXISTING GATE VALVE
- ○ EXISTING SANITARY MANHOLE
- □ EXISTING FIBER HANDHOLE
- Maple 2 in EXISTING TREE SPECIES W/DIA.
- EXISTING FENCE LINE
- EXISTING CHANNEL THALWEG
- 805 EXISTING 5' CONTOUR
- 801 EXISTING 1' CONTOUR
- WT WT EXISTING WETLAND EDGE
- EXISTING PARCEL BOUNDARY
- EXISTING UTILITY EASEMENT
- EROSION CONTROL SILT FENCE
- CONSTRUCTION LIMITS



1 PLAN

0 10 20

SCALE IN FEET

RELEASED FOR BID

NO.	BY	CHK	APP.	DATE	REVISION DESCRIPTION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: GREGORY J. WILSON

SIGNATURE:

DATE: 6/8/2018 LICENSE # 25782

RELEASED TO/FOR: CLIENT 4/19, 6/20; BID 8/19, 12/20; CONSTRUCTION

A	B	C	0	1	2	3

DATE RELEASED

BARR

Corporate Headquarters: Minneapolis, Minnesota. Ph: 1-800-632-2277

Project Office: BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE, Suite 200, MINNEAPOLIS, MN 55435. Ph: 1-800-632-2277, Fax: (952) 832-2601, www.barr.com

Scale	AS SHOWN
Date	4/1/2018
Drawn	GGN
Checked	GJW
Designed	GGN
Approved	GJW

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

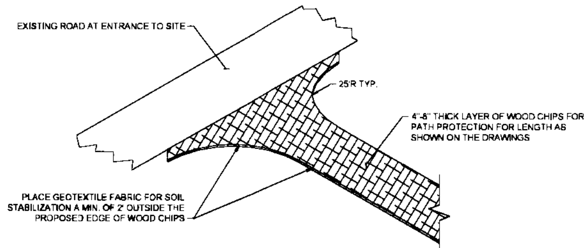
EXISTING CONDITIONS AND EROSION CONTROL

BARR PROJECT No. 23/62-1274.00

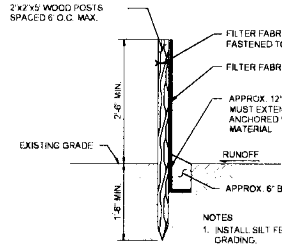
CLIENT PROJECT No. -

DWG. No. C-01

REV. No. 1

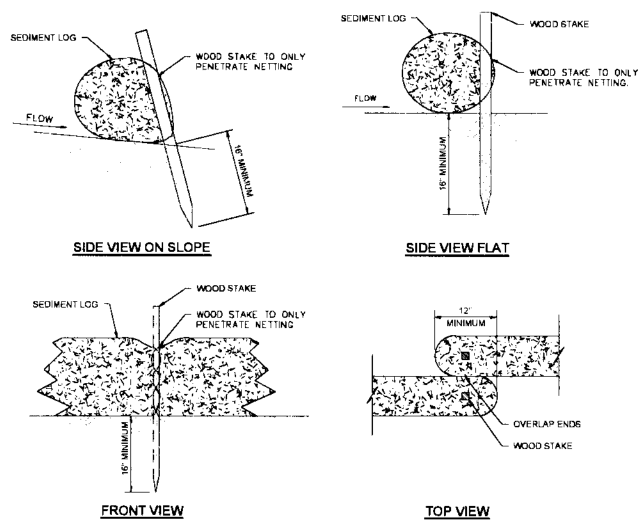


1 DETAIL: WOOD CHIP CONSTRUCTION ENTRANCE
NOT TO SCALE



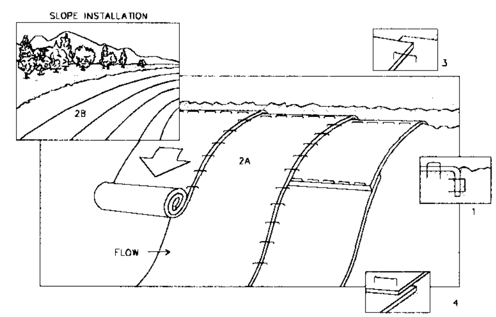
NOTES
1. INSTALL SILT FENCE PRIOR TO EXCAVATION AND GRADING.
2. REMOVE SILT FENCE FOLLOWING INSTALLATION OF EROSION CONTROL BLANKET.

3 DETAIL: SILT FENCE
NOT TO SCALE



NOTES
1. INSTALL SEDIMENT LOG ALONG CONTOURS (CONSTANT ELEVATION).
2. NO GAPS SHALL BE PRESENT UNDER SEDIMENT LOG. PREPARE AREA AS NEEDED TO SMOOTH SURFACE OR REMOVE DEBRIS.
3. REMOVE ACCUMULATED SEDIMENT WHEN REACHING 1/3 OF LOG HEIGHT.
4. MAINTAIN SEDIMENT LOG THROUGHOUT THE CONSTRUCTION PERIOD AND REPAIR OR REPLACED AS REQUIRED.

2 DETAIL: SEDIMENT LOG - STAKING
NOT TO SCALE



NOTE: REFER TO GENERAL STAPLE PATTERN GUIDE FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR SLOPE INSTALLATIONS.

1. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN 6" DEEP x 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
2. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE.
3. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 6" OVERLAP, WITH THE UPHILL BLANKET ON TOP.
4. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 6" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART.

4 DETAIL: TEMPORARY EROSION CONTROL BLANKET
NOT TO SCALE

RELEASED FOR BID

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINTED NAME GREGORY J. WILSON
SIGNATURE
DATE ___ LICENSE # ___

RELEASED TO/FOR	A	B	C	0	1	2	3
CLIENT	4/19	6/20	—	—	—	—	—
BID	—	—	—	8/9	12/20	—	—
CONSTRUCTION	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
	DATE RELEASED						

BARR
Corporate Headquarters
Minneapolis, Minnesota
Project Office
BARR ENGINEERING CO
4300 MARKETPOINTE DRIVE
Suite 200
MINNEAPOLIS, MN 55435
Ph. 1-800-632-2277
www.barr.com

Scale	AS SHOWN
Date	4/1/2018
Drawn	GGN
Checked	GJW
Designed	GGN
Approved	GJW

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

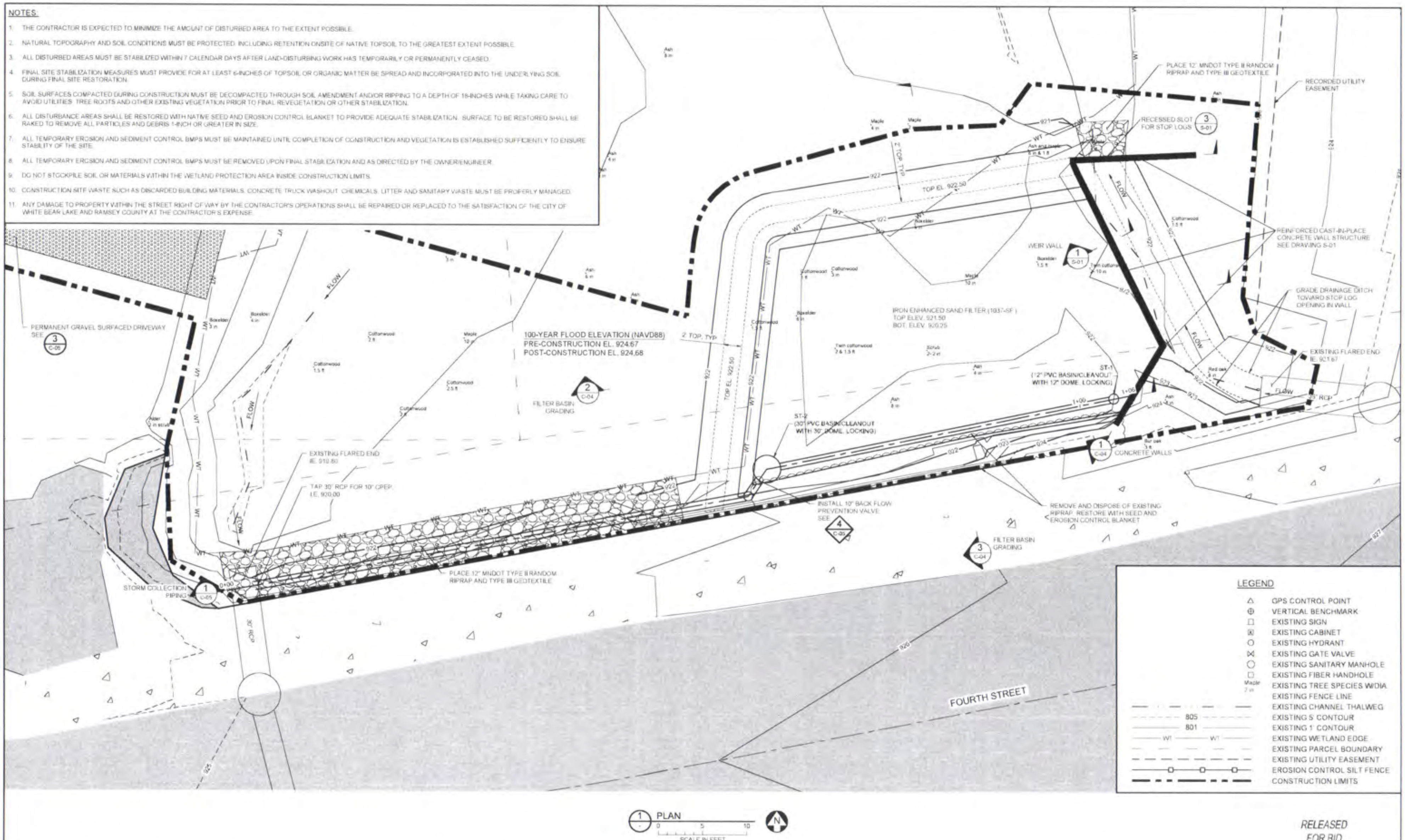
BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

EROSION CONTROL DETAILS

BARR PROJECT No. 23/62-1274.00
CLIENT PROJECT No.
DWG. No. C-02
REV. No. 1

NOTES:

1. THE CONTRACTOR IS EXPECTED TO MINIMIZE THE AMOUNT OF DISTURBED AREA TO THE EXTENT POSSIBLE.
2. NATURAL TOPOGRAPHY AND SOIL CONDITIONS MUST BE PROTECTED, INCLUDING RETENTION ONSITE OF NATIVE TOPSOIL TO THE GREATEST EXTENT POSSIBLE.
3. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 CALENDAR DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED.
4. FINAL SITE STABILIZATION MEASURES MUST PROVIDE FOR AT LEAST 6-INCHES OF TOPSOIL OR ORGANIC MATTER BE SPREAD AND INCORPORATED INTO THE UNDERLYING SOIL DURING FINAL SITE RESTORATION.
5. SOIL SURFACES COMPACTED DURING CONSTRUCTION MUST BE DECOMPACTED THROUGH SOIL AMENDMENT AND/OR RIPPING TO A DEPTH OF 18-INCHES WHILE TAKING CARE TO AVOID UTILITIES, TREE ROOTS AND OTHER EXISTING VEGETATION PRIOR TO FINAL REVEGETATION OR OTHER STABILIZATION.
6. ALL DISTURBANCE AREAS SHALL BE RESTORED WITH NATIVE SEED AND EROSION CONTROL BLANKET TO PROVIDE ADEQUATE STABILIZATION. SURFACE TO BE RESTORED SHALL BE RAKED TO REMOVE ALL PARTICLES AND DEBRIS 1-INCH OR GREATER IN SIZE.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND VEGETATION IS ESTABLISHED SUFFICIENTLY TO ENSURE STABILITY OF THE SITE.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE REMOVED UPON FINAL STABILIZATION AND AS DIRECTED BY THE OWNER/ENGINEER.
9. DO NOT STOCKPILE SOIL OR MATERIALS WITHIN THE WETLAND PROTECTION AREA INSIDE CONSTRUCTION LIMITS.
10. CONSTRUCTION SITE WASTE SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITTER AND SANITARY WASTE MUST BE PROPERLY MANAGED.
11. ANY DAMAGE TO PROPERTY WITHIN THE STREET RIGHT OF WAY BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE CITY OF WHITE BEAR LAKE AND RAMSEY COUNTY AT THE CONTRACTOR'S EXPENSE.



RELEASED FOR BID

NO	BY	CHK	APP	DATE	REVISION DESCRIPTION

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PRINTED NAME: GREGORY J. WILSON
SIGNATURE:
DATE: 9/6/2018 LICENSE # 25782

CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
	DATE RELEASED						

BARR
Project Office: BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE Suite 200 MINNEAPOLIS, MN 55435 Ph: 1-800-632-2277 Fax: (952) 832-2601 www.barr.com
Corporate Headquarters: Minneapolis, Minnesota Ph: 1-800-632-2277

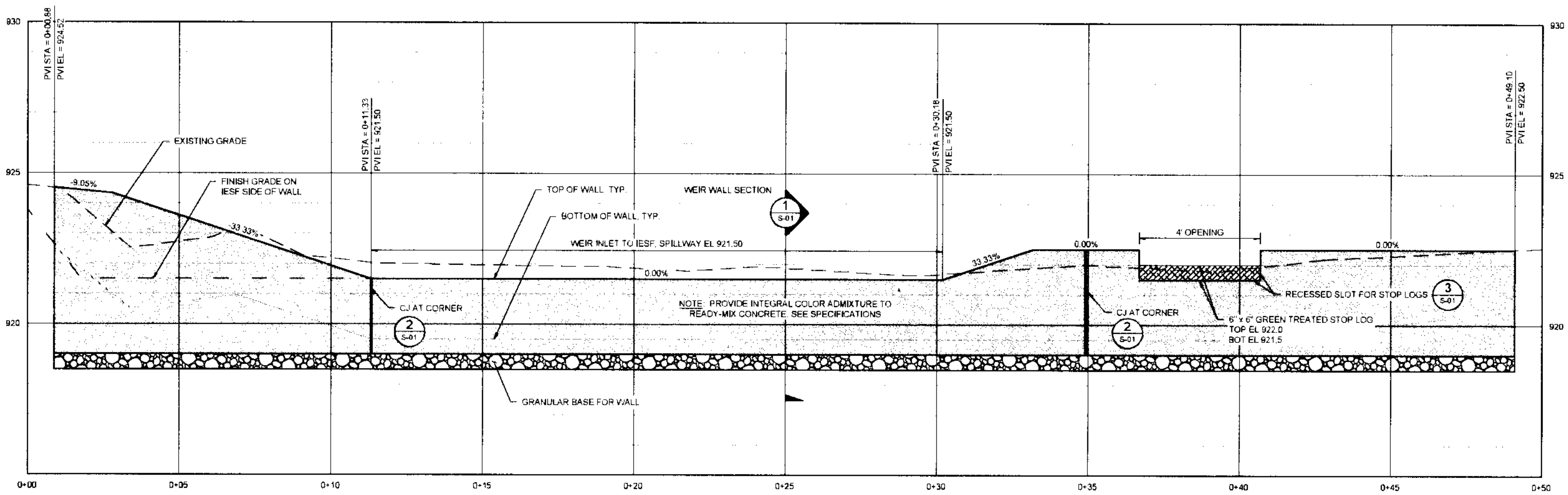
Scale	AS SHOWN
Date	4/1/2018
Drawn	CGN
Checked	GJW
Designed	CGN
Approved	GJW

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

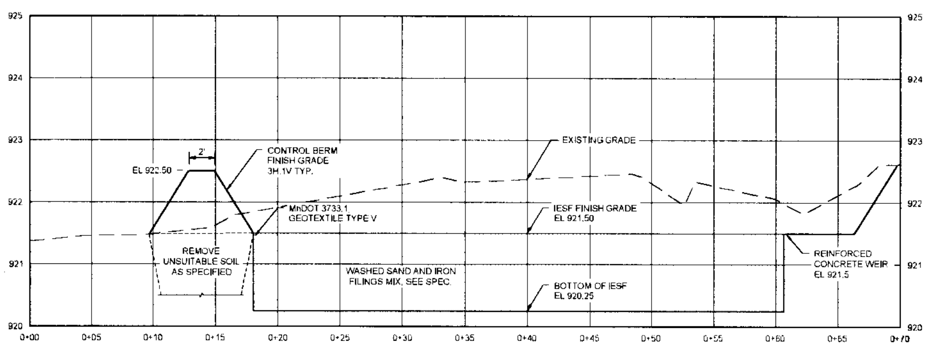
BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

SITE GRADING AND STORM SEWER

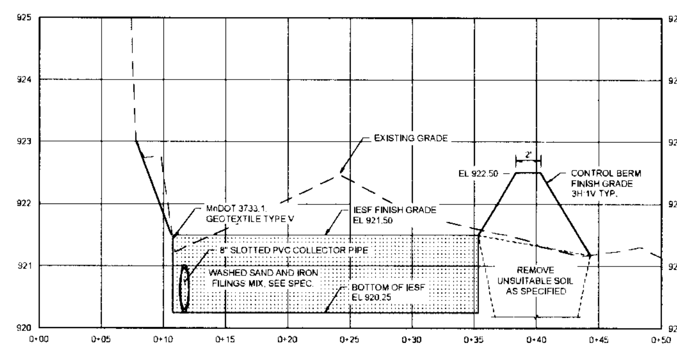
BARR PROJECT No. 23/62-1274.00
CLIENT PROJECT No.
DWG. No. C-03
REV. No. 1



1 SECTION: CONCRETE WALLS
SCALE IN FEET



2 SECTION: FILTER BASIN GRADING
HORIZONTAL SCALE IN FEET
VERTICAL SCALE IN FEET



3 SECTION: FILTER BASIN GRADING
HORIZONTAL SCALE IN FEET
VERTICAL SCALE IN FEET

RELEASED FOR BID

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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PRINTED NAME GREGORY J. WILSON
SIGNATURE
DATE LICENSE #

RELEASED TO/FOR	A	B	C	0	1	2	3
CLIENT	4/19	6/20					
BID				8/8	12/20		
CONSTRUCTION							

DATE RELEASED

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Corporate Headquarters Minneapolis, Minnesota
Project Office
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4300 MARKETPOINTE DRIVE
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MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
www.barr.com

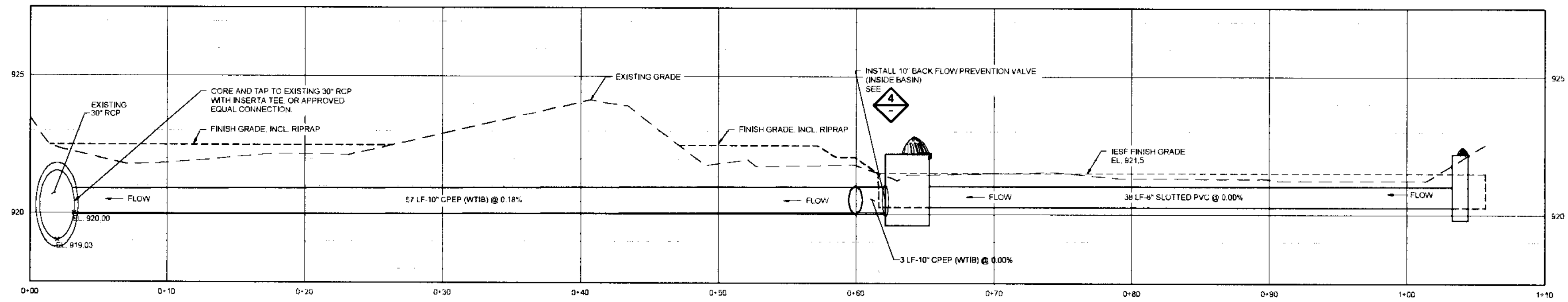
Scale	AS SHOWN
Date	4/1/2018
Drawn	GGN
Checked	GJW
Designed	GGN
Approved	GJW

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

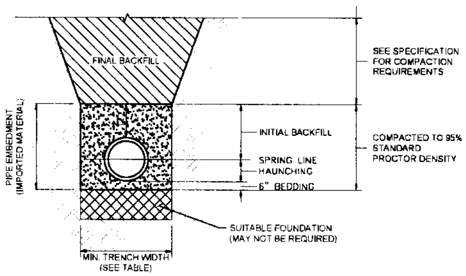
SITE GRADING AND WALL SECTIONS

BARR PROJECT No. 23/62-1274.00
CLIENT PROJECT No.
DWG. No. C-04
REV. No. 1



1 PROFILE: STORM COLLECTION PIPING

HORIZONTAL SCALE IN FEET · VERTICAL SCALE IN FEET

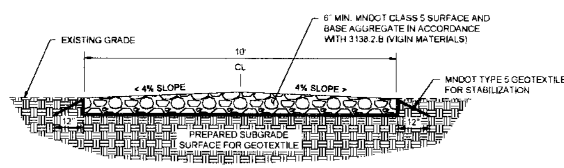


1. IMPORTED PIPE EMBEDMENT MATERIAL PER MnDOT SPEC. 3149.2F GRANULAR BEDDING, 100% PASSING THE 1" SIEVE AND NOT MORE THAN 10.5% WILL PASS THE #200 SIEVE.
2. IMPORTED PIPE EMBEDMENT MATERIAL SHALL BE COMPACTED IN UNIFORM LIFTS, 8" OR LESS IN DEPTH, LOOSE MEASURE, TO 95% STANDARD PROCTOR DENSITY FROM THE BEDDING TO A MINIMUM DEPTH OF AT LEAST 12" ABOVE THE CROWN OF THE PIPE.

PIPE DIA.	MIN. TRENCH WIDTH
INCHES	INCHES
4	21
6	23
8	26
10	28
12	30

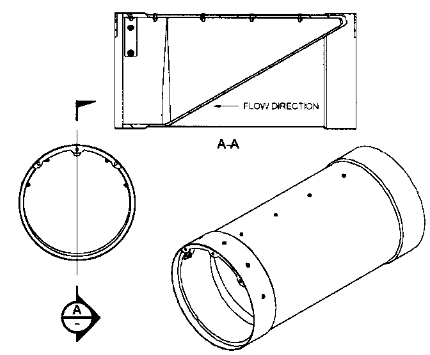
2 DETAIL: NON-RIGID STORM SEWER TRENCH

NOT TO SCALE



3 SECTION: GRAVEL SURFACED DRIVEWAY

SCALE IN FEET



4 DETAIL: INLINE BACKFLOW PREVENTION VALVE

NOT TO SCALE

RELEASED FOR BID

NO	BY	CHK	APP	DATE	REVISION DESCRIPTION

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PRINTED NAME GREGORY J. WILSON

SIGNATURE

DATE 8/9/2019 LICENSE # 25782

RELEASED TO/FOR	A	B	C	0	1	2	3
CLIENT	4/19	6/20					
BID				8/9	12/20		
CONSTRUCTION							
	DATE RELEASED						

BARR
Corporate Headquarters: Minneapolis, Minnesota Ph: 1-800-632-2277
Project Office: BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE Suite 200 MINNEAPOLIS, MN 55435 Ph: 1-800-632-2277 Fax: (952) 832-2601 www.barr.com

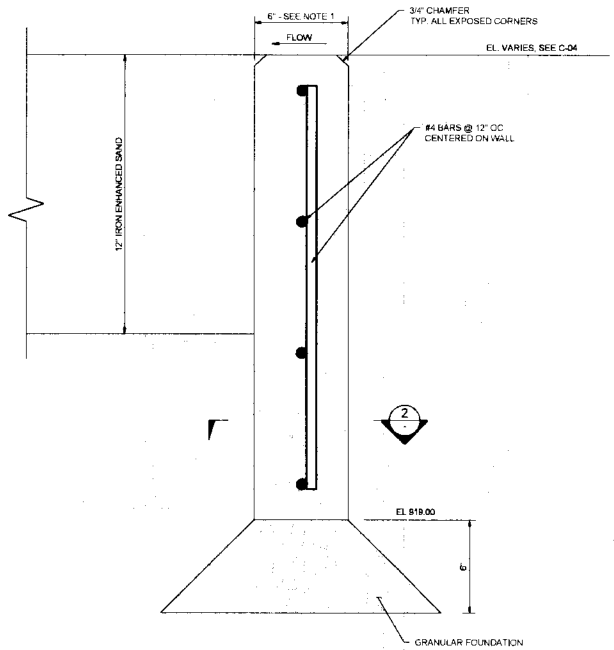
Scale	AS SHOWN
Date	4/1/2018
Drawn	GGN
Checked	GJW
Designed	GGN
Approved	GJW

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

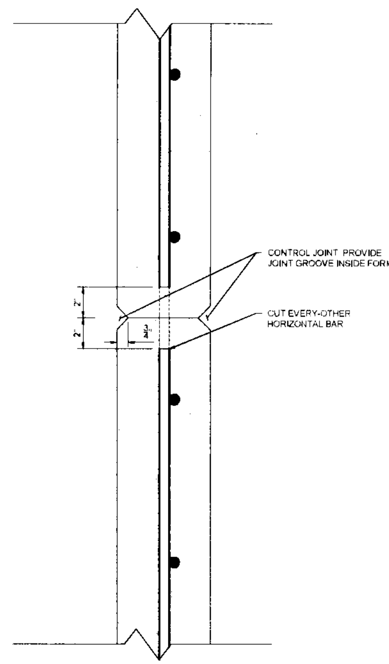
BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

STORM AND DRIVEWAY SECTIONS & DETAILS

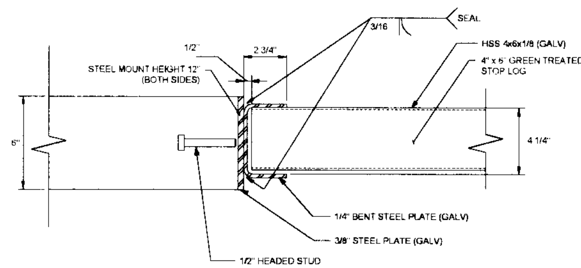
BARR PROJECT No. 23/62-1274.00
CLIENT PROJECT No.
DWG. No. C-05
REV. No. 1



1 SECTION: WEIR WALL
3" = 1'-0"



2 SECTION: CONTROL JOINT
3" = 1'-0"



3 SECTION: GALVANIZED STEEL STOP LOG MOUNT
3" = 1'-0"

RELEASED FOR BID

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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PRINTED NAME BRIAN SILJENBERG
SIGNATURE
DATE 8/14/2019 LICENSE # 50033

RELEASED FOR/OR	A	B	C	0	1	2	3
CLIENT	4/19	6/20	—	—	—	—	—
BID	—	—	—	8/9	12/20	—	—
CONSTRUCTION	—	—	—	—	—	—	—
DATE RELEASED							

BARR
Corporate Headquarters Minneapolis, Minnesota Ph: 1-800-632-2277

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BARR ENGINEERING CO.
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MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
www.barr.com

Scale	AS SHOWN
Date	4/1/2018
Drawn	GGN
Checked	GJW
Designed	GGN
Approved	GJW

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

REINFORCED CONCRETE
WALL SECTIONS

BARR PROJECT No. 23/62-1274.00
CLIENT PROJECT No.
DWG. No. S-01
REV. No. 1

INCENTIVE PROGRAM AGREEMENT

THIS AGREEMENT is made the 14 day of **March**, 2016, by and between the Ramsey-Washington Metro Watershed District, (hereinafter "District") and The City of White Bear Lake (hereinafter "Landowner"). #16-03 CS

1. BACKGROUND

1.1 The District has included in its annual budget funds to cost-share with approved Landowners to implement best management practices within the watershed district.
1.2 The District funding is limited to 50% of the cost of materials and labor actually incurred by the Landowners for the project as approved by the District, up to a maximum contribution of $1,509.00 per governmental Landowner.
1.3 Landowner has applied to the District for funds to help pay for the cost of materials or labor for Native Habitat Restoration(1) (hereinafter "Project") as described in the BMP Incentive Program Application attached herein as Exhibit A.
1.4 The District is willing to fund the Project described in Exhibit A in accordance with the terms of this Agreement.

2. SERVICES

2.1 Landowner will complete the Project described in Exhibit A in accordance with the terms, scope, schedule, and budget set forth therein. The Landowners do hereby covenant that they are the owners and are lawfully seized and possessed of the real estate above-described.
2.2 Landowner shall maintain the Project for a period of twenty (20) years per government Landowner from the date of this document. The agreement shall run with the land and extend to and bind the heirs, representatives, successors and/or assigns of the party hereto respectively.

3. REIMBURSEMENT

3.1 Expenses incurred by Landowner in Exhibit A will be reimbursed by the District up to 50% of the total cost of materials or labor actually incurred by Landowner up to a maximum amount of $1,509.00 per governmental property. Upon incurring the costs identified in Exhibit A, the Landowner shall provide a list of all reimbursable expenses incurred and receipts or copies of receipts therefore, to the District.
3.2 The District will reimburse the identified reimbursable expenses in accordance with Section 3.1 within 60 days of receipt of the required financial and performance information and receipts.
3.3 The District will not be liable or responsible for payment for services or reimbursement for expenses other than those specified as reimbursable expenses in accordance with Section 3.1.
3.4 Following the completion of the project described in Exhibit A, Landowner shall submit a final financial report to the District listing the final expenses for the activity, along with copies of receipts.

GENERAL TERMS

4.1 This Agreement shall remain in effect unless canceled by mutual agreement or in accordance with Section 4.2. This Agreement shall expire if the Project is not completed pursuant to the schedule in Exhibit A and the financial information required by Sections 3.1 and 3.4 is not received within one year after approval.
4.2 If weather or other conditions beyond the control of the Landowner do not permit the completion of this Project within one year after approval, this Agreement may be amended, by mutual written consent of the parties, to reschedule the Project and funding.
4.3 Landowner must obtain all permits required in conjunction with the Project, including but not limited to City and Department of Natural Resources approval, prior to starting the Project.
4.4 Landowner agrees to allow the District access to the Project area for evaluation and promotion of the Project. The Landowner agrees to make the site available as a demonstration site to the general public at the reasonable request of the District.
4.5 Landowner will act in all respects as an independent contractor under this Agreement and will be solely responsible for performance of services required hereunder as well as the means and manner of performance thereof. The District will not be an employer, partner, or co-venturer with Landowner for any purpose. Nothing herein authorizes Landowner to act as an agent or representative of the District for any purpose whatsoever.
4.6 Landowner shall indemnify, defend and hold the District and its agents, employees, officers and contractors, harmless from all claims made by Landowner and/or third parties for damage or loss sustained or costs incurred, including but not limited to District staff, engineering and attorneys fees, in connection with or arising out of the issuance of and/or acceptance and payment by the District of funds pursuant to this cost-

share, construction of the Project, or this agreement.
4.7 The District shall have no obligation to the Landowner, specifically, the District shall not need to restore the land to its original condition upon expiration or termination of this Agreement.

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

Tina Carstens

District Administrator

Date 03/31/16

2665 Noel Drive

Little Canada, MN 55117

LANDOWNERS

Mark Burch

Print Name MARK BURCH PWD/CE

_____

Print Name _____

_____

Print Name _____

Date _____

Property Address

_____

_____

Birch Lake Shoreland Restoration Project
Maintenance Agreement

This agreement is made the 13 day of December, 2011, by and between the Vadnais Lake Area Water Management Organization, (hereinafter "VLAWMO") and the City of White Bear Lake, to maintain the phase 2 shoreline restoration (Project) on City of White Bear Lake park property along the north shore of Birch Lake.

1. BACKGROUND
   - 1.1 This Project was identified in the Birch Lake Sustainable Lake Management Plan as a cost-effective site to enhance protection of the lake, treat stormwater, and provide wildlife habitat.
   - 1.2 The WMO has included in its annual budget funds to cost-share on approved Projects to implement best management practices (BMP's) for stormwater within the watershed boundaries.
   - 1.3 The City of White Bear Lake has pledged $2000 toward the Project installation. The Birch Lake Improvement District (BLID) has also pledged funding from its Star Lake Award toward the Project.
   - 1.4 Approximately 50% cost-share matching funds or $10,000 will be provided by the State of Minnesota Clean Water Fund grant as administered by the MN Department of Natural Resources for installation and construction.
   - 1.5 The WMO funding will pay for the remaining funds needed to pay the cost of materials, contracted labor and other expenses incurred by the Project as identified below.

2. PROJECT
   - 2.1 The Project will be constructed per the general design and plans attached as Attachment A. Substantive variations on the design will be discussed with the City of White Bear Lake prior to implementation.
   - 2.2 Any additional park benches or associated grading will be the responsibility of the Landowner.
   - 2.3 VLAWMO shall secure a responsible contractor, and the appropriate permits.
   - 2.4 The Project shall be completed within one year of commencement of construction.
   - 2.5 The City of White Bear Lake and the VLAWMO will consider educational signage, which if deemed acceptable, will be installed by the WMO.
   - 2.6 Representatives of the City of White Bear Lake or the BLID who wish to take part in the installation of the Project should contact VLAWMO for opportunities. VLAWMO considers the potential for education to be an important deliverable of this project.

3. MAINTENANCE
   - 3.1 The City of White Bear and the VLAWMO shall provide for shoreline restoration area maintenance the first 10 years by contributing to a Maintenance Fund annually. This

maintenance may take the form of weeding, plant replacement, additional mulch, cleaning of the catch basin or other tasks necessary to maintain the maximum function and aesthetic value of the project. The amount of this contribution will be collected annually based on current and anticipated maintenance needs. The anticipated costs for 2012 – 2022 are as below. Minor plant replacement or other materials costs are anticipated. Major maintenance, beyond the costs identified below, would need to be addressed separately by the partners.

Years	Landowner / year	WMO / year	Total / year	BLID in-kind
2012 - 2013	$500	$500	$1000	16 hrs/$200
2014 - 2022	$500	$500	$1000	8 hrs / $100

3.2 The City of White Bear Lake and VLAWMO will partner on some maintenance activities through in-house efforts.

3.3 VLAWMO anticipates offering a stewardship program to the BLID and the greater community to assist with monitoring the shoreline for erosion, invasive species or other problems as wells as weed removal or other maintenance projects. Educational benefits and products are anticipated

3.4 VLAWMO shall act as administrator of the Maintenance Fund, determining needed work and arranging for it to be done. The administrator will advise representatives of the Landowner in maintenance tasks.

3.5 The partnership of the Landowner and the WMO or their successors shall maintain the Project for a period of ten (10) years, including the establishment period identified in 3.1 above.

3.6 Maintenance or other terms of this Agreement may be evaluated and modified as need during its lifetime.

4. GENERAL TERMS

4.1 This Agreement shall remain in effect unless cancelled by mutual agreement or in accordance with Section 4.2. This Agreement shall expire if the Project is not completed pursuant to the schedule in Attachment A as described by Sections 2.1

4.2 If weather or other conditions beyond the control of the WMO do not permit the completion of this Project within one year after approval, this Agreement may be amended, by mutual written consent of the parties, to reschedule the Project and funding.

4.3 Landowner agrees to allow the WMO access to the Project area for evaluation and maintenance and to allow the WMO to take pictures to use for public promotion of the WMO program.

4.4 Nothing herein authorizes City of White Bear Lake to act as an agent or representative of VLAWMO for any purpose whatsoever.

4.5 The City of White Bear agrees to notify VLAWMO if the property is sold, so that the new owner may be contacted by VLAWMO to explain to the landowner the purpose the project.

4.6 The City of White Bear Lake shall indemnify, defend and hold the WMO and its agents, employees, officers and contractors harmless from all claims made by City of White Bear Lake and/or third parties for damage or loss sustained or costs incurred, including but not limited to VLAWMO staff, engineering and attorneys fees, in connection with or arising out of the installation of this Project or this agreement.

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

Stephanie Stadsvaag

WMO Administrator

Date: 12-26-11

City of White Bear Lake

City Manager

Date: 12/14/11

Whitaker Pond File

Agreement PW2009-19
October 13, 2009

RAMSEY COUNTY
COOPERATIVE AGREEMENT
WITH THE VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION, CITY OF WHITE BEAR LAKE, AND WHITE BEAR TOWNSHIP

Agreement between
County of Ramsey,
Vadnais Lake Area Water
Management Organization, City of White Bear
Lake, and White Bear Township

Whitaker Pond Improvement Project; Ongoing Operation and Maintenance Activities; and Cost Share

Attachment:
Exhibit A -- Location Map

THIS AGREEMENT, by and between the Vadnais Lake Area Water Management Organization, hereinafter referred to as "VLAWMO", White Bear Township, hereinafter referred to as "Town", City of White Bear Lake, hereinafter referred to as "City", and Ramsey County, a political subdivision of the State of Minnesota, hereinafter referred to as "County";

WITNESSETH:

WHEREAS, the County, in cooperation with the City and Town, reconstructed Highway 96 between April 1996 and April 1997; and

WHEREAS, Whitaker Pond was constructed as part of the project to improve the quality of storm water runoff from approximately 11 acres of Highway 96 right-of-way, and

WHEREAS, Whitaker Pond receives storm water from a total watershed area of about 662 acres comprised of mixed residential, and limited business/commercial, land uses, within the City (98%) and Town (2%); and

WHEREAS, maintenance activities and responsibilities related to Whitaker Pond were not specified in project agreements between the County and City (No. 95010) or County and Town (No. 95006); and

WHEREAS, major maintenance activities have not been completed in Whitaker Pond since its construction and the County, City and Town agree are needed; and

WHEREAS, VLAWMO in 2008 completed a consultant evaluation of the current effectiveness of Whitaker Pond related to improving water quality, and a feasibility study to assess maintenance options, contamination monitoring and disposal requirements for excavated pond improvements, as well as other possible design improvements to Whitaker Pond; and

WHEREAS, VLAWMO in 2009 convened meetings with the County, City, and Town, collectively described as project "Stakeholders", to refine the scope of maintenance activities and other improvements for Whitaker Pond, as well as identify an appropriate cost distribution approach; and

WHEREAS, Stakeholders agreed that the scope of the current project, called the Whitaker Pond Improvement Project, should include removal of approximately 3,000 Cubic Yards of sediments from Whitaker Pond, regrading and repair of the outlet berm and weir structure, excavation of an upstream forebay to retain sediment upstream of Whitaker Pond, construction of an access road to the forebay for future maintenance, sand and iron filing filter socks to remove a portion of dissolved pollutants from storm water flowing through the outlet weir, as well as habitat improvements; and

WHEREAS, the estimated cost for the Whitaker Pond Improvement Project, including engineering costs, is $248,390; and

WHEREAS, VLAWMO has committed $130,000 for the Whitaker Pond Improvement Project including a $30,000 grant from the Upper Mississippi River Source Water Protection Project (UMRSWPP); and

WHEREAS, Stakeholders agreed that the cost distribution for the Whitaker Pond Improvement Project and future routine maintenance is 53% County, 46% City and 1% Town, based on the proportion of Whitaker Pond permanent pool volume (6.4 Acre-Ft) needed to treat the Highway 96 right-of-way area (3.4 Acre-Ft) and the remainder determined by relative contributing area within the City and Town; and

WHEREAS, ongoing inspection and minor maintenance of Whitaker Pond will be necessary on an annual basis, including cleaning and minor repair of the outlet weir structure, monitoring of the amount of sediment retained in the forebay and Whitaker Pond, sampling the sediment retained in the forebay and possible measurement of pollutant concentrations per the Minnesota Pollution Control Agency publication, "Managing Dredge Materials in the State of Minnesota (October 2007)", or current or future applicable MPCA regulations, and periodic removal of accumulated sediment from the forebay to restore its capacity to remove pollutants from storm water; and

WHEREAS, major maintenance activity may be required on an estimated ten-year or more basis, including major repair or replacement of the weir structure, sampling the sediment retained in Whitaker Pond and possible measurement of pollutant concentrations per the Minnesota Pollution Control Agency publication, "Managing Dredge Materials in the State of Minnesota (October 2007)", or current or future applicable MPCA regulations, removal of accumulated sediment from Whitaker Pond, and possible disposal of contaminated sediments from either the forebay or Whitaker Pond according to current or future applicable MPCA regulations; and

WHEREAS, VLAWMO added habitat elements, sand and iron filing filter socks at the weir outlet for the purpose of removing a portion of dissolved storm water pollutants, and a forebay to facilitate maintenance to the Whitaker Pond Improvement Project; and

WHEREAS, VLAWMO is responsible for evaluating the effectiveness of Whitaker Pond and associated elements in improving water quality of storm water following implementation of the Whitaker Pond Improvement Project to meet current or future MPCA regulations related to Environmental Protection Agency (EPA) Impaired Waters and Total Maximum Daily Load (TMDL) programs; and

WHEREAS, this Agreement has been prepared to establish the cost participation and responsibilities of the County, VLAWMO, City, and Town for the Whitaker Pond Improvement Project and operation and maintenance activities for Whitaker Pond and associated elements;

NOW THEREFORE BE IT MUTUALLY AGREED AS FOLLOWS:

1. The County, City, Town and VLAWMO shall each identify a designated project representative for the Whitaker Pond Improvement Project and for ongoing communication related to minor or future major maintenance work.

2. VLAWMO shall prepare construction plans, specifications and bid documents for the Whitaker Pond Improvement Project and distribute these documents for review to the designated project representative for the County, City and Town.

3. VLAWMO shall advertise the project and receive bids for the Whitaker Pond Improvement Project.

4. VLAWMO shall distribute a summary of bids received, and recommendation for contract award, to the County, City and Town and award the construction contract for the Whitaker Pond Improvement Project upon receipt of written concurrence from the designated project representatives for the County, City and Town.

5. VLAWMO shall administer the construction contract for the Whitaker Pond Improvement Project including authorization to begin work, construction inspection, approval of change orders, certification of work completed and partial and final payments to the contractor.

6. VLAWMO shall notify the designated project representative for the County, City and Town of any change order. Designated project representatives shall have authority to approve or modify change orders that increase the contract amount by $10,000 or less. Contract increases above $10,000 shall be independently approved by the County, City, Town and VLAWMO. Costs of change orders shall be borne by project partners using the same percentages utilized in the base contract: VLAWMO 40%; County 32%, City 27% and Town 1%.

7. Repair of damage to Whitaker Street or other haul streets used in the project shall be responsibility of the Contractor and included in the performance bond for the project. The Stakeholder with affected road surface will oversee and be responsible for accepting the repair work.

8. The construction window for the Whitaker Pond Improvement Project is anticipated to be January – February, 2010.

9. VLAWMO shall prepare invoices based on the total amount of the awarded construction contract plus total engineering costs for the Whitaker Pond Improvement Project and submit to the County, City and Town. The invoices will be determined from the total contract amount plus total engineering costs, less the total VLAWMO contribution of $130,000, and the

remainder distributed as County 53%, City 46% and Town 1%. The County, City and Town will not be invoiced until 2010.

10. The County, City and Town shall remit payment to VLAWMO for the Whitaker Pond Improvement Project within 30 days of receipt of the invoice.

11. VLAWMO shall prepare final invoices to include the total amount of the final construction contract amount based on actual construction quantities plus total engineering costs for the Whitaker Pond Improvement Project and submit to the County, City and Town. The final invoices will be determined from the total final contract amount plus total engineering costs, less the VLAWMO contribution of $130,000, and the remainder distributed as County 53%, City 46% and Town 1%.

12. The County, City and Town shall remit final payment to VLAWMO for the Whitaker Pond Improvement Project within 30 days of receipt of the invoice. VLAWMO shall reimburse the County, City and Town if the sum of the final contract amount plus total engineering costs is less than the sum of the awarded contract amount plus total engineering costs.

13. The County shall be responsible for annual inspection of the Whitaker Pond outlet weir and berm. The County shall provide a copy of the inspection report to the other Stakeholders for review. The report shall summarize needed work, the timeline and estimated cost. The City and Town shall provide a prompt response to the County approving the proposed work plan and costs or proposing an alternative approach. The County shall perform all routine maintenance related to the outlet weir structure and berm, including such things as removal of litter and vegetation which may substantially block water flow through the weir, the repair of weir boards or the addition of riprap at the outlet berm, unless an alternative approach is jointly recommended by the Stakeholders.

14. The County shall be responsible for annual inspection of the forebay constructed as part of the Whitaker Pond Improvement Project. The County shall utilize its established pond inspection protocol. The County shall provide a copy of the inspection report to the other Stakeholders for review. If the Stakeholders agree that the forebay requires maintenance excavation, the County shall follow the protocol contained within the Minnesota Pollution Control Agency publication, "Managing Dredge Materials in the State of Minnesota (October 2007)", or current or future applicable MPCA regulations, for sediment sampling and measurement of sediment pollutant concentrations, if required. The County shall summarize the sediment sampling and sediment pollutant analysis, if any, and provide a copy of the report to the other Stakeholders for review. If the sediment evaluation and sediment pollutant concentration measurements, if required, indicate the sediment may be disposed of without restriction by current or future applicable MPCA regulations, the County shall provide a cost estimate to the other Stakeholders for removal of excess sediment from the forebay as a routine maintenance activity. The City and Town shall provide a prompt response to the County approving the proposed work plan and estimated cost or proposing an alternative approach. The County may complete this work with its own maintenance staff using County-owned or rental equipment or contract for the work. If the sediment evaluation and required pollutant concentration measurements, if any, indicate that current or future applicable MPCA criteria for unrestricted disposal of the sediment are exceeded, sediment removal is considered to be major maintenance work (see item 20 below).

15. VLAWMO shall be responsible for annual inspection of the habitat elements and the sand and iron filing filter socks implemented as part of the Whitaker Pond Improvement Project. VLAWMO shall perform all routine maintenance related to the habitat and sand and iron filing filter sock elements.

16. The County shall summarize on an annual basis all costs associated with routine maintenance activities completed (as identified in items 13 and 14 above) and distribute to each Stakeholder for review. Eligible costs include contractor cost, inspection, maintenance or construction personnel, equipment, equipment rental, laboratory analysis, and materials. Documentation for the costs shall be provided per standard County accounting protocol. The total cost of routine maintenance work shall be divided as County 53%, City 46% and Town 1%. The County shall prepare invoices according to this cost-share distribution and submit them to the City and Town.

17. The City and Town shall remit payment to the County for eligible routine maintenance costs (as identified in item 16 above) within 30 days of receipt of the invoice. The City and Town shall notify the County of any disputed charges within this same 30-day period and make partial payment of charges not in dispute.

18. The County shall be responsible for the inspection of Whitaker Pond every 5 years to determine the need to remove accumulated sediment. The County shall provide a copy of the inspection report to the other Stakeholder representatives for review. Sediment sampling and the measurement of sediment pollutant concentrations, if required, as well as the removal of accumulated sediment from Whitaker Pond shall be considered major maintenance work (see item 20 below).

19. VLAWMO shall evaluate the overall effectiveness of Whitaker Pond and associated elements in improving water quality of storm water flowing from the Highway 96 right-of-way and the 662-acre contributing watershed following implementation of the Whitaker Pond Improvement Project.

20. VLAWMO shall coordinate major maintenance work for Whitaker Pond and associated elements. Examples of major maintenance work include dredging of sediment to restore Whitaker Pond's capacity for pollutant removal; disposal of sediments excavated from Whitaker Pond or the associated forebay with sediment pollutant concentrations that exceed current or future applicable MPCA criteria for unrestricted disposal of the sediment; replacement or modification of the outlet weir structure; and other possible improvements to meet current or future MPCA regulations related to EPA's Impaired Waters and Total Maximum Daily Load (TMDL) programs. VLAWMO shall convene a meeting of Stakeholders to discuss the effectiveness and operating condition of Whitaker Pond. The Stakeholders shall agree upon the need for major maintenance work. A separate cooperative agreement shall be executed by Stakeholders for future major maintenance work related to Whitaker Pond and associated elements.

21. The City and Town, as property owners, grant to each other and the County and VLAWMO all necessary access to the outlet weir structure and associated elements of Whitaker Pond for performance of inspection and maintenance activities.

22. Ramsey County agrees to hold harmless, indemnify, and defend VLAWMO (including its board members, officers, and employees), City (including its officers and employees), and Town (including its board members, officers, and employees) from all claims, losses, or damages which they, or any of them shall be legally obligated to pay as a consequence of any act or omission, any intentional tort, or any violation of applicable law with respect to proposed operation and maintenance of Whitaker Pond and associated elements and services thereto by the County (including its officers, employees, agents and sub consultants). VLAWMO, City and Town individually agree to hold harmless, indemnify, and defend Ramsey County (including its board members, officers, and employees) from all claims, losses, or damages which they, or any of them shall be legally obligated to pay as a consequence of any act or omission, any intentional tort, or any violation of applicable law with respect to proposed operation and maintenance of Whitaker Pond and associated elements and services thereto, respectively, by VLAWMO (including its officers, employees, agents and sub-consultants), City (including its officers and employees), or Town (including its board members, officers, and employees)

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed.

RAMSEY COUNTY

Julie Kleinschmidt 12/7/09
Julie Kleinschmidt, County Manager Date

RECOMMENDED FOR APPROVAL:

11/20/09
Kenneth Haider, P.E. Date
Director and County Engineer

~~Harry McPeak~~ Gary A. Davis 12/4/09 Date
Assistant County Attorney

N/A
Lee Mehrkens, Director Date
Office of Finance

VADNAIS LAKE AREA WATER
MANAGEMENT ORGANIZATION

10-21-09

Marc Johannsen, Chair Date

10-23-09

William Mample , Secretary/Treasurer Date

CITY OF WHITE BEAR LAKE

Paul Auger, Mayor Date

Mark Sather, City Manager Date 11/12/09

RECOMMENDED FOR APPROVAL:

Mark Burch, City Engineer Date 11/12/09

WHITE BEAR TOWNSHIP

By: _____ 10-19-09
Richard A. Sand, Chair Date

ATTEST:

By: _____ 10/19/09
William Short, Town Clerk Date

Site Map- Whitaker Pond

MEMORANDUM OF AGREEMENT

East Goose Lake Boat Launch Access

This Memorandum of Agreement ("MOA") is made and entered into by and between the City of White Bear Lake ("City") and the Vadnais Lake Area Water Management Organization ("VLAWMO") for the construction, operation, and maintenance of a limited access boat launch on East Goose Lake.

RECITALS

A. The two entities share the water quality goals and ecological goals for East Goose Lake and wish to facilitate access for VLAWMO to conduct its necessary partnership-based water quality management activities. Water quality management activities and programs for East Goose Lake are identified as a priority in both the VLAWMO Watershed Management Plan and City Local Surface Water Management Plan. East Goose Lake is also listed for nutrient impairment on the State's Impaired Waters list and therefore has been incorporated into VLAWMO's 10-year capital improvement program and in the City's requirements under its MS4 permit.

B. The City owns the right-of-way adjacent to East Goose Lake ("Lake") at Highland Avenue as shown in Exhibit A ("ROW").

C. In order to allow for reasonable Lake access by VLAWMO, VLAWMO must undertake grading work and construct a boat launch in the ROW ("Project").

D. The boat launch ("Launch") is intended for use by VLAWMO and, if needed, by the City. The Launch is not intended to be operated as a public access to the Lake.

E. The City is willing to grant VLAWMO and its contractors a license over the ROW to construct the Project and to operate the Launch in accordance with the terms and conditions of this MOA.

AGREEMENT

The parties to this MOA hereby agree as follows:

1. Grant of License. The City hereby grants VLAWMO a license over the portion of ROW shown on the attached Exhibit A for the entire term of this MOA to allow VLAWMO to construct, operate, and maintain a Launch to facilitate access to the Lake by VLAWMO, its employees, agents, and contractors. Access to the ROW will take place via Highland Avenue. Construction staging at the ROW will be located at the end of Highland Avenue as identified in Exhibit A.

2. Responsibility for Design Engineering.

2.1 VLAWMO shall prepare basic plans and distribute these documents to the City for review.

2.2 The City will promptly give VLAWMO any information in its possession regarding subsurface structures, utilities or other physical features within the Project area relevant to construction of the Project.

2.3 VLAWMO shall prepare a permit application for work in the City's right-of-way. The City will cooperate with VLAWMO in securing permits and approvals in its status as landowner, and will timely process any permit or approval that it requires. The City will not charge a fee for any such permit or approval.

3. Procurement and Award of Contract.

3.1 VLAWMO shall be responsible for complying with all applicable laws related to letting the contract to construct the Project.

3.2 VLAWMO shall distribute a summary of construction proposals it receives and its recommendation for contract award to the City, and award the construction contract upon concurrence from VLAWMO and the City.

3.3 VLAWMO will require its contractor to conform to all laws in performing the Project. The VLAWMO will require that the City be named as an additional insured under the contractor's commercial general liability insurance for the Project.

4. Responsibility for Construction.

4.1 VLAWMO shall administer the construction contract for the Project, including authorization to begin work, construction inspection, approval of change orders, certification of work completed and partial and final payments to the contractor.

4.2 VLAWMO shall comply with local, state and federal standards for all construction activities, erosion control, restoration, and permits.

4.3 Construction access and staging will be allowed at the ROW as identified in Exhibit A.

4.4 The license granted herein allows access to the ROW by VLAWMO and its contractors for construction of the Project including, but not limited to, land disturbance, excavation, grading, filling, recontouring of adjacent land, seeding and planting, staging, stockpiling, installations to protect work-in-progress and public safety, and all other operations convenient or necessary for construction of the Launch. Any type of equipment deemed necessary by VLAMWO to complete the construction work will be granted access.

4.5 VLAWMO will notify the City a minimum of 72 hours prior to construction.

4.6 The City will take the lead with any necessary barricades for construction activities.

4.7 The City agrees to work in good faith with VLAWMO to accommodate reasonable adjustments to the construction plans, means, methods, and schedule as necessary.

5. Project Construction Costs.

5.1 VLAWMO will assume all costs for design engineering of the Project, including permits and permit fees.

5.2 VLAWMO will be responsible for all construction project costs, with the exception of spoil hauling and tree removal/cleaning and grubbing which is the City's costs.

6. Use and Maintenance Responsibility.

6.1 The license granted herein allows VLAWMO the right to unlimited use of the Launch for its purposes, including to launch equipment and vessels to conduct any and all water quality management activities, research and data collection, and monitoring and related lake management work.

6.2 VLAWMO's use of the ROW will be confined to the area labeled on the site plan in the attached Exhibit A.

6.3 The parties will coordinate so VLAWMO may accomplish its purposes with the least disruption to normal use of the ROW.

6.4 VLAWMO shall be responsible for routine maintenance of the Launch. VLAWMO shall coordinate its maintenance activities with the City.

6.5 The City agrees to allow for the installation of electrical service facilities and or lines on or thru the ROW if VLAWMO needs to install electrical service for any water quality related activity or device on the Lake. VLAWMO will work with the City on the location of lines and any possible equipment or electrical equipment that needs to be permanently or temporary kept or constructed on site.

6.6 VLAWMO's Administrator and the City Engineer are the designated representatives of the parties for all coordination and notice under this MOA.

7. Term and Termination. This MOA is effective when fully executed by both parties. The parties intend this MOA to have an initial term of 10 years, and shall automatically renew for successive 10 year terms unless it is terminated as provided herein. The parties may

mutually agree to terminate this MOA at anytime. The City may terminate this MOA upon 180 days written notice to VLAWMO if it determines VLAWMO's use of the Launch unreasonably interferes with the City's use, or planned use, of the ROW.

8. Indemnification. VLAWMO agrees to indemnify, hold harmless and defend the City, its officials, agents, and employees against any and all liability, losses, costs, damages, expenses, claims or actions, including reasonable attorney's fees, which the City, its officials, agents, or employees may hereafter sustain, incur or be required to pay, arising out of and to the extent resulting from any act or omission of the VLAWMO, its officials, agents or employees, or contractors in the execution, performance, or failure to adequately perform the VLAWMO's obligations under this MOA including, but not limited to, the imposition of any lien against the City for labor or materials for the Project, any action or inaction of VLAWMO or its contractor in the performance of the Project, or any injury, loss, or damage arising from the Project or VLAWMO's use of the Launch. Nothing in this MOA is a waiver by City or VLAWMO of any immunity, defense or liability limit provided by law or and nothing creates a right in any third party against the City or VLAWMO

9. Modifications. The terms of this agreement may be changed only by written agreement of the parties signed by duly authorized officers.

The parties have entered into this MOA effective as the date of the last party to execute it.

City of White Bear Lake Organization

Jo Emerson
Mayor

Ellen Hiniker
City Manager

Date: July 14, 2020

Vadnais Lake Water Management

Chairperson

Phil Belfiore
Administrator

Date: 7/16/20

RAMSEY COUNTY
COOPERATIVE AGREEMENT
WITH THE CITY OF WHITE BEAR LAKE

Agreement between
the County of Ramsey
and the City of White Bear Lake

Ramsey County Account P3149
SAP 62-612-14
MSAP174-020-19

Reconstruction of County Road F
between Highway 61 and White Bear Avenue

Attachments:
Exhibit A -- Estimated Cost Participation Summary

THIS AGREEMENT, by and between the City of White Bear Lake, Minnesota, a municipal corporation, hereinafter referred to as the "City," and Ramsey County, a political subdivision of the State of Minnesota, hereinafter referred to as the "County";

WITNESSETH:

WHEREAS, the County and the City desire to reconstruct County Road F between Highway 61 and McKnight Road; and

WHEREAS, this segment of County Road F has been designated by the Minnesota Department of Transportation as eligible for funds from the County State Aid Highway Account; and

WHEREAS, this segment of County Road F has been designated as State Aid Project 62-612-14; and

WHEREAS, the subject road segment is located within the City of White Bear Lake; and

WHEREAS, plans for S.A.P. 62-612-14 showing proposed alignment, profiles, grades and cross sections for the improvement of County Road F, as defined herein have been presented to the City; and

WHEREAS, the project includes, in addition to other things, grading, paving, concrete curb and gutters, storm sewer, bituminous path, turf establishment, and utility adjustments and betterments; and

WHEREAS, the grading provisions require acquisition of certain right of way and temporary construction and slope easements prior to construction; and

WHEREAS, the Minnesota Department of Transportation has determined the storm sewer is eligible for County State Aid Highway funds.

NOW, THEREFORE, IT IS HEREBY MUTUALLY AGREED AS FOLLOWS:

1. The County shall prepare the necessary plans, specifications and proposals. Cost of project revisions after completion of plans and specifications will be paid for by the party requesting the revisions or as defined by supplemental agreement. Revisions must be consistent with State Aid requirements and are subject to County approval.

2. The County shall take bids and award a contract for the construction of this subject project.

3. With the exception of corner easements acquisitions at the intersections of County Road F and White Bear Avenue, Hazel Street and McKnight Road, the City shall administer the acquisition of all rights of way and easements required for the construction of the project in accordance with State Aid requirements and all applicable Federal and State Statutes. The City shall provide all compensation to property owners for acquired rights of way and easements. Properly executed easement documents, or documentation establishing rights of possession via eminent domain proceedings, shall be submitted to the County prior to bid advertisement. In the event the City requests work not included within the original plans, the City will be responsible for costs for any additional rights of way required. Corner easements at the three referenced intersections shall be acquired and paid for by Ramsey County.

4. All acquired road rights of way and temporary easements will be in the name of the County, and parking and other regulations will be controlled by the County. Any right of way acquisition for which the City is responsible, which cannot be negotiated, will be acquired through eminent domain proceedings by the City, or eliminated through design revisions, as determined most appropriate by the County. Right of way acquisition for which the County is responsible, which cannot be negotiated, will be acquired through eminent domain proceedings by the County, or eliminated through design revisions, as determined most appropriate by the County.

5. The County and City shall participate in the costs of construction in accordance with the Estimated Cost Participation Summary, attached as Exhibit A and incorporated herein, except as modified below.

6. The County and City shall participate in the costs of storm sewer construction to the extent identified by the Mn/DOT Hydraulics Engineer's Memorandum on storm sewer cost participation percentages.

7. Upon completion of the project the County shall own and maintain all storm sewer catch basins, leads and outfalls which are located within County road rights of way and directly serve the paved portion of County Road F or intersecting County roadways. The main trunk storm sewer in the portion of County Road F within the City shall be owned and maintained by the City. It is acknowledged that the County and City of White Bear Lake support the construction of stormwater treatment facilities for the purpose of treating drainage from within the project area. It is agreed that the best management practice at this time includes rainwater gardens and catch basin sumps. It is further acknowledged that rainwater gardens and sumps serve a watershed function. Maintenance and operations costs associated with both features will be shared by Ramsey County and the City of White Bear Lake. Maintenance shares shall be commensurate with each agencie's respective contributing watershed areas, weighted to reflect an appropriate runoff coeficient for the type of development and/or land use present. It is agreed the percentage split of 49.6% County and 50.4%

City shall be the basis for sharing cost incurred by either party in the performance of operations and maintenance activities. Either party may perform work subject to notification to and concurrence from the other party.

8. The City will coordinate and manage replacement of private property entrances beyond that necessitated by roadway construction – including contacting and meeting with property owners to determine the limits and layout for each drive replacement. The County will include appropriate items in the plans and bid documents to accommodate the work and will coordinate contractor replacement work based on a listing of participating properties and layout drawings provided by the City. The City will pay the County directly for all construction costs incurred for this work and be responsible for collection of fees from participating property owners.

9. Any utilities or facilities modified or added to those provisions presently made in the plans and specifications may be incorporated in the construction contract by supplemental agreement and shall be paid for as specified in the supplemental agreement. Design and construction engineering fees for additions shall be negotiated at the time of supplemental agreement preparation.

10. The City shall reimburse the County for engineering costs incurred on its share of project design and administration, as set forth in Exhibit A, as a preliminary engineering fee. Said fee shall be 10% of item costs for which the City is responsible for, as determined at the time of contract award, with the exception of those items related to utility betterments and private drive replacement. The preliminary engineering fee borne by the City on utility betterments shall be 2% of construction costs, as determined at the time of contract award.

11. The City shall reimburse the County for engineering costs incurred on its share of project construction, as set forth in Exhibit A, as a construction engineering fee. Said fee shall be 10% of item costs for which the City is responsible for, as determined upon completion of the project, with the exception of those items related to utility betterments and private drive replacement. The construction engineering fee borne by the City on utility betterments and private drive replacement shall be 2% of construction costs, as determined by final contract amounts.

12. Throughout project design and construction, the County shall prepare partial cost and payment estimates for preliminary engineering fees, construction costs, and construction engineering fees and, at appropriate intervals, notify the City of its share of the costs for the City's items of work. City shall pay its share of engineering fees and construction costs within twenty one calendar days of receipt of County invoice.

13. The City shall pay to the County all additional remaining costs for its share of the work upon notification by the County of the final amounts due to the contractor.

14. All payments by the City shall be to the Treasurer of Ramsey County, Minnesota.

15. City and the County agree to indemnify each other and hold each other harmless from any and all claims, causes of action, lawsuits, judgments, charges, demands, costs and expenses including, but not limited to, interest involved therein and attorneys' fees and costs and expenses connected therewith, arising out of or resulting from the failure of either party to satisfy the provisions of this agreement or for damages caused to third parties as a result of the manner in which the City or the County perform or fail to perform duties imposed on each party by the terms of this agreement.

Nothing herein will constitute a waiver of limitations of liability available at Minnesota Statute Chapter 466 and other applicable law.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed.

CITY OF WHITE BEAR LAKE, MINNESOTA

By: _____

Its Mayor

By: _____

Its City Manager

Date: 3/25/03

THE COUNTY OF RAMSEY

By: _____
Jim McDonough, Chair
Ramsey County Board of Commissioners

_____
Bonnie C. Jackelen 2003-188
Chief Clerk - County Board

Date: 6/10/03

Approved as to Form:

_____
Assistant County Attorney

_____
Risk Management

_____
Recommended for Approval:

_____
Kenneth Haider, P.E.
Director and County Engineer

EXHIBIT A

GROUP 1 - ENGINEERS ESTIMATE & COST PARTICIPATION						
PROJECT: COUNTY ROAD F - T.H. 61 TO MCKNIGHT ROAD.					GROUP 1 S.A.P. 62-612-14	
DATE: December 5, 2002						
ITEM NO.	ITEM	UNIT	UNIT PRICE	TOTAL QUANTITY	GROUP 1 QUANTITY	AMOUNT
2021.501	MOBILIZATION	LS	$106,000.00	1.00	0.51	$54,060.00
2031.501	FIELD OFFICE, TYPE D	EACH	$5,000.00	1.00	0.51	$2,550.00
2101.502	CLEARING	TREE	$500.00	15.00	15.00	$7,500.00
2101.507	GRUBBING	TREE	$500.00	15.00	15.00	$7,500.00
2102.501	PAVEMENT MARKING REMOVAL	SF	$1.50	150.00	150.00	$225.00
2104.501	REMOVE RCP PIPE SEWER (STORM) 12 INCH	LF	$7.00	510.00	510.00	$3,570.00
2104.501	REMOVE RCP PIPE SEWER (STORM) 15 INCH	LF	$7.00	75.00	75.00	$525.00
2104.501	REMOVE RCP PIPE SEWER (STORM) 24 INCH	LF	$7.00	2935.00	2935.00	$20,545.00
2104.501	REMOVE RCP PIPE SEWER (STORM) 27 INCH	LF	$7.00	480.00	480.00	$3,360.00
2104.501	REMOVE CMP PIPE CULVERTS AND APRONS	LF	$5.00	725.00	725.00	$3,625.00
2104.501	REMOVE 6 INCH CIP WATERMAIN	LF	$15.00	107.00	107.00	$1,605.00
2104.501	REMOVE CURB & GUTTER	LF	$3.00	835.00	835.00	$2,505.00
2104.501	REMOVE WOOD TIMBERS	LF	$5.00	82.00	82.00	$410.00
2104.505	REMOVE CONCRETE PAVEMENT	SY	$6.00	214.00	214.00	$1,284.00
2104.505	REMOVE CONCRETE WALK	SY	$10.00	88.00	88.00	$880.00
2104.505	REMOVE BITUMINOUS PAVEMENT	SY	$1.50	17562.00	17562.00	$26,343.00
2104.505	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	SY	$4.00	3320.00	1320.00	$5,280.00
2104.505	REMOVE CONCRETE DRIVEWAY	SY	$10.00	204.00	204.00	$2,040.00
2104.507	REMOVE RIP RAP	CY	$20.00	10.00	10.00	$200.00
2104.509	REMOVE CATCH BASIN	EACH	$300.00	24.00	24.00	$7,200.00
2104.509	REMOVE STORM MANHOLE	EACH	$500.00	4.00	4.00	$2,000.00
2104.509	REMOVE SIGNAL AND FOUNDATION	EACH	$500.00	6.00	6.00	$3,000.00
2104.509	REMOVE HANDHOLE	EACH	$200.00	3.00	3.00	$600.00
2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	$10.00	360.00	360.00	$3,600.00
2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	$2.25	1755.00	1755.00	$3,948.75
2104.521	SALVAGE WOOD FENCE	LF	$20.00	215.00	215.00	$4,300.00
2104.523	SALVAGE SIGN TYPE C	EACH	$30.00	34.00	34.00	$1,020.00
2104.523	SALVAGE SIGN TYPE D	EACH	$50.00	3.00	3.00	$150.00
2104.523	SALVAGE MAST ARM	EACH	$500.00	7.00	7.00	$3,500.00
2104.523	SALVAGE SIGNAL CABINET	EACH	$200.00	1.00	1.00	$200.00
2104.523	SALVAGE LIGHT POLE AND BASE	EACH	$300.00	12.00	12.00	$3,600.00
2104.523	SALVAGE MARQUEE SIGN	EACH	$200.00	1.00	1.00	$200.00
2104.601	HAUL SALVAGED MATERIAL	LS	$1,000.00	1.00	1.00	$1,000.00
2105.501	COMMON EXCAVATION (P)	CY	$5.00	22871.00	22871.00	$114,355.00
2105.522	SELECT GRANULAR BORROW (CV)	CY	$12.00	9425.00	5938.00	$71,256.00
2105.523	COMMON BORROW (LV)	CY	$7.00	1020.00	1020.00	$7,140.00
2105.525	TOPSOIL BORROW (LV)	CY	$7.00	745.00	745.00	$5,215.00
2123.61	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	$60.00	50.00	50.00	$3,000.00
2130.501	WATER	MGAL	$62,500.00	0.10	0.10	$6,250.00
2211.501	AGGREGATE BASE, CLASS 7	TON	$15.00	500.00	500.00	$7,500.00
2211.503	AGGREGATE BASE (CV), CLASS 7 (P)	CY	$16.00	4567.00	2877.00	$46,032.00
2232.501	MILL BITUMINOUS PAVEMENT	SY	$4.00	256.00	256.00	$1,024.00
2301.503	CONCRETE PAVEMENT PATCH (HE)	SY	$80.00	182.00	182.00	$14,560.00
2301.603	PERMANENT HEADER	LF	$50.00	120.00	120.00	$6,000.00
2331.604	BITUMINOUS DRIVEWAY (IN ROW)	SY	$21.50	1431.00	1431	$30,766.50
2350.501	TYPE MVWE35035B WEARING COURSE MIXTURE	TON	$40.00	2545.00	1603.00	$64,120.00
2350.502	TYPE MVNW350350B BINDER COURSE MIXTURE	TON	$36.50	2545.00	1603.00	$58,509.50
2350.502	TYPE LVNW35035B BASE COURSE MIXTURE	TON	$36.50	3816.00	2404.00	$87,746.00
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL	$1.20	2212.00	1394.00	$1,672.80
2504.602	ADJUST CURB STOP BOX	EACH	$20.00	70.00	70.00	$1,400.00
2504.602	ADJUST WATERMAIN VALVE BOX	EACH	$50.00	9.00	9.00	$450.00
2504.602	POT HOLE WATER SERVICE	EACH	$150.00	30.00	30.00	$4,500.00
2504.602	LOWER WATER SERVICE	EACH	$600.00	20.00	20	$12,000.00
2504.602	INSTALL 8 INCH GATE VALVE	EACH	$1,200.00	2.00	2.00	$2,400.00
2504.602	RELOCATE HYDRANT AND GATE VALVE	EACH	$2,500.00	7.00	7.00	$17,500.00
2504.603	8 INCH DIP WATERMAIN DUCTILE IRON CL 52	LF	$40.00	107.00	107.00	$4,280.00
2504.604	3 INCH POLYSTYRENE INSULATION	SY	$10.00	500.00	500.00	$5,000.00
2504.608	CAST IRON FITTINGS	LB	$2.50	200.00	200.00	$500.00
2506.602	ADJUST CATCH BASIN	EACH	$200.00	2.00	2.00	$400.00
2506.602	ADJUST MANHOLE RING AND CASTING	EACH	$250.00	13.00	13.00	$3,250.00

2506.602	RECONSTRUCT SANITARY SEWER SERVICE DROP	EACH	$500.00	15.00	15.00	$7,500.00
2531.501	CONCRETE CURB & GUTTER DESIGN B612	LF	$8.00	70.00	70.00	$560.00
2531.507	6 INCH CONCRETE DRIVEWAY PAVEMENT (IN ROW	SY	$60.00	42.00	42.00	$2,520.00
2531.507	6 INCH CONCRETE DRIVEWAY APRON	SY	$45.00	548.00	548.00	$24,660.00
2540.602	FURNISH AND INSTALL MAILBOX AND SUPPORT	EACH	$60.00	80.00	80.00	$4,800.00
2540.602	CONSTRUCT SURVEY MONUMENT MANHOLE	EACH	$1,500.00	1.00	1.00	$1,500.00
2545.602	INSTALL SALVAGED LIGHT POLE	EACH	$500.00	12.00	12	$6,000.00
2554.603	WATER FILLED BARRIER	LF	$32.00	300.00	300	$9,600.00
2554.603	RELOCATE WATER FILLED BARRIER	LF	$10.00	300.00	300	$3,000.00
2557.603	INSTALL SALVAGED WOOD FENCE	LF	$15.00	215.00	215	$3,225.00
2563.601	TRAFFIC CONTROL	LS	$25,000.00	1.00	0.51	$12,750.00
2564.531	F&I SIGN PANEL TYPE C	SF	$22.00	247.78	247.78	$5,451.16
2564.602	PAVEMENT MESSAGE TYPE 1 (ONLY) EPOXY	EACH	$180.00	1.00	1	$180.00
2564.602	PAVEMENT MESSAGE TYPE 1 (RT ARROW) EPOXY	EACH	$110.00	1.00	1	$110.00
2564.602	INSTALL SIGN TYPE D	EACH	$100.00	4.00	4	$400.00
2564.603	4 INCH DOUBLE SOLID LINE YELLOW - EPOXY	LF	$3.00	695.00	695	$2,085.00
2564.603	4 INCH SOLID LINE WHITE - EPOXY	LF	$1.50	7785.00	7785	$11,677.50
2564.603	4 INCH BROKEN LINE WHITE - EPOXY	LF	$1.50	1000.00	1000	$1,500.00
2564.603	4 INCH BROKEN LINE YELLOW - EPOXY	LF	$1.50	130.00	130	$195.00
2564.618	CROSSWALK MARKING - EPOXY	SF	$3.00	1638.00	1638	$4,914.00
2565.511	FULL T ACT T CONTROL SIGNAL SYSTEM B	SIG SYS	$139,300.00	1.00	1	$139,300.00
2565.616	REVISE SIGNAL SYSTEM A	SIG SYS	$11,100.00	1.00	1	$11,100.00
2564.531	FURNISH AND INSTALL SIGN PANEL TYPE D	SF	$37.78	45.00	45.00	$1,700.10
2573.501	BALE CHECK	EACH	$10.00	50.00	50.00	$500.00
2573.502	SILT FENCE, TYPE HEAVY DUTY	LF	$10.00	80.00	80.00	$800.00
2573.602	ROCK CONSTRUCTION ENTRANCE	EACH	$1,000.00	6.00	6.00	$6,000.00
2575.505	SODDING, TYPE LAWN	SY	$4.50	6700.00	6700.00	$30,150.00
				TOTAL GROUP 1		**$1,047,330.31**

GROUP 2 - ENGINEERS ESTIMATE & COST PARTICIPATION						
					GROUP 2	
PROJECT:	COUNTY ROAD F - T.H. 61 TO MCKNIGHT ROAD.				25% S.A.P. 62-612-14	
					75% M.S.A.P. 174-020-19	
DATE:	December 5, 2002					
				TOTAL	GROUP2	
ITEM NO.	ITEM	UNIT	UNIT PRICE	QUANTITY	QUANTITY	AMOUNT
2021.501	MOBILIZATION	LS	$106,000.00	1.00	0.15	$15,900.00
2031.501	FIELD OFFICE, TYPE D	EACH	$5,000.00	1.00	0.15	$750.00
2105.522	SELECT GRANULAR BORROW (CV)	CY	$12.00	9425.00	3487.00	$41,844.00
2211.503	AGGREGATE BASE (CV), CLASS 7 (P)	CY	$16.00	4567.00	1690.00	$27,040.00
2350.501	TYPE MVWE35035B WEARING COURSE MIXTURE	TON	$40.00	2545.00	942.00	$37,680.00
2350.502	TYPE MVNW350350B BINDER COURSE MIXTURE	TON	$36.50	2545.00	942.00	$34,383.00
2350.502	TYPE LVNW35035B BASE COURSE MIXTURE	TON	$36.50	3816.00	1412.00	$51,538.00
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL	$1.20	2212.00	818.00	$981.60
2411.618	MODULAR BLOCK RETAINING WALL	SF	$25.00	722.00	722.00	$18,050.00
2502.521	4 INCH PVC PIPE	LF	$9.00	81.00	81.00	$729.00
2521.501	4 INCH CONCRETE WALK	SY	$1.35	20790.00	20790.00	$28,066.50
2531.501	CONCRETE CURB & GUTTER DESIGN B624	LF	$8.00	10228.00	10228.00	$81,824.00
2531.602	CONCRETE PEDESTRIAN RAMP TYPE A	EACH	$500.00	9.00	9.00	$4,500.00
2563.601	TRAFFIC CONTROL	LS	$25,000.00	1.00	0.15	$3,750.00
				TOTAL GROUP 2		$347,036.10
			25% S.A.P. 62-612-14			$86,759.03
			75% M.S.A.P. 174-020-19			$260,277.08
				TOTAL GROUP 2		$347,036.10

GROUP 3 - ENGINEERS ESTIMATE & COST PARTICIPATION						
					GROUP 3	
PROJECT:	COUNTY ROAD F - T.H. 61 TO MCKNIGHT ROAD.				75% S.A.P. 62-612-14	
					25% M.S.A.P. 174-020-19	
DATE:	December 5, 2002					
				TOTAL	GROUP3	
ITEM NO.	ITEM	UNIT	UNIT PRICE	QUANTITY	QUANTITY	AMOUNT
2021.501	MOBILIZATION	LS	$106,000.00	1.00	0.32	$33,920.00
2031.501	FIELD OFFICE, TYPE D	EACH	$5,000.00	1.00	0.32	$1,600.00
2105.603	WEEP TRENCH	LF	$9.00	651.00	651	$5,859.00
2451.607	TRENCH STABILIZATION ROCK	CY	$40.00	200.00	200	$8,000.00
2501.569	48" RC SAFETY APRON	EA	$1,000.00	1.00	1	$1,000.00
2502.521	8 INCH PVC PIPE	LF	$10.00	192.00	192	$1,920.00
2502.541	4 INCH PERF. PVC PIPE DRAIN	LF	$9.00	651.00	651	$5,859.00
2503.521	58 INCH SPAN RC PIPE-ARCH SEW. DES. 3006 CL IIIA	LF	$143.00	450.00	450	$64,350.00
2503.541	15 INCH RC PIPE SEWER DESIGN 3006 CL V	LF	$30.00	1253.00	1253	$37,590.00
2503.541	27 INCH RC PIPE SEWER DESIGN 3006 CL III	LF	$40.00	48.00	48	$1,920.00
2503.541	33 INCH RC PIPE SEWER DESIGN 3006 CL III	LF	$43.00	632.00	632	$27,176.00
2503.541	42 INCH RC PIPE SEWER DESIGN 3006 CL III	LF	$108.00	1928.00	1928	$208,224.00
2503.541	48 INCH RC PIPE SEWER DESIGN 3006 CL III	LF	$120.00	1951.00	1951	$234,120.00
2503.602	CONNECT TO EXISTING STORM SEWER	EACH	$750.00	3.00	3	$2,250.00
2506.501	CONSTRUCT DRAINAGE STRUCTURE DSGN 48-4020	LF	$150.00	33.58	34	$5,037.00
2506.501	CONSTRUCT DRAINAGE STRUCTURE DSGN 60-4020	LF	$243.00	106.01	106.01	$25,760.43
2506.501	CONSTRUCT DRAINAGE STRUCTURE DSGN 72-4020	LF	$300.00	142.00	142	$42,600.00
2506.501	CONSTRUCT DRAINAGE STRUCTURE DSGN 84-4020	LF	$320.00	16.22	16.22	$5,190.40
2506.501	CONSTRUCT DRAINAGE STRUCTURE DSGN 96-4020	LF	$350.00	9.00	9	$3,150.00
2506.501	CONSTRUCT DRAINAGE STRUCTURE DSGN 2X3	LF	$140.00	103.30	103.3	$14,462.00
2506.502	CONSTRUCT DRAINAGE STRUCTURE4006 H	EACH	$150.00	4.00	4	$600.00
2506.516	CASTING ASSEMBLY	EACH	$250.00	60.00	60	$15,000.00
2511.501	RANDOM RIPRAP CLASS III	CY	$30.00	20.00	20	$600.00
2563.601	TRAFFIC CONTROL	LS	$25,000.00	1.00	0.32	$8,000.00
				TOTAL GROUP 3		$754,187.83
			STORM SEWER			
			75% S.A.P. 62-612-14			$565,640.87
			25% M.S.A.P. 174-020-19			$188,546.96
				TOTAL GROUP 2		$754,187.83

GROUP 4 - ENGINEERS ESTIMATE & COST PARTICIPATION						
						GROUP 4
PROJECT:	COUNTY ROAD F - T.H. 61 TO MCKNIGHT ROAD.					100% CITY OF WHITE BEAR LAKE
						NON-PARTICIPATING
DATE:	December 5, 2002					
				TOTAL	GROUP4	
ITEM NO.	ITEM	UNIT	UNIT PRICE	QUANTITY	QUANTITY	AMOUNT
2021.501	MOBILIZATION	LS	$106,000.00	1.00	0.02	$2,120.00
2031.501	FIELD OFFICE, TYPE D	EACH	$5,000.00	1.00	0.02	$100.00
2104.505	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	SY	$4.00	3320.00	2000	$8,000.00
2331.601	BIT. DRIVEWAY (PRIVATE RECONSTRUCTION)	SY	$21.50	2000.00	2000	$43,000.00
2531.507	6 INCH CONC. DRIVEWAY PAVEMENT (PRIVATE)	SY	$60.00	100.00	100	$6,000.00
2563.601	TRAFFIC CONTROL	LS	$25,000.00	1.00	0.02	$500.00
				TOTAL GROUP 4		$59,720.00

GROUP 5 - ENGINEERS ESTIMATE & COST PARTICIPATION						
						GROUP 5
PROJECT:	COUNTY ROAD F - T.H. 61 TO MCKNIGHT ROAD.					100%
						M.S.A.P. 174-020-19
DATE:	December 5, 2002					
				TOTAL	GROUP5	
ITEM NO.	ITEM	UNIT	UNIT PRICE	QUANTITY	QUANTITY	AMOUNT
2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM B	LS	$8,400.00	1.00	1	$8,400.00
				TOTAL GROUP 5		$8,400.00

SUMMARY - ENGINEERS ESTIMATE & COST PARTICIPATION

PROJECT: COUNTY ROAD F - T.H. 61 TO MCKNIGHT ROAD.

DATE: December 5, 2002

GROUPS	S.A.P. 62-612-14 ROADWAY	M.S.A.P. 174-020-19	CITY OF WHITE BEAR LAKE	GROUP TOTALS
GROUP 1 - 100% S.A.P. 62-612-14	$1,047,330.31			$1,047,330.31
GROUP 2 - 25% S.A.P. 62-612-14 75% M.S.A.P. 174-020-19	$86,759.03	$260,277.08		$347,036.10
GROUP 3 - STORM SEWER - 75% S.A.P. 62-612-14 25% M.S.A.P. 174-020-19	$565,640.87	$188,546.96		$754,187.83
GROUP 4 - 100% CITY OF WHITE BEAR LAKE NON-PARTICIPATING			$59,720.00	$59,720.00
GROUP 5 - 100% M.S.A.P. 174-020-19		$8,400.00		$8,400.00
TOTAL	**$1,699,730.21**	**$457,224.03**	**$59,720.00**	**$2,216,674.24**

PROJECT TOTAL = $2,216,674.24

City of White Bear Lake Cost for Preliminary & Construction Engineering
Group 2 & Group 3 are eligible for 10% preliminary engineering and 10% construction engineering costs
Group 4 eligible for 2% preliminary engineering and 2% construction engineering costs

		10% Preliminary/Design Cost	10% Construction Cost	2% Preliminary/Design Cost	2% Construction Cost
Group 2 Total	$260,277.08	$26,027.71	$26,027.71		
Group 3 Total	$188,546.96	$18,854.70	$18,854.70		
Group 4 Total	$59,720.00			$1,194.40	$1,194.40
Group 5 Total	$8,400.00	$840.00	$840.00		
Totals =	*$516,944.03*	*$45,722.40*	*$45,722.40*	*$1,194.40*	*$1,194.40*
White Bear Lake Total =	**$610,777.64**				

GROUP 1 -	ENGINEERS ESTIMATE & COST PARTICIPATION					
PROJECT:	COUNTY ROAD F - T.H. 61 TO MCKNIGHT ROAD.				GROUP 1	
	LANDSCAPE ESTIMATE				S.A.P. 62-612-14	
DATE:	December 5, 2002					
				TOTAL	GROUP 1	
ITEM NO.	ITEM	UNIT	UNIT PRICE	QUANTITY	QUANTITY	AMOUNT
2021.501	MOBILIZATION	LS	$2,000.00	1.00	0.49	$980.00
				TOTAL GROUP 1		$980.00

GROUP 2 - ENGINEERS ESTIMATE & COST PARTICIPATION						
	LANDSCAPE ESTIMATE					
					GROUP 2	
PROJECT:	COUNTY ROAD F - T.H. 61 TO MCKNIGHT ROAD.				25% S.A.P. 62-612-14	
					75% M.S.A.P. 174-020-19	
DATE:	December 5, 2002					
				TOTAL	GROUP2	
ITEM NO.	ITEM	UNIT	UNIT PRICE	QUANTITY	QUANTITY	AMOUNT
2571.503	IVORY SILK JAP. REE LILAC-2" CAL, B&B	EACH	$300.00	77.00	77.00	$23,100.00
2575.607	MULCH MATERIAL, HARDWOOD	CY	$20.00	30.00	30.00	$600.00
				TOTAL GROUP 2		$23,700.00
			25% S.A.P. 62-612-14			$5,925.00
			75% M.S.A.P. 174-020-19			$17,775.00
				TOTAL GROUP 2		$23,700.00

GROUP 3 - ENGINEERS ESTIMATE & COST PARTICIPATION						
	LANDSCAPE ESTIMATE				GROUP 3	
PROJECT:	COUNTY ROAD F - T.H. 61 TO MCKNIGHT ROAD.				75% S.A.P. 62-612-14	
					25% M.S.A.P. 174-020-19	
DATE:	December 5, 2002					
				TOTAL	GROUP3	
ITEM NO.	ITEM	UNIT	UNIT PRICE	QUANTITY	QUANTITY	AMOUNT
2571.602	RAINWATER GARDEN PLANT, #1 CONT.	EACH	$12.00	1305.00	1305	$15,660.00
2575.604	GEOJUTE, EROSION CONTROL FABRIC	SY	$2.50	5218.00	5218	$13,045.00
				TOTAL GROUP 3		$28,705.00
			STORM SEWER			
			75% S.A.P. 62-612-14			$21,528.75
			25% M.S.A.P. 174-020-19			$7,176.25
				TOTAL GROUP 2		$28,705.00

GROUP 4 - ENGINEERS ESTIMATE & COST PARTICIPATION						
	LANDSCAPE ESTIMATE				GROUP 4	
PROJECT:	COUNTY ROAD F - T.H. 61 TO MCKNIGHT ROAD.				100% CITY OF	
					WHITE BEAR LAKE	
DATE:	December 5, 2002				NON-PARTICIPATING	
				TOTAL	GROUP4	
ITEM NO.	ITEM	UNIT	UNIT PRICE	QUANTITY	QUANTITY	AMOUNT
2021.501	MOBILIZATION	LS	$2,000.00	1.00	0.51	$1,020.00
				TOTAL GROUP 4		$1,020.00

SUMMARY - ENGINEERS ESTIMATE & COST PARTICIPATION
LANDSCAPE ESTIMATE
PROJECT: COUNTY ROAD F - T.H. 61 TO MCKNIGHT ROAD. 23100

DATE: December 5, 2002

GROUPS	S.A.P. 62-612-14 ROADWAY	M.S.A.P. 174-020-19	CITY OF WHITE BEAR LAKE	GROUP TOTALS
GROUP 1 - 100% S.A.P. 62-612-14	$980.00			$980.00
GROUP 2 - 25% S.A.P. 62-612-14 75% M.S.A.P. 174-020-19	$5,925.00	$17,775.00		$23,700.00
GROUP 3 - 75% S.A.P. 62-612-14 25% M.S.A.P. 174-020-19	$21,528.75	$7,176.25		$28,705.00
GROUP 4 - 100% CITY OF WHITE BEAR LAKE NON-PARTICIPATING			$1,020.00	$1,020.00
TOTAL	**$28,433.75**	**$24,951.25**	**$1,020.00**	**$54,405.00**

PROJECT TOTAL = $54,405.00

City of White Bear Lake Cost for Preliminary & Construction Engineering
Group 2 & Group 3 are eligible for 10% preliminary engineering
and 10% construction engineering costs
Group 4 eligible for 2% preliminary engineering
and 2% construction engineering costs

		10% Preliminary/Design Cost	10% Construction Cost	2% Preliminary/Design Cost	2% Construction Cost
Group 2 Total	$17,775.00	$1,777.50	$1,777.50		
Group 3 Total	$7,176.25	$717.63	$717.63		
Group 4 Total	$1,020.00			$20.40	$20.40
Totals =	*$25,971.25*	*$2,495.13*	*$2,495.13*	*$20.40*	*$20.40*
White Bear Lake Total =	**$31,002.30**				

VLAWMO Cost Share Agreement

This agreement is made the 13th day of July, 2012, by and between the Vadnais Lake Area Water Management Organization, (hereinafter "WMO") and City of White Bear Lake, 4701 Highway 61, White Bear Lake, MN 55110, (hereinafter "City"), which is accepting responsibility for the project located at the home of Mike Dreyling, 2105 Blomquist Ave, White Bear Lake, MN 55110.

1. BACKGROUND
   - 1.1 The WMO has included in its annual budget funds to cost-share with approved Landowners to implement best management practices within the watershed boundaries.
   - 1.2 The WMO funding is limited to 50% of the cost of materials actually incurred by the Landowners for the project as approved by the WMO, up to a maximum contribution of $1,000 per residential Landowner and $1,000 per parcel per commercial/governmental Landowner.
   - 1.3 City has applied to the WMO for funds to help pay for the costs of materials for a *raingarden project* (hereinafter "Project") as described in the Cost Share Application attached herein as Exhibit A.
   - 1.4 The WMO is willing to fund the Project described in Exhibit A in accordance with the terms of this Agreement.

2. SERVICES
   - 2.1 City will complete the Project described in Exhibit A in accordance with the terms, scope, schedule, and budget set forth therein within one year of the date of this agreement.
   - 2.2 **City or successors shall maintain the Project for a period of five (5) years.** Maintenance means keeping the Project in working condition so that it performs water quality and/or stormwater protection functions. This will likely include: watering, weeding, replacing mulch, replacing plants, repair of inlets/outlets, among other maintenance activities. WMO staff will visit the site on an annual basis to ensure maintenance is being done.

3. REIMBURSEMENT
   - 3.1 Expenses incurred by City in Exhibit A will be reimbursed by the WMO up to 50% of the total cost of materials and approved labor actually incurred by City up to a maximum of **$830.00**. Materials eligible for reimbursement shall be those that are used solely for the Project. Materials that are purchased or rented and not contained within the Project are not eligible for reimbursement. Labor costs must be incurred through a professional company for work done on the project as described in Exhibit A. Upon incurring the costs identified in Exhibit A, City shall provide a list of all reimbursable expenses incurred and receipts or copies of receipts therefore, to the WMO.

3.2 The WMO will reimburse the identified reimbursable expenses in accordance with Section 3.1 within 60 days of receipt of the required financial and performance information and receipts.

3.3 The WMO will not be liable or responsible for payment for services or reimbursement for expenses other than those specified as reimbursable expenses in accordance with Section 3.1.

3.4 Following the completion of the project described in Exhibit A, City shall submit a final financial report to the WMO listing the final expenses for the activity, along with copies of receipts.

4. GENERAL TERMS

4.1 This Agreement shall remain in effect unless cancelled by mutual agreement or in accordance with Section 4.2. This Agreement shall expire if the Project is not completed pursuant to the schedule in Exhibit A and the financial information required by Sections 3.1 and 3.4 is not received within one year from approval.

4.2 If weather or other conditions beyond the control of the City do not permit the completion of this Project within one year after approval, this Agreement may be amended, by mutual written consent of the parties, to reschedule the Project and funding.

4.3 City must obtain all permits required in conjunction with the Project, including but not limited to City and Department of Natural Resources approval, prior to starting the Project.

4.4 City agrees to allow the WMO access to the Project area for evaluation while project is being constructed, for annual maintenance reviews, and to allow the WMO to take pictures to use for public promotion of the cost share program.

4.5 City will act in all respects as an independent contractor under this Agreement and will be solely responsible for performance of services required hereunder as well as the means and manner of performance thereof. The WMO will not be an employer, partner, or co-venturer with City for any purpose. Nothing herein authorizes City to act as an agent or representative of the WMO for any purpose whatsoever.

4.6 City shall indemnify, defend and hold the WMO and its agents, employees, officers and contractors harmless from all claims made by City, Landowner and/or third parties for damage or loss sustained or costs incurred, including but not limited to WMO staff, engineering and attorneys fees, in connection with or arising out of the issuance of and/or acceptance and payment by the WMO of funds pursuant to this cost-share, construction of the project, or this agreement.

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

Kristine Jenson, Project Coordinator

Date: 12/19/12

CITY REPRESENTATIVE

Title

2105 Blomquist Ave, White Bear Lake, MN 55110
Address of project

Date: 12/12/12

VLAWMO Cost Share Agreement

This agreement is made the 13th day of July, 2012, by and between the Vadnais Lake Area Water Management Organization, (hereinafter "WMO") and City of White Bear Lake, 4701 Highway 61, White Bear Lake, MN 55110, (hereinafter "City"), which is accepting responsibility for the project located at the home of Miriam Whitney, 3790 Van Dyke St, White Bear Lake, MN 55110.

1. BACKGROUND
   - 1.1 The WMO has included in its annual budget funds to cost-share with approved Landowners to implement best management practices within the watershed boundaries.
   - 1.2 The WMO funding is limited to 50% of the cost of materials actually incurred by the Landowners for the project as approved by the WMO, up to a maximum contribution of $1,000 per residential Landowner and $1,000 per parcel per commercial/governmental Landowner.
   - 1.3 City has applied to the WMO for funds to help pay for the costs of materials for a *raingarden project* (hereinafter "Project") as described in the Cost Share Application attached herein as Exhibit A.
   - 1.4 The WMO is willing to fund the Project described in Exhibit A in accordance with the terms of this Agreement.

2. SERVICES
   - 2.1 City will complete the Project described in Exhibit A in accordance with the terms, scope, schedule, and budget set forth therein within one year of the date of this agreement.
   - 2.2 **City or successors shall maintain the Project for a period of five (5) years.** Maintenance means keeping the Project in working condition so that it performs water quality and/or stormwater protection functions. This will likely include: watering, weeding, replacing mulch, replacing plants, repair of inlets/outlets, among other maintenance activities. WMO staff will visit the site on an annual basis to ensure maintenance is being done.

3. REIMBURSEMENT
   - 3.1 Expenses incurred by City in Exhibit A will be reimbursed by the WMO up to 50% of the total cost of materials and approved labor actually incurred by City up to a maximum of **$850.00**. Materials eligible for reimbursement shall be those that are used solely for the Project. Materials that are purchased or rented and not contained within the Project are not eligible for reimbursement. Labor costs must be incurred through a professional company for work done on the project as described in Exhibit A. Upon incurring the costs identified in Exhibit A, City shall provide a list of all reimbursable expenses incurred and receipts or copies of receipts therefore, to the WMO.

3.2 The WMO will reimburse the identified reimbursable expenses in accordance with Section 3.1 within 60 days of receipt of the required financial and performance information and receipts.

3.3 The WMO will not be liable or responsible for payment for services or reimbursement for expenses other than those specified as reimbursable expenses in accordance with Section 3.1.

3.4 Following the completion of the project described in Exhibit A, City shall submit a final financial report to the WMO listing the final expenses for the activity, along with copies of receipts.

4. GENERAL TERMS

4.1 This Agreement shall remain in effect unless cancelled by mutual agreement or in accordance with Section 4.2. This Agreement shall expire if the Project is not completed pursuant to the schedule in Exhibit A and the financial information required by Sections 3.1 and 3.4 is not received within one year from approval.

4.2 If weather or other conditions beyond the control of the City do not permit the completion of this Project within one year after approval, this Agreement may be amended, by mutual written consent of the parties, to reschedule the Project and funding.

4.3 City must obtain all permits required in conjunction with the Project, including but not limited to City and Department of Natural Resources approval, prior to starting the Project.

4.4 City agrees to allow the WMO access to the Project area for evaluation while project is being constructed, for annual maintenance reviews, and to allow the WMO to take pictures to use for public promotion of the cost share program.

4.5 City will act in all respects as an independent contractor under this Agreement and will be solely responsible for performance of services required hereunder as well as the means and manner of performance thereof. The WMO will not be an employer, partner, or co-venturer with City for any purpose. Nothing herein authorizes City to act as an agent or representative of the WMO for any purpose whatsoever.

4.6 City shall indemnify, defend and hold the WMO and its agents, employees, officers and contractors harmless from all claims made by City, Landowner and/or third parties for damage or loss sustained or costs incurred, including but not limited to WMO staff, engineering and attorneys fees, in connection with or arising out of the issuance of and/or acceptance and payment by the WMO of funds pursuant to this cost-share, construction of the project, or this agreement.

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

Kristine Jenson, Project Coordinator

Date: 12/19/12

CITY REPRESENTATIVE

PWD/CE

Title

3790 Van Dyke St, White Bear Lake, MN 55110

Address of project

Date: 12/12/12

OPERATION AND MAINTENANCE AGREEMENT
FOR
EROSION CONTROL AND LANDSCAPING FEATURES

THIS AGREEMENT is made on November 3, 2008 by the City of White Bear Lake (Owner) of the property described in the attached **Exhibit A** (Property), and the Rice Creek Watershed District (RCWD), a Minnesota Special Purpose Unit of Government.

WHEREAS, the Owner agrees to construct an erosion control and landscaping plan on the Property in the approximate location depicted on the attached **Exhibit B**.

WHEREAS, the RCWD agrees to cost share the erosion control structures and/or landscaping techniques in the amount specified on the attached **Exhibit C**.

NOW THEREFORE THE PARTIES AGREE AS FOLLOWS:

1. The Owner assumes the full and sole responsibility for the installation, maintenance and management of the erosion control and landscaping project on the Property in accordance with the approved grant application attached at **Exhibit B**, which meets the RCWD standards.

2. The RCWD will not under any circumstances be responsible for the on-going physical performance of the erosion control structures and landscaping features, or for any repairs, changes or alterations to the same and appurtenances, and the RCWD will not be liable for the cost thereof.

3. The Owner agrees, at no cost to the RCWD, to regularly: (1) maintain the integrity and viability of the erosion control structures and plantings, (2) maintain all native perennial vegetation in the project area in a way which does not compromise the effectiveness of the design, (3) maintain and trim all other shrubs and vegetation in the project area, (4) remove all litter and debris from the project area, and (5) repair or replace any grass or other vegetation in the project area disturbed by maintenance.

4. The Owner agrees to indemnify, defend, and hold harmless the RCWD from all present and future claims that may arise from the construction and maintenance of the erosion control practice located on the Property.

5. The Owner shall allow the RCWD to bring other landowners to the Property, at reasonable times and with prior notice to The Owner, to view the Project for the purpose of encouraging other landowners to similar Best Management Practices.

6. The Owner agrees to notify the RCWD if the property is sold, so that the new owner can be approached and explain to him/her the purpose of the erosion control structures and/or landscaping techniques.

7. This agreement is valid for 5 years after installation date.

8. Any notice provided under this Agreement will be sent by certified mail, return receipt requested, or by personal service at the following address:

Owner

Rice Creek Watershed District
4325 Pheasant Ridge Drive NE, Suite 611
Blaine, MN 55449

Dated: November 5, 2008

OWNER [signature]
City of White Bear Lake

Dated: 11/12/08

RICE CREEK WATERSHED DISTRICT

By [signature]

Its District Administrator

The foregoing instrument was acknowledged before me this 5th day of NOVEMBER, 2008, by MARK SATHER.

CORY J. VADNAIS
Notary Public-Minnesota
My Commission Expires Jan 31, 2010

[Notary signature and stamp]

[signature] Vadnais

The foregoing instrument was acknowledged before me this 12 day of November, 2008, by Douglas J. Thomas and by _____, the administrator and _____ respectively of the Rice Creek Watershed District, a Minnesota Special Purpose Unit of Government, on its behalf.

[signature]

THERESA M STASICA
NOTARY PUBLIC – MINNESOTA
MY COMMISSION EXPIRES 1-31-10

[Notary signature and stamp]

This instrument was drafted by:
Rice Creek Watershed District
4325 Pheasant Ridge Drive NE, Suite 611
Blaine, MN 55449

NOTES:

To be included in budget:

Removal of all rip rap along project area.
Maintenance including weeding, replacing dead plants, and repairing fencing for the **first three** growing sea
Preparation of planting areas including removal of turf grass and invasives and regrading where necessary.
Straw erosion control blanket over all transitional planting areas below OHW.
Shredded hardwood mulch at 3" thick on all upland planting areas above OHW.
14 boulders with flat surfaces at least 3' in diameter.
Flagstones to be used for paths through plantings down to lake edge.
Split-rail fence – about 420 feet – along upland edges of planting throughout Lions Park.

existing on site:

River Bulrush
Softstem Bulrush
Bottlebrush Sedge
Sandbar Willow
Several weeds, including: Jewelweed, Creeping Charlie, Reed Canary Grass, Narrow-leafed Cattail, Purple Loosestrife, White Clover, Goat's Beard, Canada Thistle, Crab Grass
Rip Rap

Symbol	*Scientific Name*	Common Name	Spacing	Size	Quantity
Shrubs					
BA	*Baptisia alba*	Wild Indigo	3'		
CS	*Cornus sericea*	Red Osier Dogwood	4'		
DV	*Diervilla lonicera*	Dwarf Bush Honeysuckle	3'		
Forbs					
AG	*Andropogon gerardii*	Big Bluestem	18"		
AC	*Aquilegia canadensis*	Columbine	18"		
AI	*Asclepias incarnata*	Swamp Milkweed	18"		
AT	*Asclepias tuberosa*	Butterflyweed	12"		
CL	*Carex lacustris*	Lake Sedge	12"		
EP	*Echinacea purpurea*	Purple Coneflower	18"		
EH	*Elymus hystrix*	Bottlebrush Grass	18"		
HA	*Helenium autumnale*	Sneezeweed	18"		
IV	*Iris versicolor*	Blueflag Iris	12"		
LP	*Liatris pychnostachya*	Prairie Blazingstar	18"		
LC	*Lobelia cardinalis*	Cardinal Flower	18"		
MS	*Matteuccia struthiopteris*	Ostrich Fern	18"		
MF	*Monarda fistulosa*	Wild Bergamot	18"		
OS	*Onoclea sensibilis*	Sensitive Fern	18"		
PB	*Polygonatum biflorum*	Solomon Seal	18"		
RH	*Rudbeckia hirta*	Black-eyed Susan	18"		
SF	*Scirpus fluviatilis*	River Bulrush	12"		
SV	*Scirpus validus*	Softstem Bulrush	12"		
SP	*Spartina pectinata*	Prairie Cordgrass	18"		
VV	*Veronicastrum virginicum*	Culver's Root	18"		
AN	*Aster novae-angliae*	New England Aster	18"		
EP	*Eupatorium perfoliatum*	Boneset	18"		
VH	*Verbena hastata*	Blue Vervain	18"		
VF	*Vernonia fasciculata*	Ironweed	18"		

Shoreline Calculator

(for Raingarden Calculator, click tab at bottom of the page)

Please enter the following information (if it does not apply enter 0):

Length of Aquatic Zone (feet)	1487	
Width of Aquatic Zone (feet)	2	Note enter 0 if you are no biologs only
Length of Transitional Zone (feet)	1487	
Width of Transitional Zone (feet)	4	←
Length of Upland Zone (feet)	1487	
Width of Upland Zone (feet)	3	←
Area to be planted with shrubs (square feet)	0	
Number of trees to be planted	0	
Will you use biologs? (if yes, enter 1, if no, enter 0)	1	
Measure the vertical drop from bottom of lake/creek to top of bank (inches)	48	
Number of "Coconut Fiber Erosion Control Blanket" rolls needed (6.5' by 108')	0	Note install in slopes stee
Number of "Straw Erosion Control Blanket" rolls needed (6.5' by 108')	0	Note instal in moderate sl
Number of "Salamander Erosion Control Blanket" rolls needed (6.5' by 164')	0	Note install in slopes stee
Percentage of upland area where mulch will be used (0-100)	100	

The following information should be calculated automatically:

		Cost/unit	Total cost
Emergent plugs	991	1.5	1487
Emergent pots	862	6	5174.76
Transitional plugs	3033	1.5	4550.22
Upland plugs	2275	1.5	3412.665
Shrubs	0	20	0
Number of trees	0	60	0
Shredded wood mulch (Cubic Yards)	41	30	1239.1667
16" biologs	198	100	19826.667
12" biologs	0	60	0
Biostakes (1 box of 500 stakes per 2000 SF)	5	90	468.405
48"*2"*2" wooden stakes	1190	2	2379.2
24" wooden stakes	0	1	0
"Coconut Fiber Erosion Control Blanket" rolls needed (6.5' by 108')	0	120	0
"Straw Erosion Control Blanket" rolls needed (6.5' by 108')	0	40	0
"Salamander Erosion Control Blanket" rolls needed (6.5' by 164')	0	150	0
Herbicide	10	100	1040.9
5' Fence Posts (1 every 5 ft of shore)	298	3	894.6
Fence (4' by 50')	30	20	596.4
Fence Ties (100/bag)-1 bag per 25 posts	12	4	47.712

Enter other required materials (and prices):

Total	**41117.695**

Ramsey Conservation District

1425 Paul Kirkwold Dr.
Arden Hills, MN 55112
Telephone 651 / 266-7270
Fax 651 / 266-7276
www.ramseyconservation.org

July 29, 2008

Project:

Mark Burch
4701 Highway 61
White Bear Lake, MN 55110
Shoreline Restoration

Project Overview:

Proposed Lakeshore Restoration in the Lions Park Area on White Bear Lake. The project will cover 1487 lineal ft (approx. 10,500sqft) of eroded shoreline on the west side of the lake (Hwy 61 and White Bear Ave). The restoration would include biologs, erosion control fabrics, native plants, and rock outcroppings to improve fishing areas.

Funding Request:

Material: $40,000.00
Labor: not estimated
Total: $40,000.00
Cost Share Request: $5,000.00

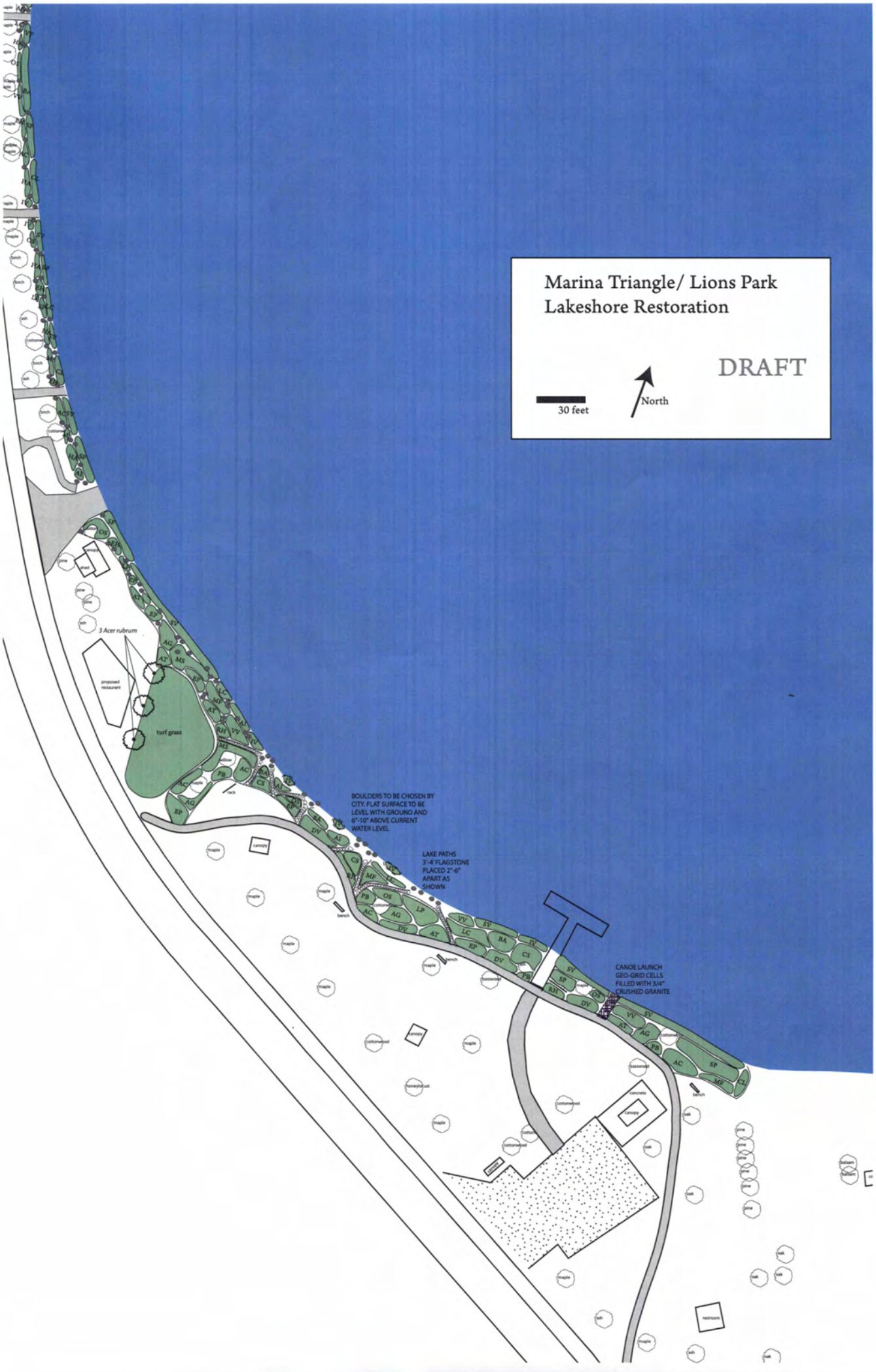
Recommendation:

It is my recommendation that this project be awarded the Cost Share at the 50% match limit.

The shoreline restoration would be a great water quality improvement by keeping the shore in place. It would also be an excellent educational piece because of the high visibility, and recreational use of the area. The upland buffer would also help deter geese, and increase wildlife habitat.

Sincerely,

Ryan Johnson
Urban BMP Specialist
Ramsey Conservation District


Marina Triangle/ Lions Park
Lakeshore Restoration
DRAFT
30 feet
North
3 Acer rubrum
proposed restaurant
turf grass
BOULDERS TO BE CHOSEN BY CITY. FLAT SURFACE TO BE LEVEL WITH GROUND AND 6"-10" ABOVE CURRENT WATER LEVEL
LAKE PATHS 3'-4' FLAGSTONE PLACED 2"-6" APART AS SHOWN
CANOE LAUNCH GEO-GRID CELLS FILLED WITH 3/4" CRUSHED GRANITE
bench
canopy
concrete
restroom

Standard Operation Procedures
for

Inspection and Maintenance

PROJECT:
Stormwater BMP "Water Tracks"

Central Middle School, White Bear Lake, MN

VLAWMO
Vadnais Lake Area
Water Management Organization

EARTH WIZARDS, INC.
Balancing Urban Development and Water Conservation

November 2012

TABLE OF CONTENTS

1 BACKGROUND

Vadnais Lakes Area Water Management Organization did a study in 2010 that identified sub watershed areas that would have the greatest impact on storm water quality for instituting storm water BMPs. Lambert Creek is on the Impaired Waters List of Minnesota and the sub watershed where Central Middle School is located was noted as one of the primary areas.

Previously a grass swale received runoff from the building, parking lot and ballfields to a storm water outlet that discharges directly to Lambert Creek. Unfortunately the grass swale took in a great deal of sediment, created problems for the school maintenance staff and resulted in concerns of sediment discharge. The area presented a great opportunity to store and slow down runoff with better safeguards to control sediment capture.

The design incorporates sediment capture structures, an underground storage system (Stormtech Chambers) on the north end only and a bioswale planted with natives throughout the entirety of the vegetated median.

There are three lines of defense for sediment capture at the main inlets (north end):

- Concrete Forebay - designed for a skid loader to readily clean out,
- Deep Sump Catch Basin, and the
- Stormtech Underground Storage Isolator Row.

On the south end of the bioswale (school-side), curb cuts were placed to allow additional runoff to enter into the area with low-tech “Portland 1/2 Pails” (1 gallon landscape pots that are cut in half and filled with rock). The most southern portion of the swale (school-side), a section of ScourStop was installed to prevent scouring at another large curb cut. Additionally the grade was adjusted to encourage water flow to the north into the native planting area rather than immediately short-circuiting to the outlet pipe.

2 INSPECTION

2.1 Access and Easements

Full access from each side of the bioswale is readily available. Any large equipment will need to coordinate with the School Administration beforehand.

Contact: Phil Fischer, Manager of Building Operations # (651) 407-7534

2.2 Project Overview Map

Inspection and maintenance personnel may utilize the Plan “Water Tracks” located in Appendix A_1 and A_2 to understand the project overview and the locations of the various stormwater Best Management Practices (BMPs).

2.3 Water Tracks Features

It is important for maintenance personnel to understand the function of each of these features to prevent damage during maintenance operations. Below is a list of the features within this project and the corresponding maintenance inspection items that can be anticipated:

TABLE 1
Typical Inspection & Maintenance Requirements Matrix

	Sediment Removal	Trash/ Debris Removal	*Spring/ Fall Mowing	Erosion	Weed	Overseed
Concrete Forebay (northwest)	X	X				
Concrete Spillway (northeast)	X	X				
Nyoplast Deep Sump Catch Basin (north end)	X	X				
Isolator Row	X	X				
Portland 1/2 Pails	X	X				
Bioswale		X			X	
Sediment Logs	X	X		X		
No Mow Turf		X	X		X	X
ScourStop	X	X		X	X	
Rip Rap	X	X		X	X	
Pipe Outlet	X	X		X	X	
Stone Steps	X	X		X	X	

!

2.3.1 Main Inlet (North End) - Concrete Forebay, Nyoplast Deep Sump Catch Basin and Concrete Spillway

Sediment and trash will collect in this area. Regular monthly maintenance should be done with the forebay and spillway. Record keeping will begin with the chambers to determine how much sediment accumulates within a certain timeframe to establish the cleaning schedule for the Vac Truck.

The typical maintenance activities that are required at the Main Inlet

a. Concrete Forebay - Sediment, trash and muck will accumulate. Remove the grate and clean out the structure by shoveling or with a skidloader. Occasionally sweep out. There are weep holes in the bottom of the chamber that should be checked and cleaned out to prevent plugging.

b. Nyoplast Deep Sump Catch Basin – Remove the grate and clean out using a JetVac truck. The sump is 48" deep and the overall structure is 75" deep (outflow pipe is 24"). The Stormtech Underground Storage Chamber - Isolator Row ONLY will also require occasional cleaning with the JetVac Truck.

c. Stone/Concrete Spillway – Less runoff enters through this opening so an expensive fore bay was unnecessary. The stone acts to slow the runoff and will capture some sediment. Either sweeping or blowing it out with a backpack blower will work well. Any cracks that may develop in the concrete spillway should be filled with a concrete crack filler.

2.3.2 Isolator Row (see Appendix B_1 and B2, Report Appendix C_2)

On the north side from the Nyoplast Sump Catch Basin Structure running south to the bridge is the Stormtech Underground Storage Chamber System. One row was installed of the SC-740 Infiltration Chambers with the first 6 chambers as the Isolator Row followed by an additional 11 chambers that allow for quicker infiltration. The Isolator Row has a woven geotextile on the bottom to allow for the JetVac Truck to apply force without causing erosion. The northernmost three access ports correspond to the Isolator Row, with the JetVac truck the access would be these three ports only.

!

Nyoplast Deep Sump Catch Basin

First SC-740 Chamber (part of the Isolator Row)

Access Port

Access Port

Measurements of sediment build up of the three northernmost access ports to be done on a frequent basis. There will be some margin of error (0.5") due to the rock base but accuracy to determine whether JetVac of the system needs to happen with sediment buildup. The measurement should be noted with the top of the pipe - in this photo the reading is 52-10/16". See Appendix C_2 for the Inspection Maintenance Report Form.

!

2.3.3 Portland 1/2 Pails

Concrete curbcuts were done to allow for additional runoff to enter the bioswale. Behind these curb cuts a 1 gallon pail was cut in half and filled with rock. These were installed to also illustrate a low-tech method to capture sediment.

The typical maintenance activities that are required:

Sediment/Debris - Sometimes just a portion of the top layer of rock can be removed and that will remove most of the debris. Occasionally the entire pail will need to be dumped out, replaced with new rock and reinstalled. Make sure the surrounding soil/ mulch has been replaced with any disturbance caused around the area and note the elevation height to allow the water not to be held back (too high) or not capturing sediment (too low). Make proper adjustments.

2.3.4 Bioswale

The bioswale was graded to first encourage the water to enter the underground storage chamber before being received in the bioswale. The overall grade is "stepped down" to encourage back flow to slow the water down while still allowing flow towards the outlet pipe. Sediment logs have been placed to prevent erosion until the plants are mature. The logs will naturally decompose.

The typical maintenance activities that are required for the bioswale are as follows:

a. Weeding – Remove weeds routinely. If very dry conditions have

existed it's helpful to water the area which will loosen the root system for easily pulling. Larger weeds may require a narrow pointed trowel to help ensure that the entire root system is removed.

b. Sediment/Pollutant Removal – Most sediment will be deposited in the pre-treatment systems, however finer suspended particles may migrate to the filter media. These sediments may need to be removed to ensure proper infiltration rates of the stormwater runoff. Observing the length of time of ponding (over 72 hours) will indicate that this is occurring and any build up that happens around the base of the plants should be removed.

c. Mulching - Depending upon the survivability of the plants and any erosion that has taken place, a double shredded hardwood mulch should be placed on exposed soils.

d. Infiltration Rate Test - An infiltration test may be necessary to ensure proper functioning of the filter media. Concerns with observed ponding for long durations (over 72 hours), an infiltration test should be conducted. Digging a test hole may show that a top layer of sediment has prevented infiltration so note the cross-section of the test holes being dug as well.

e*. Watering* - One great aspect of native plants is the deep root system which allows them to be more drought tolerant than non-natives. However, if the plants show wilting, browning or lack of growth, a deep watering of the plants should occur on a regular basis. Generally within the first two years a weekly watering regimen is required that equates to an 1". Checking the soil by hand will show whether the plants were watered deeply enough.

2.3.5 Sediment Logs

Sediment logs have been placed in the bioswale to help slow down the flow of the runoff through the swale as well as a temporary erosion control method. As the plants mature in size to naturally slow down the water, these will be unnecessary to replace unless certain areas of the swale exhibit poor plant growth. Also if there is any indication of "mild" erosion, these logs provide an easy method to install in those places.

The typical maintenance activities that are required for the sediment logs are as follows:

a. Sediment - Some accumulation may occur on the upside grade (northern) of the logs. Remove the sediment and replace with 3-4" of double shredded hardwood mulch.

b. Erosion – Any indication of "rilling" or "rutting" may be as a result of the log having moved. Shovel a level grade into the soil to partially bury the log and re-secure using long sod staples. Repairing the surrounding area with mulch and possibly combined with another temporary erosion control using a bionet coconut blanket will be necessary.

Resources: Bionet Coconut Blanket - Ramy Turf, Brock White
Mulch - Ceres, Brooklyn Center

2.3.6 No Mow Turf

Surrounding the native-planted bioswale is a No Mow Turf embankment/side slope. The seed blend allows for minimal inputs (water/fertilization/mowing), and develops a longer shaggy looking grass. This blend of fescue is a warm-season grass which will green up

later than a Kentucky Bluegrass and will stay green during drought periods. A major mistake that is made is mowing this area too low. Only the shoots that occur in the spring and fall should be mowed, not any of the vegetation crown. Oftentimes, this turf will look sparse for the first two years until it thrives.

The typical maintenance activities that are required for the embankments areas are as follows:

a. Vegetation Sparse – The embankments are one of the most visible parts of the project and, therefore, aesthetics is important. Adequate and properly maintained vegetation can greatly increase the overall appearance of the landscape. Also, proper establishment of the vegetation can reduce the potential for erosion and subsequent sediment transport to the filter media, thereby reducing the need for more costly maintenance. Overseed as necessary and be careful not to cut the crown of the grass.

b. Erosion – If an area is prone to erosion and unable to vegetate properly, supplemental temporary erosion control blankets may need to be installed. In these areas a straw-coconut or a double-sided straw again with a bionet grid that is fully degradable should be used.

c. Trash/Debris – Trash and debris can accumulate needing removal.

d. Mowing – In the Spring and Fall, this fescue blend will produce large stalks/shoots that will be quite tall relative to the turf. Only these shoots should be mowed, ideally with a weed whipper, not a mower which doesn't allow for a high enough setting. Note the seeds atop the stalks that will help to reseed the area.

e*. Watering* - Despite the fescue blend tolerating drought, it may be necessary to water the vegetation. Evidence of browning or sparseness will indicate when it should be watered. If a water truck is used, be careful to create a soft spray rather than a hard erosive blast.

Resources: Bionet Erosion Blanket - Ramy Turf, Brock White
No Mow Grass Seed - Ramy Turf and some garden centers may carry

2.3.7 Outlet Area - ScourStop, Pipe Outlet and Rip Rap

Ensuring the runoff to exit the bioswale is important. Severe rain events and early spring conditions will create problems if this area is not working properly.

The typical maintenance activities that are required for the final outlet area are as follows:

a. Riprap Displaced – Flow or snowplow activities may cause any riprap to be dislodged. Moving the rock around or adding to it may be necessary.

b. Erosion - At the most southern curb cut a section of ScourStop was installed and planted. Check this piece and ensure that it is at the right elevation, adjust as needed. Erosion occurring around the rip rap or near the pipe will require either more riprap or a permanent erosion control blanket.

c. Weeding – Remove undesirable vegetation. It may be difficult to weed within the rip rap so a minimal application of weed killer can be applied. Make sure that it is applied per instructions on the product with close attention to the drying time before a rain event or watering application of the landscape. Please note that these products are detrimental to our bee populations so infrequent usage should be considered as much as possible.

d. Obstruction/Debris – Clear any obstruction (man made or natural) to ensure that the pipe receives the overflow. It may be necessary to check the pipe itself.

2.3.8 Stone Steps

Through the bioswale there are access stone steps to allow for people movement from one side to the other. Additionally the stone provides another barrier for the water to slow down. Sediment/debris may accumulate around these areas and vegetation/weeds will need to be attended to. Most importantly the steps need to be stable. With the flow of water through the area and sandy side slopes there will be movement of the stone so ensuring that each step is secure is necessary.

The typical maintenance activities that are required for the stone steps are as follows:

a. Sediment/Debris– Remove as necessary.

b. Vegetation Sparse or Weedy - Remove any weeds and supplement with the surrounding material. The steps are within both the No Mow Turf which could require overseeding in those spaces or within the bioswale. Plants should be far enough away from the pedestrian path to prevent any overgrowth.

c. Shifting – Resecure any stone steps that have dislodged. Bury into the soil and level. It may be necessary to use a Class V gravel base to help the stone stay in place better.

2.3.8 Miscellaneous

There are a variety of inspection/maintenance issues that may not be attributed to a single feature within the SFB. This category on the inspection form is for maintenance items that are commonly found in the Water Tracks Project, but may not be attributed to an individual feature.

a. Graffiti/Vandalism – Vandals can cause damage to the stormwater BMP. If criminal mischief is evident, the inspector should forward this information to the school contact and VLAWMO. Onsite educational signage is present on the southernmost end of the project and may be prone to graffiti or damage.

b. Public Hazards – Public hazards include items such as vertical drops of greater than 4-feet, containers of unknown/suspicious substances, and exposed metal/jagged concrete on structures. **If any hazard is found within the facility area that poses an immediate threat to public safety, call the school contact and VLAWMO right away.**

c. Other – Any miscellaneous inspection/maintenance items not contained on the form should be entered here.

2.4 Inspection Forms

Inspection forms are located in Appendix C_1 and C2. Inspection forms shall be completed by the person(s) conducting the inspection activities. Each form shall be reviewed and submitted to VLAWMO. These inspection forms shall be kept indefinitely and made available anytime.

3 MAINTENANCE CONCERNS

3.1 Maintenance Personnel

Maintenance personnel need to be trained by Earth Wizards' staff to ensure a proper understanding. Earth Wizards' staff is involved for the first 3 years of the project (2010-2014), after that the School Maintenance Staff will be taking over unless Earth Wizard's contract term is extended. Please note, that inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

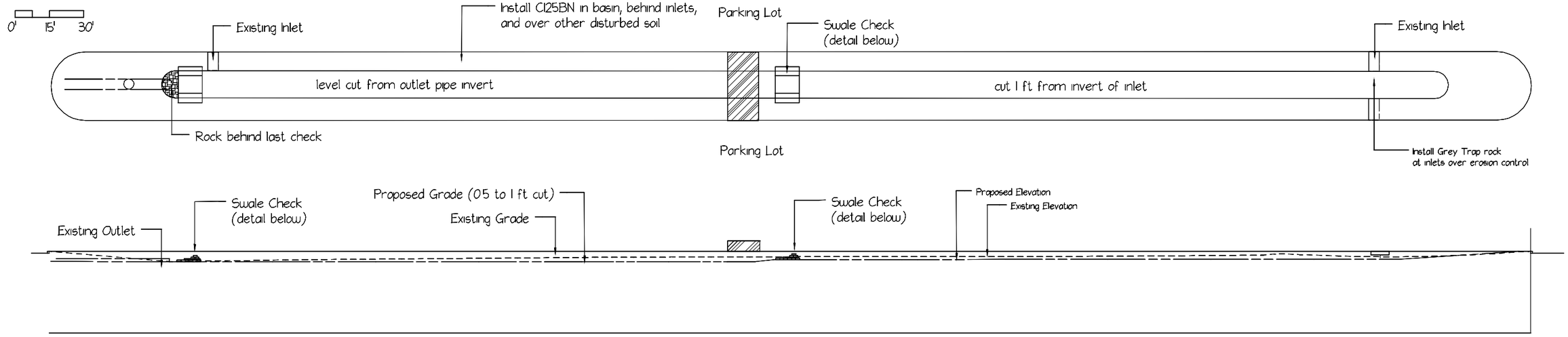
3.2 Equipment

It is imperative that the appropriate equipment and tools are taken to the field with the operations crew. The types of equipment/tools will vary depending on the task at hand. Below is a list of tools, equipment, and material(s) that may be necessary to perform maintenance:

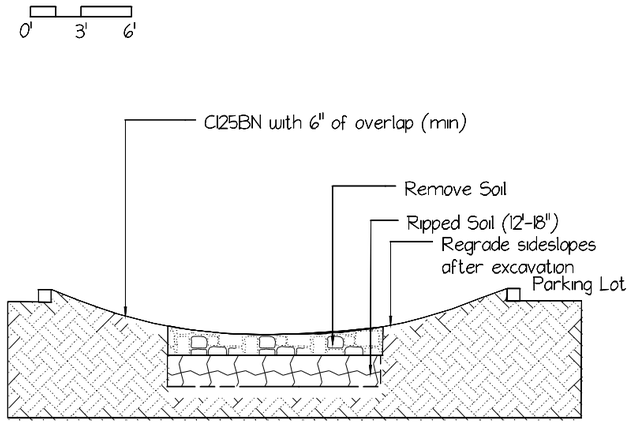
- Weed whipper (spring and fall)
- Trimmers (extra string)
- Shovels
- Rakes
- Skidloader
- Dump Truck
- Jet-Vac Machine
- Riprap
- Erosion Control Blanket(s) - as noted
- Native Plant Plugs to supplement as needed
- Double shredded hardwood mulch, natural color
- No Mow Seed
- Class V
- Trash Bags
- Tools (wrenches for access ports)
- This manual
- Appendix items noted for inspection reports and planset to reference

Some of the items identified above may not be needed for every maintenance operation. However, this equipment should be available to the maintenance operations crews should the need arise.

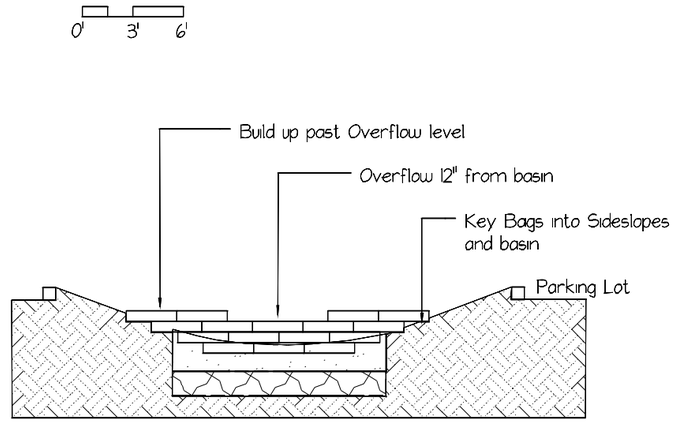
Overview: Proposed



Erosion Control Cross Section



Check Cross Section



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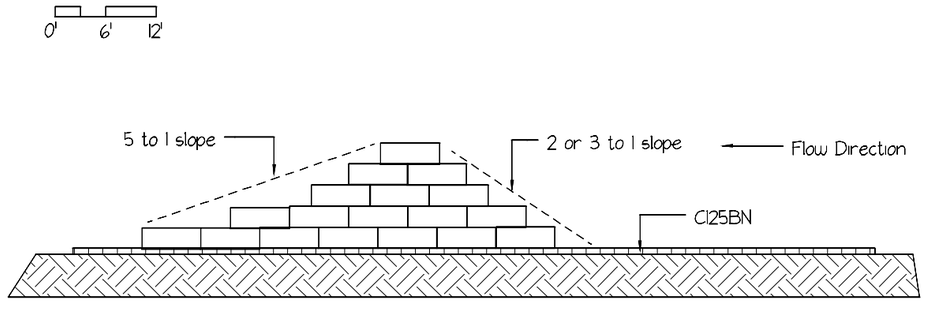


NOTES
- -CALL GOPHER ONE 48 HOURS PRIOR TO DIGGING
- -CALL THE RCD OR VLAWMO WITH ANY QUESTIONS
- -PROTECT EXISTING OUTLET PIPE FROM RECEIVING SEDIMENT BEFORE, DURING, AND AFTER CONSTRUCTION

- -Prepare entire island area by removing turf grass
- -North of Bridge Remove 1' of soil from invert and continue a flat grade until bridge at a width of appr 5 ft
- -South of Bridge Remove soil down to invert of outlet pipe and continue flat grade north to bridge (5 ft width)
- -Regrade side slopes to make smooth transition
- -Rip the subsoil of the swale 12-18" deep to remove compaction prior to installing blanket (tracked equipment only)
- -Install CI25BN on the bottom of the swale, inlet areas, and all other distrirbed soil (Shingle Style in accordance to flow)

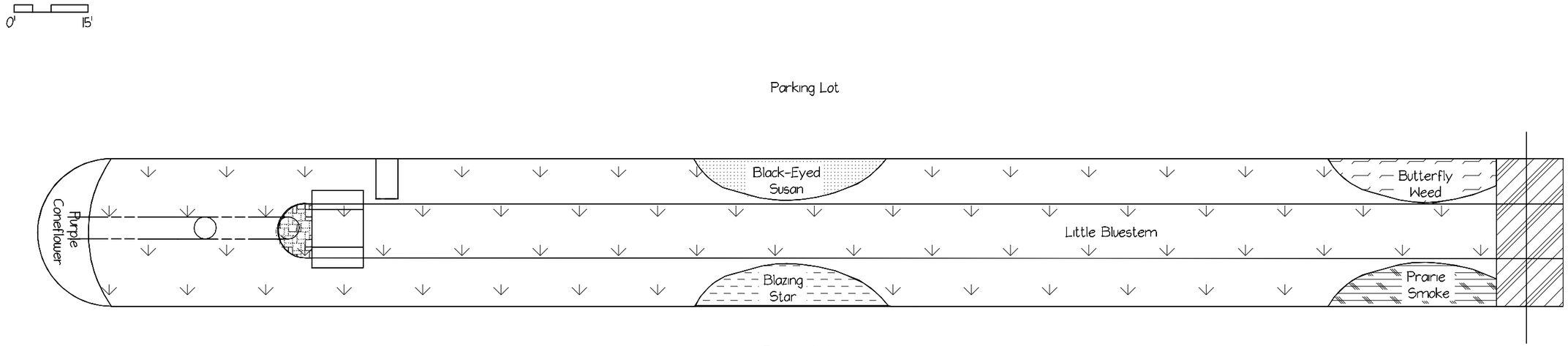
- -Install Filled Envirolok Checks per manufacture's directions (make sure bags are tamped and spiked into place to ensure bags don't shift)
- -Key in Checks into sideslopes to ensure water doesn't erode around bags

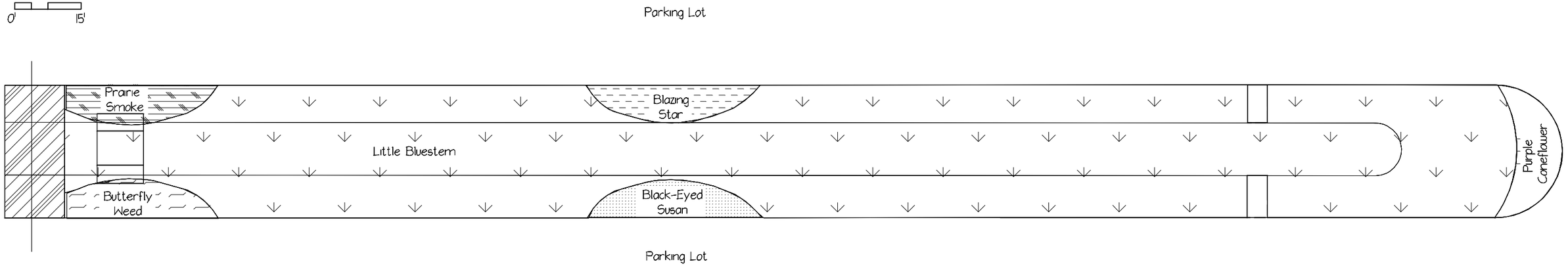
N

Infiltration
Central Middle School
4857 Bloom Avenue, White Bear Lake 55110

Funded By Vadnais Lake Area Water Management Org	Page 1 of 2
	Date 2-Jun-11
	Scale As Noted
Provided By Ramsey Conservation District	Original 11" x 17"

Planting Proposed





NOTES
- -CALL GOPHER ONE 48 HOURS PRIOR TO DIGGING
- -CALL THE RCD OR VLAWMO WITH ANY QUESTIONS
- -PROTECT EXISTING OUTLET PIPE FROM RECEIVING SEDIMENT BEFORE, DURING, AND AFTER CONSTRUCTION

PLANTING/MAINTENANCE
- -Plant plugs at 18" oc spacing
- -Water immediately after planting
- -Ensure plants receive 1" of water per week during 1st growing season
- -Weed as needed

N

Infiltration
Central Middle School
4857 Bloom Avenue, White Bear Lake 55110

Funded By Vadnais Lake Area Water Management Org	Page 2 of 2
	Date 2-Jun-11
	Scale As Noted
Provided By Ramsey Conservation District	Original 11" x 17"

Ramsey Conservation District
COST ESTIMATE

Central Middle School	Total Plants :	3,550
4857 Bloom Avenue	LF:	431
White Bear Lake, MN 55110	SF:	8,500
Island Retrofit	Date:	2-Jun-11

COST/LABOR ESTIMATE

Materials	Qty	Unit	Unit Cost	Amount	Potential Source
Site Prep (Chemical app. - eg. Rodeo/Roundup)	1	treatment	$ 125.00	$ 125.00	Beisswnger's, Fair's, Dundee
Temporary BMP (protecing inlet)	1	lump	$ 25.00	$ 25.00	Brock White, (651) 647-0950
C125BN (6.5' x 108.5')	8,500	sq-ft	$ 0.15	$ 1,275.00	Brock White, (651) 647-0950
Securing staples- 500 ct (6" x 1")	2	box	$ 28.00	$ 56.00	Brock White, (651) 647-0950
Envirolok Bag system (or approved equal)	80	sq-ft	$ 8.00	$ 640.00	Agrecol, Versilok, St Croix Valley Landscaping
Trap Rock (9")	2.4	ton	$ 56.00	$ 134.40	Local Aggregate Supplier
			MATERIALS SUBTOTAL	$ 2,255.40	
Plants					
Native Forbs (Plug)	550	each	$ 1.00	$ 550.00	Native Plant Supplier
Little Bluestem Plugs- (Plug)	3,000	each	$ 1.00	$ 3,000.00	Native Plant Supplier
	3,550		PLANT SUBTOTAL	$ 3,000.00	
Excavation and Grading					
Excavation	8	hrs	$ 150.00	$ 1,200.00	Landscape/Excavation Contractor
Soil Haul-Away	80	cu-yd	$ 20.00	$ 1,600.00	Landscape/Excavation Contractor
Rip Soil- tracked equipment only (12-18" depth)	0	hrs	$ 150.00	$ -	Landscape/Excavation Contractor
			EXCAVATION/GRADING SUBTOTAL	$ -	
Misc					
Deliveries (Rock, Plants, Erosion Control, etc)	4	job	$ 100.00	$ 400.00	Agrecol, Versilok, St Croix Valley Landscaping
			MISC SUBTOTAL	$ 400.00	

Materials	$	2,255.40
Plants	$	3,000.00
Excavation/Grading	$	-
Misc	$	400.00
Materials Estimate	$	5,655.40
Labor Estimate	$	4,791.40
Project Estimate	$	10,446.80
:-10%	$	9,402.12
:+10%	$	11,491.48

Ramsey Conservation District
PLANT SCHEDULE

Central Middle School
4857 Bloom Avenue
White Bear Lake, MN 55110
Island Retrofit

Total Plants: 3,550
LF: 431
SF: 8,500
Date: 2-Jun-11

Qty:	Key:	Scientific:	Common:	Flower:	Period:	Height:	Size:	Spacing:
110		Asclepias tuberosa	Butterfly Weed	Orange	June-Sept	12-24"	Plug	18" o.c.
110		Echinacea angustifolia	Purple Confeflower	Purple	July-Aug	24-36"	Plug	18" o.c.
110		Geum triflorum	Prairie-smoke	Purple	April-June	6-12"	Plug	18" o.c.
110		Liatris aspera	Rough Blazing Star	Purple	July-Sept	18-36"	Plug	18" o.c.
110		Rudbeckia hirta	Black Eyed Susan	Yellow	June-Oct	24-36"	Plug	18" o.c.
3000		Schizachyrium scoparium	Little Bluestem	Amber	July-Sept	18-36"	Plug	18" o.c.
3550								

RAMSEY COUNTY
COOPERATIVE AND MAINTENANCE AGREEMENT
WITH THE CITY OF WHITE BEAR LAKE FOR
Operation and Maintenance Responsibilities for South Heights Stormwater Pond

Attachments:
A – Project Location and Storm Sewer Ownership
B – Plat
C – Drainage Area Summary

This Agreement is between the City of White Bear Lake, a municipal corporation ("City") and Ramsey County, a political subdivision of the State of Minnesota, ("County");

RECITALS

1. An existing stormwater pond is located southwest of County Road F and Myrle Avenue within the City of White Bear Lake, as shown in Attachment A.

2. County Road F is designated County State Aid Highway (CSAH) 12.

3. The South Heights Addition No. 2 Plat dated December 20, 1979 identifies this stormwater pond as Outlot A within a drainage easement dedicated to the public. See Attachment B.

4. The pond receives stormwater from a total watershed area of about 22.40 acres comprised of mixed residential from the City (76%) and County (24%) contributing drainage area.

5. Currently, no maintenance agreement exists for the pond.

6. South Heights Addition No. 2, Outlot A was tax forfeited by the residential developer landowner in 2014 and is now listed as State of MN Trust Exempt.

7. This Agreement has been prepared to establish the cost participation and responsibilities of the County and City for operation and maintenance activities for the pond and associated elements.

AGREEMENTS

1. Ownership and Maintenance Responsibility

    1.1. Ownership and Maintenance Responsibility of the Pond

        1.1.1. Either party may coordinate major maintenance work for pond. Examples of major maintenance work include dredging of sediment to restore the pond's capacity for pollutant removal; disposal of sediments excavated from the pond with sediment pollutant concentrations that exceed current or future applicable MPCA criteria for unrestricted disposal of the sediment; and other possible improvements to meet current or future MPCA regulations related to EPA's Impaired Waters and Total Maximum Daily Load (TMDL) programs. Both parties shall be in agreement upon the need for major maintenance work. Adequate notice shall be given for budgeting purposes.

        1.1.2. Cost-participation for major maintenance to the pond shall be according to contributing drainage area of City (76%) and County (24%).

    1.2. Ownership and Maintenance Responsibility of the Storm Sewer (*catch basins and leads, main*)

        1.2.1. The County and City shall own and maintain their respective elements of the storm sewer system as identified in Attachment A.

        1.2.2. The City shall own the components of the storm sewer system identified in Attachment A and any surface drains located outside the County road right-of-way, including associated leads.

        1.2.3. The County shall own the components of the storm sewer system identified in Attachment A and any surface drains located inside the County road right-of-way, including associated leads.

        1.2.4. The cost for maintenance of each storm sewer outfall shall be by contributing drainage area as shown in Attachment C.

2. The City and County shall indemnify, defend, and hold each other harmless against any and all liability, losses, costs, damages, expenses, claims, or actions, including attorney's fees, which the indemnified party, its officials, agents, or employees may hereafter sustain, incur, or be required to pay, arising out of or by reason of any act or omission of the indemnifying party, its officials, agents**,** or employees, in the execution, performance, or failure to adequately perform the indemnifying party's obligation pursuant to this Agreement. Nothing in this Agreement shall constitute a

waiver by the County or the City of any statutory or common law immunities, limits, or exceptions on liability.

3. This Agreement shall remain in full force and effect until terminated by mutual agreement of the parties.

THE REMAINDER OF THIS PAGE IN INTENTIONALLY BLANK.

CITY OF *WHITE BEAR LAKE,* MINNESOTA

By: _____ Date:_____
Mayor

By: _____ Date:_____
Director of Public Works

Approved as to Form:

By: _____
City Attorney

RAMSEY COUNTY, MINNESOTA

_____ Date: _____
Ryan T. O'Connor, County Manager

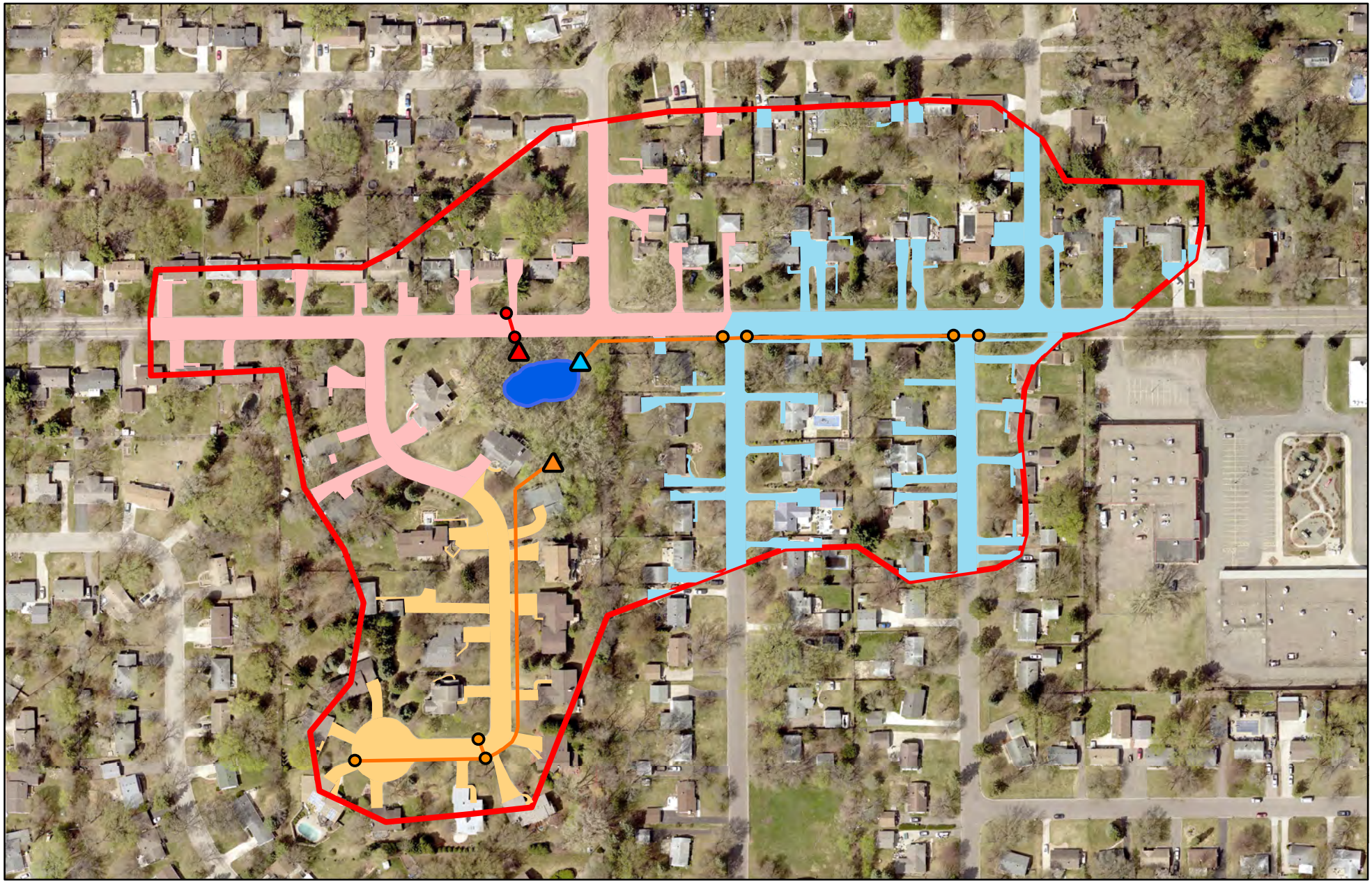
Approval recommended:

_____
Ted Schoenecker, Director
Public Works Department

Approved as to form:

_____
Assistant County Attorney

Attachment A - South Heights - Myrle Ave Stormwater Pond



Legend

- Contributing Drainage Area
- Stormwater Pond

Outfall Ownership

- Ramsey County/White Bear Lake
- Ramsey County/White Bear Lake
- White Bear Lake

Inlet Ownership

- Ramsey County
- White Bear Lake

Storm Pipe Ownership

- White Bear Lake
- Ramsey County
- Pink Drainage Area
- Blue Drainage Area
- Orange Drainage Area

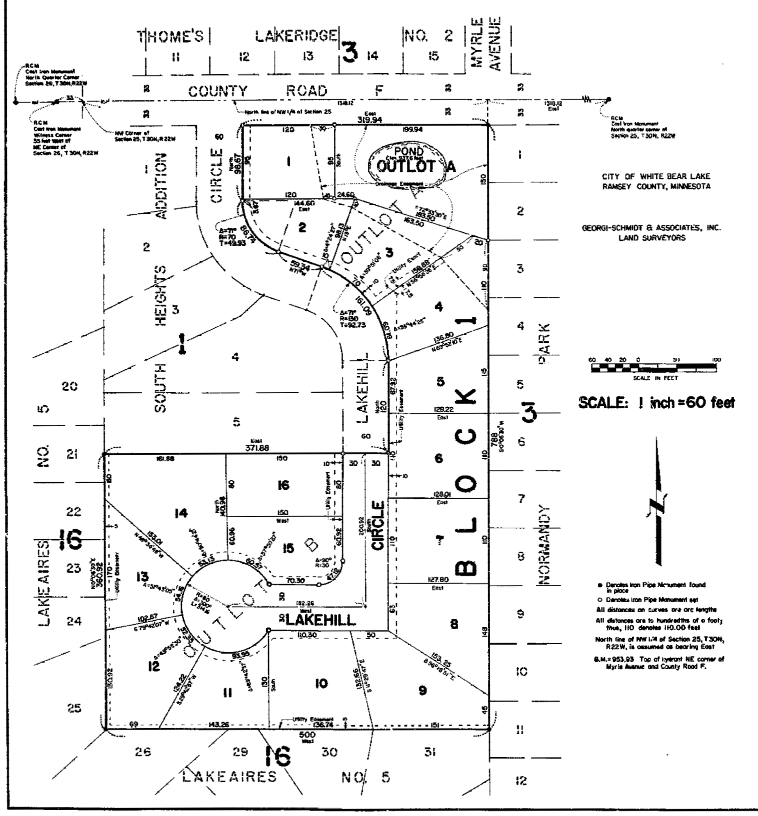
03/06/2020

Attachment B

31

OFFICIAL PLAT

SOUTH HEIGHTS ADDITION NO. 2



Know All Persons By These Presents that Robert S. Tilsen and Joyce Tilsen, husband and wife, owners, South Heights Inc., a Minnesota corporation, purchaser by contract for deed, and The First National Bank of Saint Paul, a United States corporation, mortgagee of the following described property situated in the City of White Bear Lake, Ramsey County, Minnesota:

Outlots A and B, South Heights Addition

Have caused the same to be surveyed, platted and known as SOUTH HEIGHTS ADDITION NO. 2 and do hereby dedicate to the public for public use forever the circle and drainage and utility easements as shown on the plat.

Have hereunto set our hands this 20th day of DECEMBER, 1979.

Signed:

Robert S. Tilsen — Joyce Tilsen

South Heights Inc., a Minnesota corporation, has caused these presents to be signed by its proper officers and its corporate seal to be hereunto affixed this 20th day of DECEMBER, 1979.

Signed: South Heights Inc.

Eldon O. Morrison, President — Polly J. Morrison, Secretary Treasurer

The First National Bank of Saint Paul, a United States corporation, has caused these presents to be signed by its proper officers and its corporate seal to be hereunto affixed this 20th day of DECEMBER, 1979.

Signed: The First National Bank of Saint Paul

its VICE PRESIDENT — its REAL ESTATE OFFICER

STATE OF MINNESOTA) S S
COUNTY OF RAMSEY)

The foregoing instrument was acknowledged before me, a Notary Public, this 20th day of December, 1979, by Robert S. Tilsen and Joyce Tilsen, husband and wife.

Notary Public, Ramsey County, Minnesota
My Commission Expires

STATE OF MINNESOTA) S S
COUNTY OF RAMSEY)

The foregoing instrument was acknowledged before me, a Notary Public, this 20 day of DECEMBER, 1979, by Eldon O. Morrison, its President, and by Polly J. Morrison, its Secretary-Treasurer of South Heights Inc., a Minnesota corporation, on behalf of the corporation.

Paul D. Curtis
Notary Public, County, Minnesota
My Commission Expires

STATE OF MINNESOTA) S S
COUNTY OF RAMSEY)

The foregoing instrument was acknowledged before me, a Notary Public, this 20th day of DECEMBER, 1979, by R.E. BALEANZ its VICE PRESIDENT, and by R.V. MATHEWS its REAL ESTATE OFFICER of the First National Bank of Saint Paul, a United States corporation, on behalf of the corporation.

Notary Public, Ramsey County, Minnesota
My Commission Expires

I, Donald W. Schmidt, hereby certify that I have surveyed and platted the property described in the dedication of this plat as SOUTH HEIGHTS ADDITION NO. 2; that this plat is a correct representation of said survey; that all distances are correctly shown on the plat; that all monuments have been correctly placed in the ground as shown; that the outside boundary lines are correctly designated on the plat; and there are no wet lands, easements or public highways other than as shown thereon.

Donald W. Schmidt
Registered Land Surveyor, Minnesota Registration No. 10459

STATE OF MINNESOTA) S S
COUNTY OF RAMSEY)

The Surveyor's certificate was subscribed and sworn to before me, a Notary Public, this 18th day of December, 1979.

Alan John Irwin
Notary Public, Anoka County, Minnesota
My Commission Expires May 23, 1986

Approved and accepted by the City Council of the City of White Bear Lake, Minnesota this day of October, 1979.

Mayor — Raymond Clerk

No delinquent taxes and transfer entered this day of May, 1980.

Director, Department of Property Taxation

By Deputy

Pursuant to Chapter 7, Minnesota Laws of 1976, this plat has been approved this 20th day of May, 1980.

F. R. Fuldens, Acting Ramsey County Surveyor

County Recorder, County of Ramsey, State of Minnesota

I hereby certify that this plat of SOUTH HEIGHTS ADDITION NO. 2 was filed in this office this 2 day of June, 1980, at o'clock A.M. and was filed in Book 92 of Plats, Page 21, as Document No. 2080518.

Eugene H. Gibbons, County Recorder

by Deputy

Attachment C – Drainage Area Summary

Total Drainage Area to South Heights – Myrle Avenue Pond

Total Area =	22.40 acres
Total Impervious Area =	5.08 acres
Total Pervious Area =	17.32 acres

Orange Drainage Area to Lakehill Circle Outlet

Total Area =	4.49 acres
Impervious Area =	1.03 acres
Pervious Area =	3.46 acres
City Drainage % =	100%
County Drainage % =	0%

Blue Drainage Area to Northeast Pond Outlet

Total Area =	10.55 acres
Impervious Area =	2.25 acres
Pervious Area =	8.30 acres
City Drainage % =	78%
County Drainage % =	22%

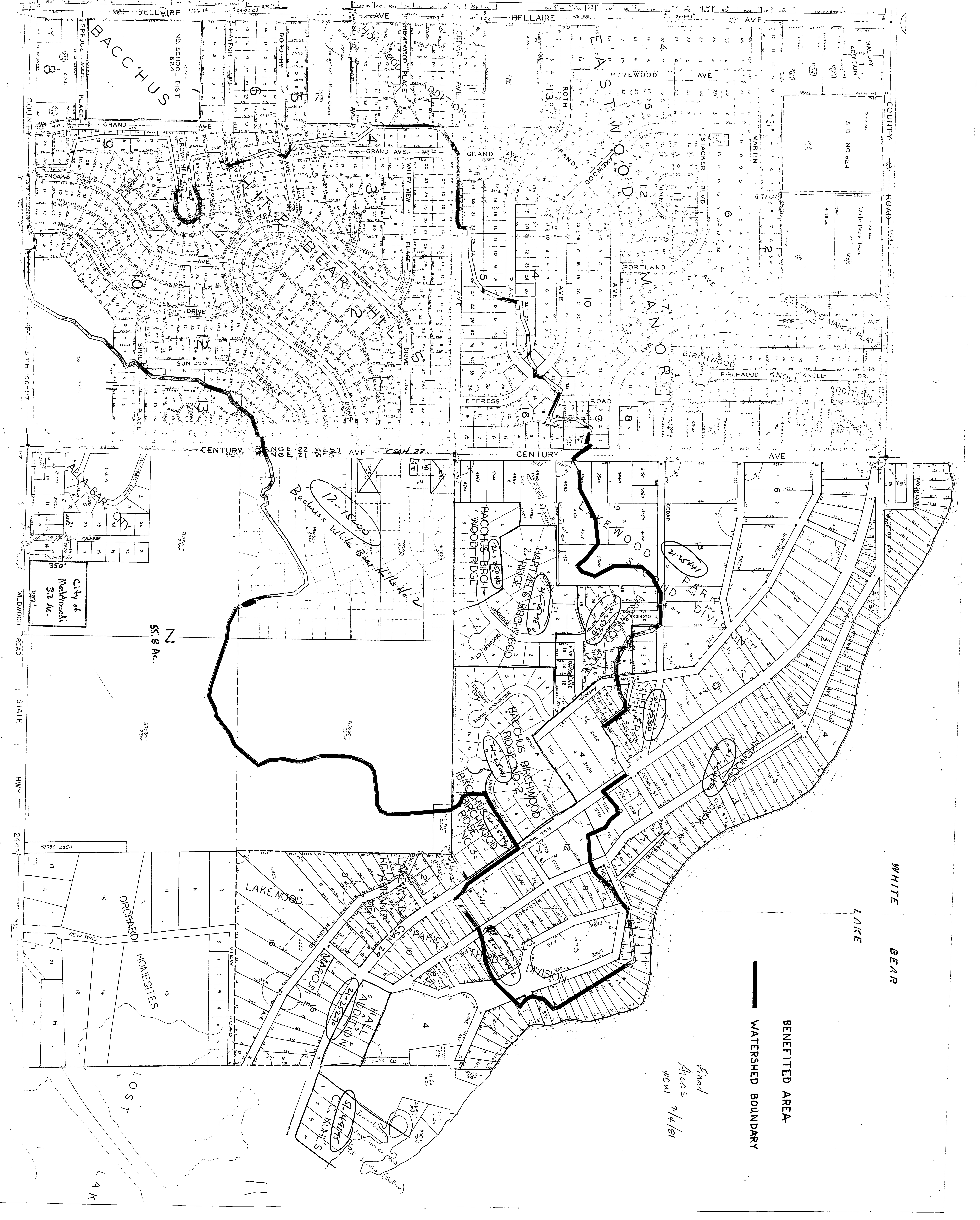
Pink Drainage Area to Northwest Pond Outlet

Total Area =	7.36 acres
Impervious Area =	1.80 acres
Pervious Area =	5.56 acres
City Drainage % =	59%
County Drainage % =	41%

Appendix E

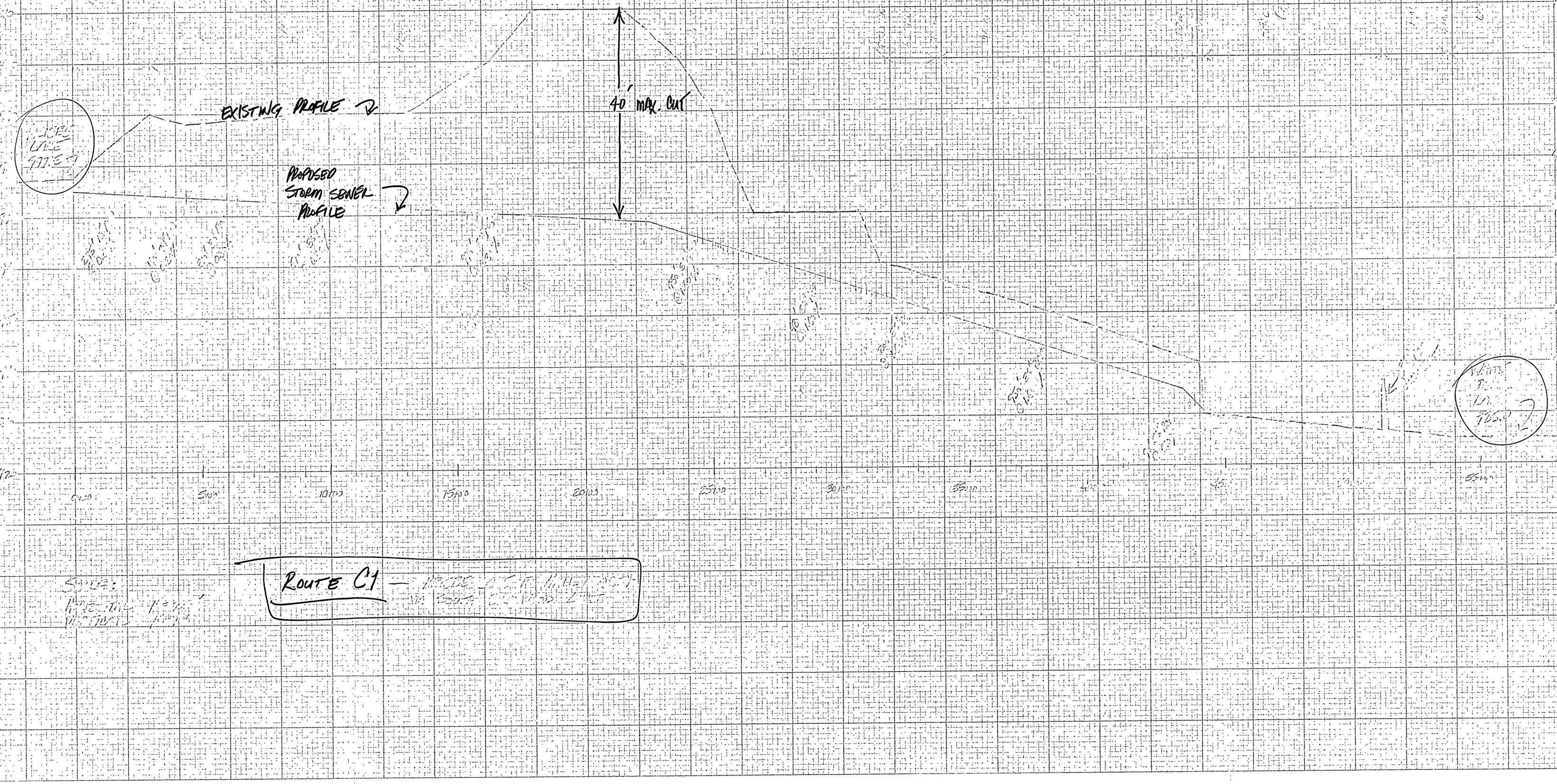
Priebe Lake Outlet Plan

OUTLET
STA. 46+30
HALLS MARSH
8.6AC
H 90
MH14
MH13
MH12
MH11
MH15
G 80
MH10
MH9
MH8
MH7
MH6
D 50
MH5
MH4
MH3
MH2
MH1
F 70
E 60
14.2AC
16.4AC
D2 40
B 20
6.5AC
11.7AC
C2 10
17.03AC
C1 30
20.86
EXIST.
21" STORM
12" RCP
NORTH ½
PRIEBE LAKE
OUTLET STRUCT.
STA. 0+00
PRIEBE LAKE
A 1
91.2AC
WILDWOOD HILLS
21.5AC
AREAS ADDED
BY LOCATION CHANGE
AREAS DELETED
WASH. CO. 27
SCH FILE 90047
13.2AC
Q = 18.2×4.7×.33
= 25.6
⇒ USE 27"



BELLAIRE AVE.
BACCHUS
IND. SCHOOL DIST. 624
EASTWOOD MANOR
WHITE BEAR HILLS
GRAND AVE.
HOMEWOOD PLACE ADDITION
VALLEY VIEW PLACE
RIVIERA DRIVE
SUN TERRACE
EFFRESS ROAD
PORTLAND AVE
BIRCHWOOD KNOLL ADDITION
EASTWOOD MANOR PLAT 2
COUNTY ROAD F
CENTURY AVE
RANGE 22 WEST
RANGE 21 WEST
CSAH 27
ALLA-BAR CITY
City of Mahtomedi 3.7 Ac.
55.8 Ac.
WILDWOOD ROAD STATE HWY 244
BACCHUS BIRCH WOOD RIDGE
HARTZELL'S BIRCHWOOD RIDGE
BACCHUS BIRCHWOOD RIDGE NO. 2
BACCHUS BIRCHWOOD RIDGE NO. 3
LAKEWOOD PARK SECOND DIVISION
LAKEWOOD PARK THIRD DIVISION
LAKEWOOD
ORCHARD HOMESITES
MARCUM
HALL ADDITION
C.C. KUHL'S
LOST LAKE
WHITE BEAR LAKE
BENEFITED AREA
WATERSHED BOUNDARY
Final Areas WOW 2/4/81

PRIEBE LAKE OUTFALL PROJECT



PRIEBE LAKE OUTFALL PROJECT

BACCHUS WHITE BEAR HILLS NO. 2

Scale in feet
100 75 50 25 0 50 100 200

SCALE 1 inch = 100 feet

CITY OF WHITE BEAR LAKE
WASHINGTON COUNTY, MINNESOTA

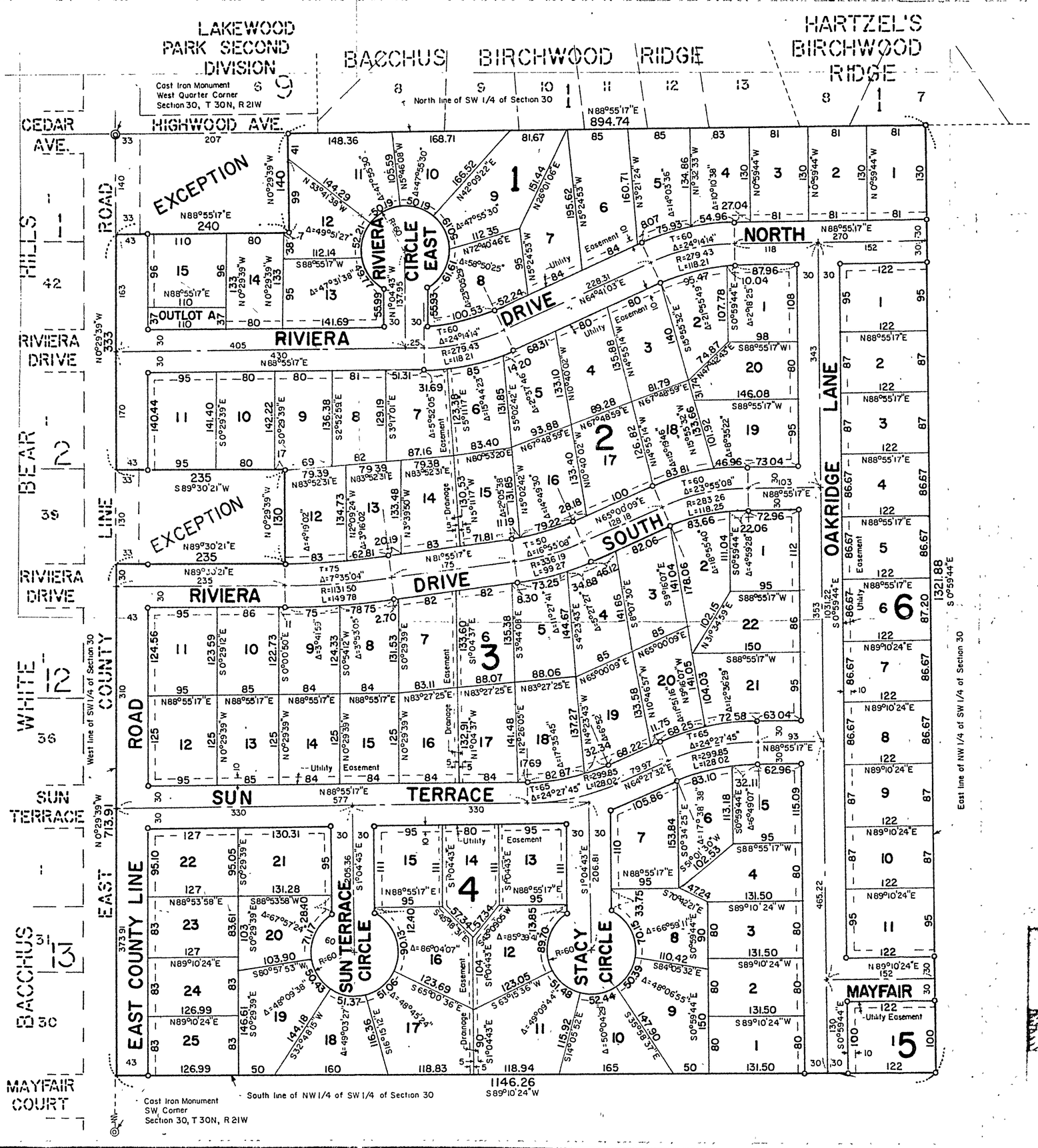
GEORGI - SCHMIDT & ASSOCIATES INC.
LAND SURVEYORS

Denotes iron pipe monument set marked by Registration No. 10459

All distances are to hundredths of a foot thus 101 denotes 101.00

line of Section 30, T30, R21 is assumed, N0°29'39"W

All distances along curves are arc lengths



Know All Men By These Presents That Kenneth W. Bacchus and Anita M. Bacchus, husband and wife, owners, of the following described property situated in the County of Washington and State of Minnesota towit:

The NW 1/4 of the SW 1/4 of Section 30, T30N, R21W, except the North 140 feet of the West 240 feet thereof, and except all that part of said Section 30 described as follows: Beginning at a point on the West line of said Section 30 distant 473 feet South of the Northwest corner of the SW 1/4 of said Section 30, thence East at right angles to said West line a distance of 235 feet, thence South at right angles a distance of 130 feet, thence West at right angles a distance of 235 feet, thence North at right angles a distance of 130 feet to the point of beginning.

have caused the same to be surveyed, platted and known as BACCHUS WHITE BEAR HILLS NO.2 and do hereby dedicate to the public for public use forever

In Witness whereof said Kenneth W. Bacchus and Anita M. Bacchus, husband and wife, have hereunto set their hands this _____ day of _____, 19__

Signed:

_____ _____

STATE OF MINNESOTA
COUNTY OF _____

This instrument was acknowledged before me this _____ day of _____, 19__ by Kenneth W. Bacchus and Anita M. Bacchus, husband and wife.

_____
Notary Public, _____ County, Minnesota
My Commission Expires _____

I, Donald W Schmidt hereby certify that I have surveyed and platted the property described in the dedication of this plat as BACCHUS WHITE BEAR HILLS NO 2; that this plat is a correct representation of said survey; that all distances are correctly shown on the plat; that all monuments have been correctly placed in the ground as shown; that the outside boundary lines are correctly designated on the plat; and that there are no wet lands or public highways to be designated on the plat other than as shown thereon.

_____
Minnesota Registered Land Surveyor Registration No 10459

STATE OF MINNESOTA
COUNTY OF RAMSEY S.S.

The foregoing certificate by Donald W. Schmidt was acknowledged before me, a Notary Public, this _____ day of _____, 19__

_____
Notary Public, Ramsey County, Minnesota.

Pursuant to Chapter 820, Laws of Minnesota, 1971, this plat has been approved this _____ day of _____, 19__

By _____
Washington County Surveyor

Approved by the City Council of the City of White Bear Lake, Minnesota, this _____ day of _____, 19__

Signed _____ Signed _____

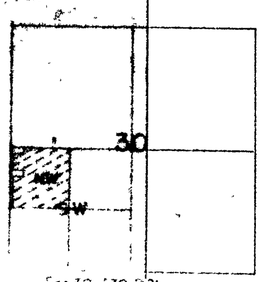
No delinquent taxes and transfer entered this _____ day of _____, 19__

By _____ _____
Washington County Auditor Deputy

Document Number _____

I hereby certify this instrument was filed in the Office of the County Recorder for record on this _____ day of _____, 19__ at _____ o'clock __ M. and was duly recorded in Washington County Records

By



Sec 30, T30, R21

WM – all 8" D.I.P

78-111

OWNER
Kenneth W Bacchus, Inc
1701 Arcade St
St Paul, Minn 55106
phone 771-8828

DESCRIPTION:
The NW 1/4 of the SW 1/4 of Section 30, T30N, R21W, Washington County, Minn
except the ~~South 115 feet of~~ the North 140 feet of the West 240 feet thereof,
and except the South 130 feet of the North 603 feet of the West 235 feet thereof (approx description – take 90° on 11C)
Subject to Century Ave
Contains 33 Acres, more or less.
(see Certificate)

ELEVATIONS
All elevations are White Bear Lake and U.S.G.S datum.
BM = 992.80 Top of Hyd-NE Corner of Century and Cedar
BM = 989.66 Tip of Hyd-SW Corner of Century and N Riviera
BM = 1013.42 Spk in PP – SW Corner of Century and Sun Terrace

GENERAL NOTES:
.11.8 denotes elevation 1011.8
89.0 denotes elevation 989.0
Topography taken when snow was 12" to 24" deep in fields
PP denotes Power Poles

HIGHWOOD AVE has been vacated by Village of Birchwood. This was subject to having Oakridge Drive extend to Century Ave. Same is under consideration by owners attorney.
8/72 – Village of Birchwood considering Bacchus Birchwood as such – No access to North by popular demand.

DRAINAGE
Good – all directions except for several low areas. Culvert under Century Ave. for drainage to Lake as shown.
94.0 – 2.3% Denotes tentative road elevation and grade

DEDICATIONS:
Streets, Cul-de-sacs and easements as shown hereon.

Summary of Lots
Block 1 – 15
Block 2 – 19
Block 3 – 21
Block 4 – 23
Block 5 – 11
Block 6 – 1
Total 90

Min. Lot Area = 10,500 Sq Ft
Min Lot = 80
Cor. lot min 91

UTILITIES
Sewers exist for Bacchus White Bear Hills, but none along Century Ave
For [illegible] plan – consult City Engr.

PROPOSED PLAT
of
BACCHUS WHITE BEAR HILLS NO 2
CITY OF WHITE BEAR LAKE
(Annexed from Lincoln Township)
WASHINGTON COUNTY, MINN
SCALE 1" = 100'

12/[illegible] – Revised Size of Exceptions
4/5/70 – Revised Block 1
8/72 – Revise Block 1 – No Access to North

Charles O Georgi Company
Civil Engineering & Land Surveying
2215 W County Road B
St Paul, Minn 55113
phone 631-0880

34.54 acres

2203 Reg

78-111

Owner
Kenneth W. Bacchus
1701 Arcade St
St. Paul Minn
Phone 771-8838

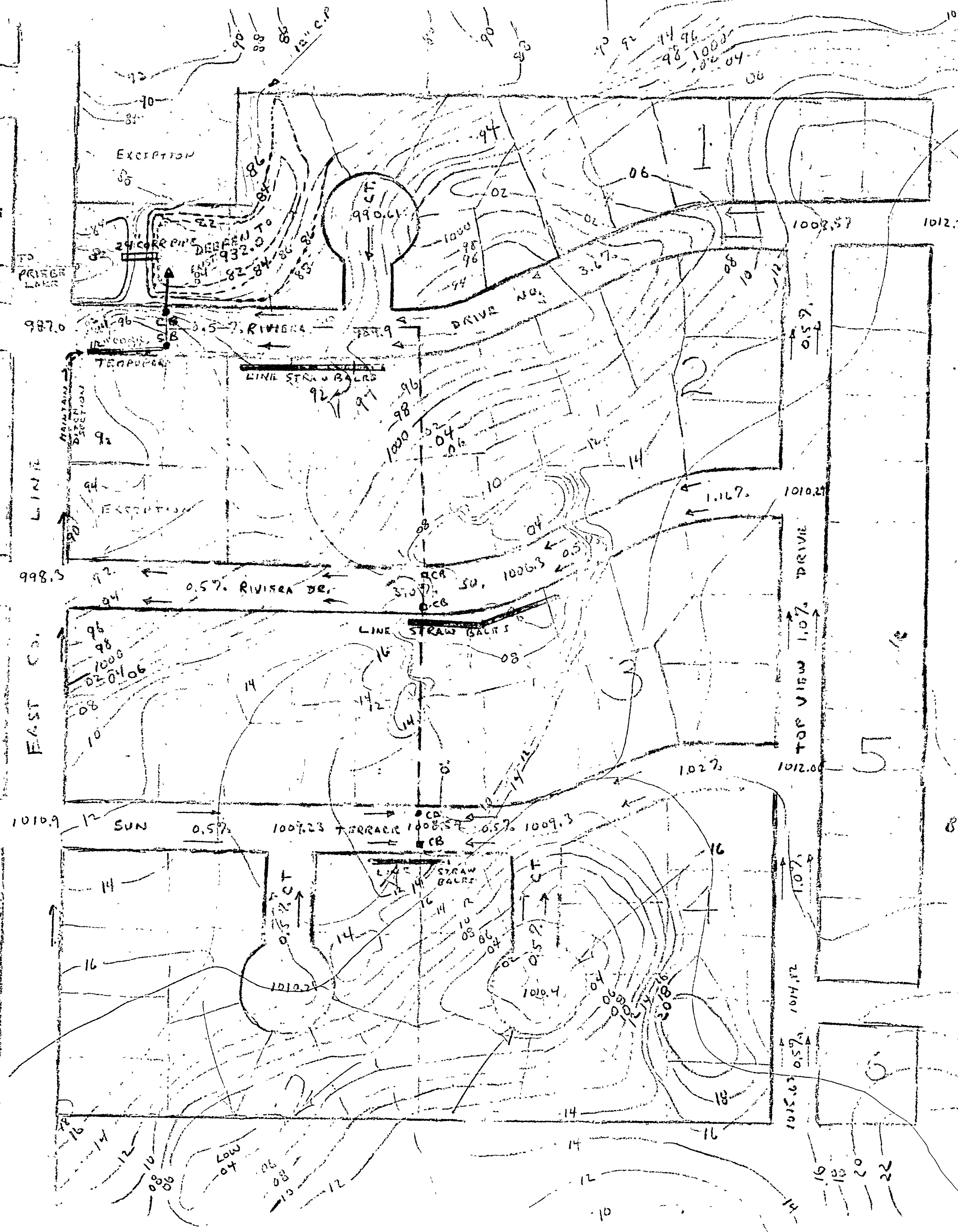
PROVIDE EARTH DIKE TO ELEV. 986.0 TO FORM SETTLING POND AREA.

PROVIDE 24" PIPE AT ELEVATION 984.0 INV.

WILL ALLOW RUN OFF WATER TO POND AND SETTLE UNTIL ELEV. 984.0 IS REACHED

LOAD OF ROCK AT OUTLET SIDE OF PIPE TO CONTROL EROSION AT WEST SIDE OF DIKE

PROVIDE 12" CORR. IRON PIPE FROM EAST CO. LINE DITCH. SECTION TO STUB AT C.B. AT SO. SIDE OF NO. RIV. DR.



DESCRIPTION
THE NW¼ OF SW¼ OF SECT 33 T 30N R21W WASH. CO. EXCEPT NO 185' OF WEST 240' THEREOF EXCEPT THE SO. 130 OF NO 605' OF THE WEST 235'

BACCHUS WHITE BEAR HILLS
#2
CITY OF WHITE BEAR LAKE
WASHINGTON COUNTY
MINN.

SCALE 1"=100'
90 LOTS

GRADING + SEDIMENT-
EROSION CONTROL
PLAN

Shopping Center 2.5 hr
Gen Off 0.5 hr
Frebe Lake 5.0 hr

NOTE

VERTICAL CONTROL FURNISHED BY EUGENE A. HICKOK & ASSOCIATES
MINNESOTA STATE GRID, SOUTH ZONE, SHOWN AT 1000 FOOT INTERVALS
VERTICAL DATUM IS MEAN SEA LEVEL.
PHOTOIMAGERY TRANSFORMED BY SCANNING TECHNIQUES WHICH MAY PRODUCE DOUBLE OR MISMATCHED IMAGES, USE THE MEAN OF IMAGE POSITIONS FOR MAP POINT

Mark Hurd
AERIAL SURVEYS INC.
MINNEAPOLIS, MINN
SANTA BARBARA, CALIF SAN JUAN, P.R.

LEGEND

⊕ PHOTO CENTER
895.6 FIELD ELEVATION
886.4 PLOTTER ELEVATION
INDEX CONTOUR
INTERMEDIATE CONTOUR
APPROXIMATE CONTOUR
SECTION CORNER APPROXIMATE LOCATION
1/4 CORNER APPROXIMATE LOCATION
× BENCH MARK
△ HORIZONTAL CONTROL POINT

SCALE 1" = 200'
0 100 200 400 600 800 FEET
CONTOUR INTERVAL 2 FEET
TOPOGRAPHY BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS TAKEN IN APRIL, 1976

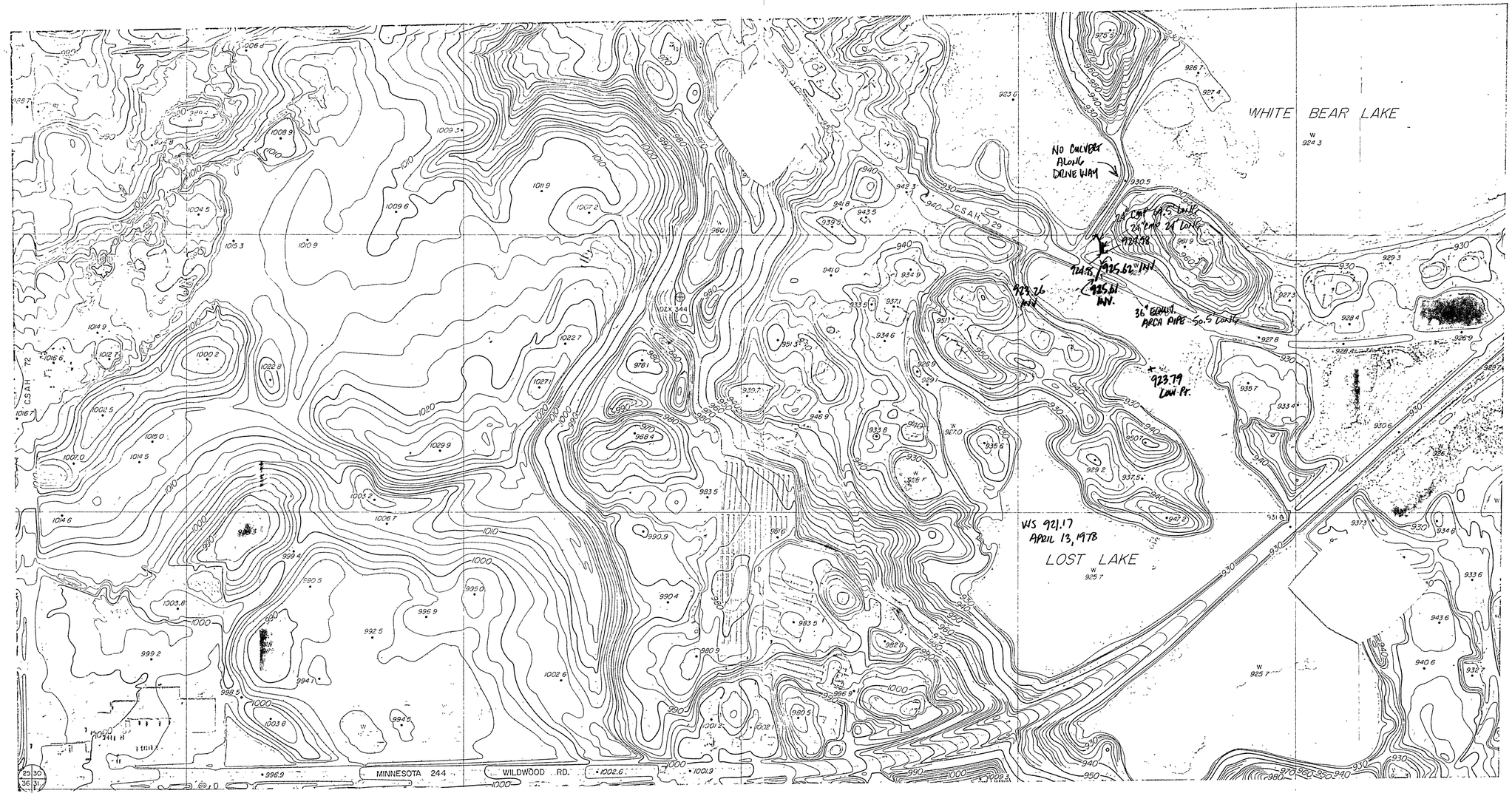
ORTHOPHOTOMAP

N1/2 SECTION 30
T 30 N, R 21 W
WASHINGTON COUNTY, MINNESOTA

G-682

2,263,000 2,264,000 2,265,000 2,266,000 2,267,000 2,268,000

749,000



NOTE

VERTICAL CONTROL FURNISHED BY EUGENE A HICKOK & ASSOCIATES

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PHOTOIMAGERY TRANSFORMED BY SCANNING TECHNIQUES WHICH MAY PRODUCE DOUBLE OR MISMATCHED IMAGES, USE THE MEAN OF IMAGE POSITIONS FOR MAP POINT

LEGEND

- PHOTO CENTER
- 896.6 FIELD ELEVATION
- *886.4* PLOTTER ELEVATION
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- APPROXIMATE CONTOUR
- SECTION CORNER APPROXIMATE LOCATION
- 1/4 CORNER APPROXIMATE LOCATION
- BENCH MARK
- HORIZONTAL CONTROL POINT

SCALE 1" = 200'

0 200 400 600 800 FEET

CONTOUR INTERVAL 2 FEET

TOPOGRAPHY BY PHOTOGRAMMETRIC METHODS FROM PHOTOGRAPHS TAKEN IN APRIL, 1976

Mark Hurd AERIAL SURVEYS INC.
MINNEAPOLIS MINN
SANTA BARBARA CALIF SAN JUAN, P.R.

ORTHOPHOTOMAP

S1/2 SECTION 30
T 30 N, R 21 W
WASHINGTON COUNTY, MINNESOTA

BACCHUS WHITE BEAR HILLS NO. 2

Scale in feet
100 75 50 25 0 50 100 200

SCALE 1 inch = 100 feet

CITY OF WHITE BEAR LAKE
WASHINGTON COUNTY, MINNESOTA

GEORGI-SCHMIDT & ASSOCIATES INC.
LAND SURVEYORS

o Denotes iron pipe monument set marked by Registration No. 10459.

All distances are to hundredths of a foot thus 101 denotes 101.00 feet.

Orientation of this bearing system is the Washington County Coordinate System South Zone.

All distances along curves are arc lengths

LAKEWOOD PARK SECOND DIVISION

BACCHUS BIRCHWOOD RIDGE

HARTZEL'S BIRCHWOOD RIDGE

Ramsey County / Washington County

Ramsey Co. Mon. Cast Iron Monument West Quarter Corner Section 30, T 30N, R 21W

North line of SW 1/4 of Section 30

N88°55'17"E 894.74

NE Corner of NW 1/4 of SW 1/4 of Section 30, T 30N, R 21W

CEDAR AVE.

HIGHWOOD AVE.

EXCEPTION

RIVIERA CIRCLE EAST

NORTH DRIVE

RIVIERA DRIVE

C.S.A.H. NO. 27

WHITE BEAR LINE ROAD

EXCEPTION

SOUTH DRIVE

OAKRIDGE LANE

HIGHWAY NO. 27 WHITE BEAR COUNTY ROAD

SUN TERRACE

SUN TERRACE CIRCLE

STACY CIRCLE

MAYFAIR AVE.

MAYFAIR COURT

BACCHUS ROAD

COUNTY STATE AID HIGHWAY NO. 27 EAST

West line of SW 1/4 of Section 30

East line of NW 1/4 of SW 1/4 of Section 30

SW Corner of NW 1/4 of SW 1/4 of Section 30, T30N, R21W

SE Corner of NW 1/4 of SW 1/4 of Section 30, T30N, R21W

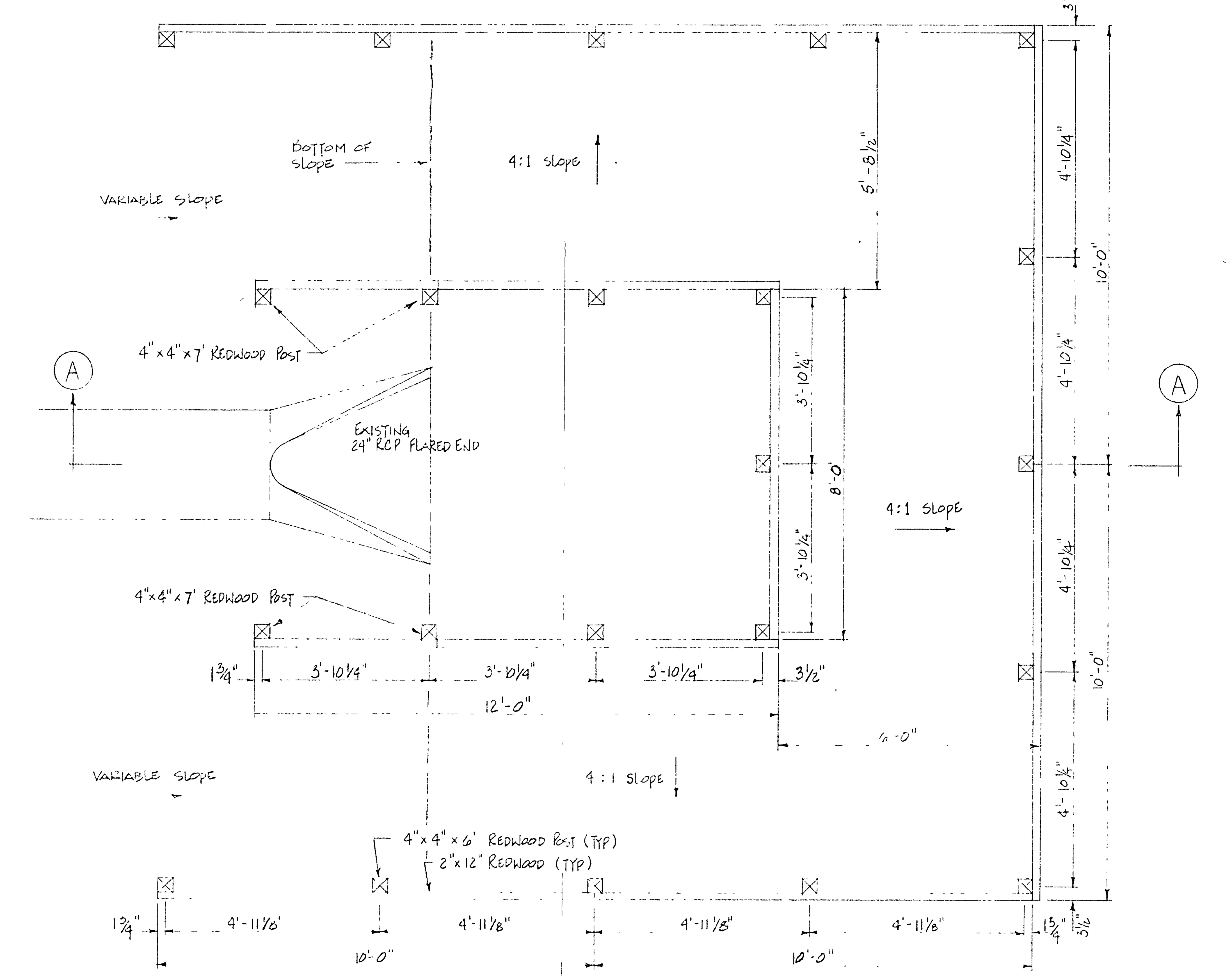
Ramsey Co. Mon. Cast Iron Monument SW. Corner Section 30, T 30N, R 21W

South line of NW 1/4 of SW 1/4 of Section 30

1146.30 S89°10'24"W

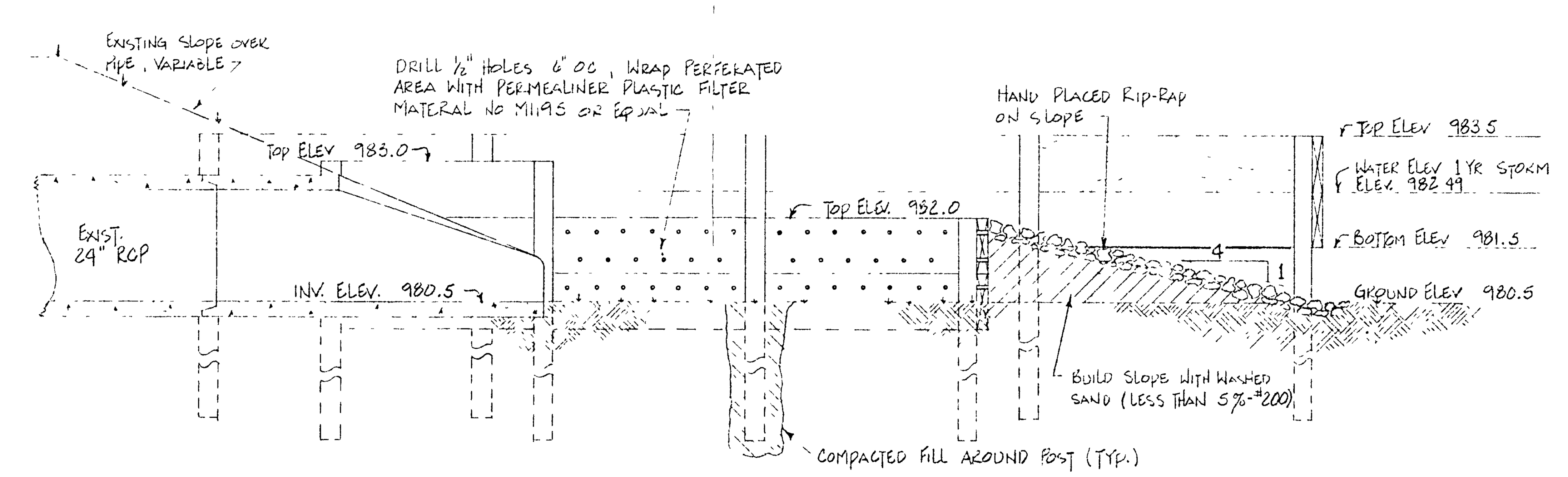
Sec 30, T30 No Sc

45,800
1,100
1,300
607
1



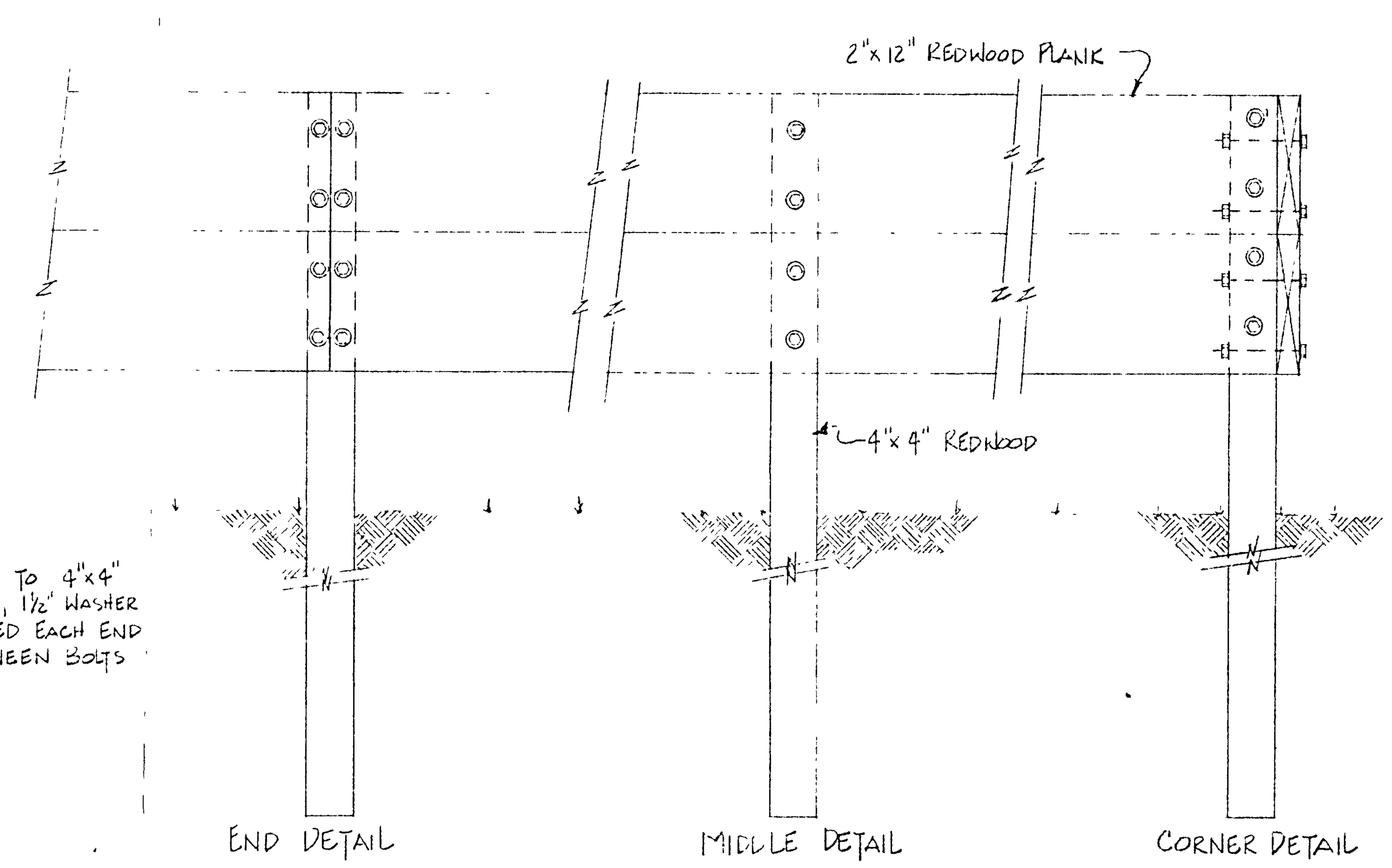
PLAN

SCALE: ½"=1'-0"



SECTION A-A

SCALE: ½"=1'-0"



NOTE: 2"x12" REDWOOD PLANKS, ATTACH TO 4"x4" REDWOOD POSTS WITH ½"Ø BOLT, 1½" WASHER BOTH ENDS OF BOLT. 2 REQUIRED EACH END OF PLANK. 6" SPACING BETWEEN BOLTS

BOLT DETAIL

SCALE: 1"=1'-0"

78-11
3/20/79

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

DATE 3-13-79 REG. NO. 6971

SURVEY	
DRAWN	KJL
DESIGN	JCA
APPROV'D	JCA

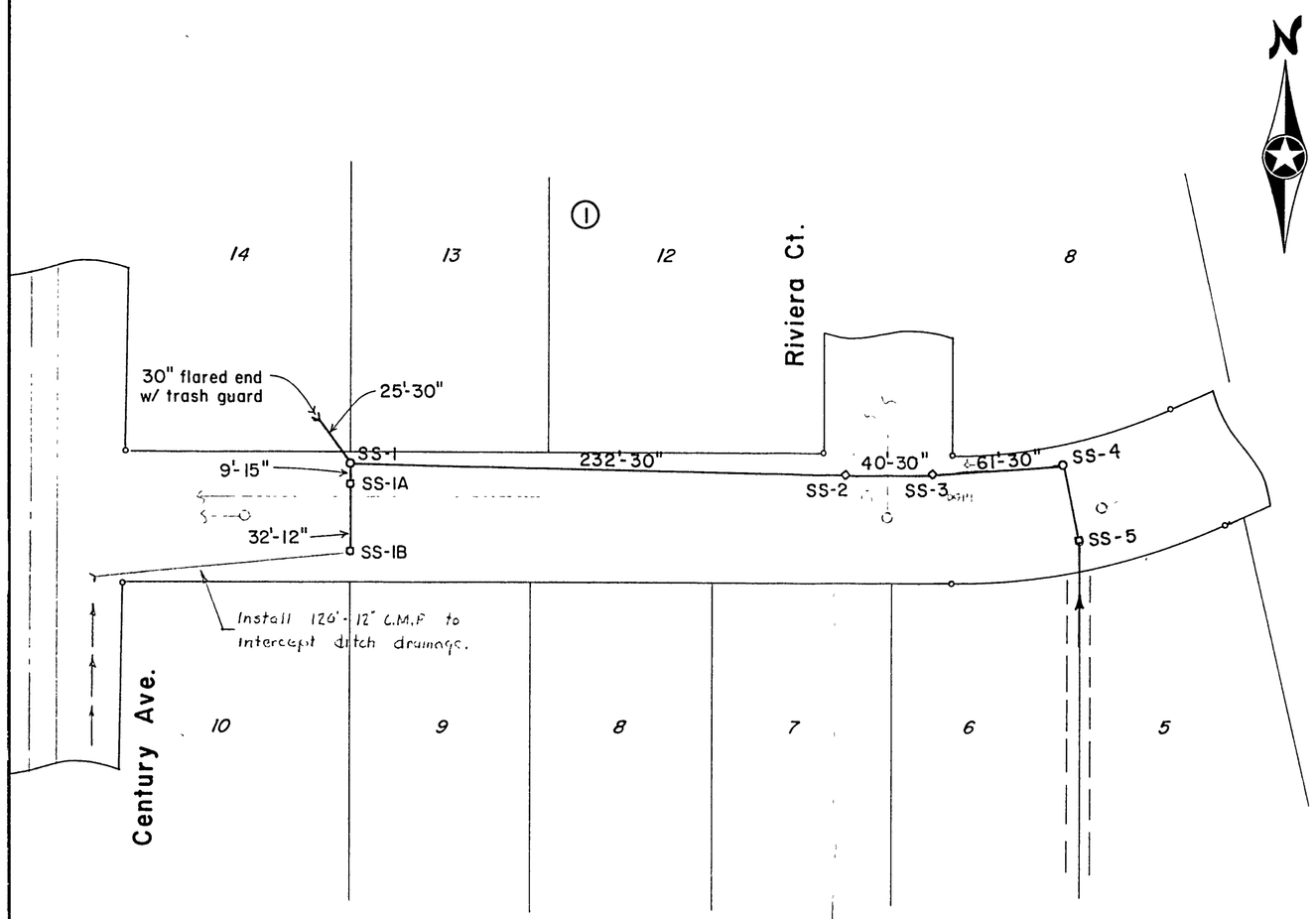
REVISIONS

BONESTROO, ROSENE, ANDERLIK & ASSOC., INC.
ST. PAUL, MINNESOTA

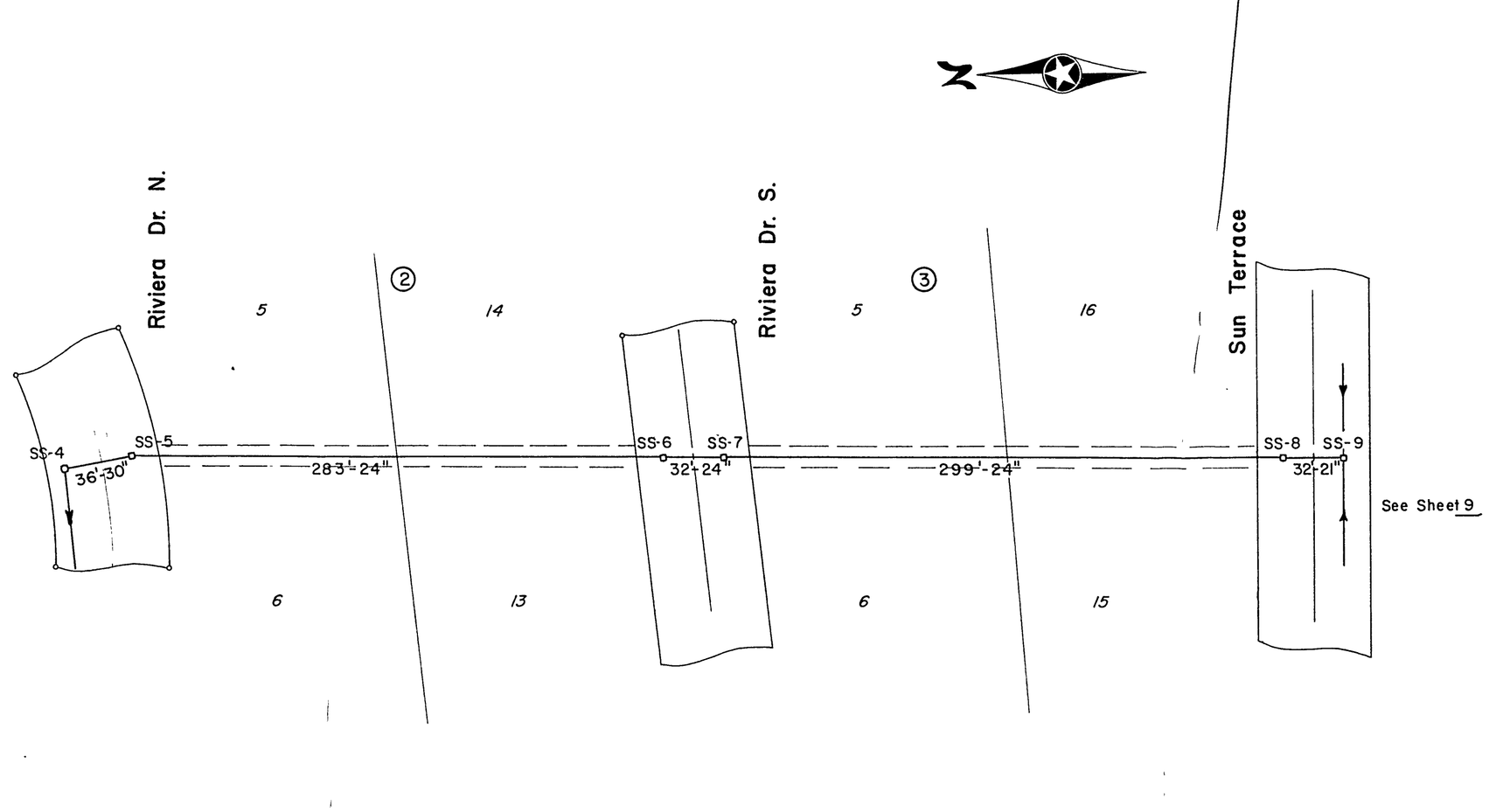
WHITE BEAR LAKE, MINNESOTA
DATE: MARCH 13, 1979 COMM 2203

WHITE BEAR HILLS No. 2
OVERFLOW WEIR AND BAFFLE

SHEET 1/1

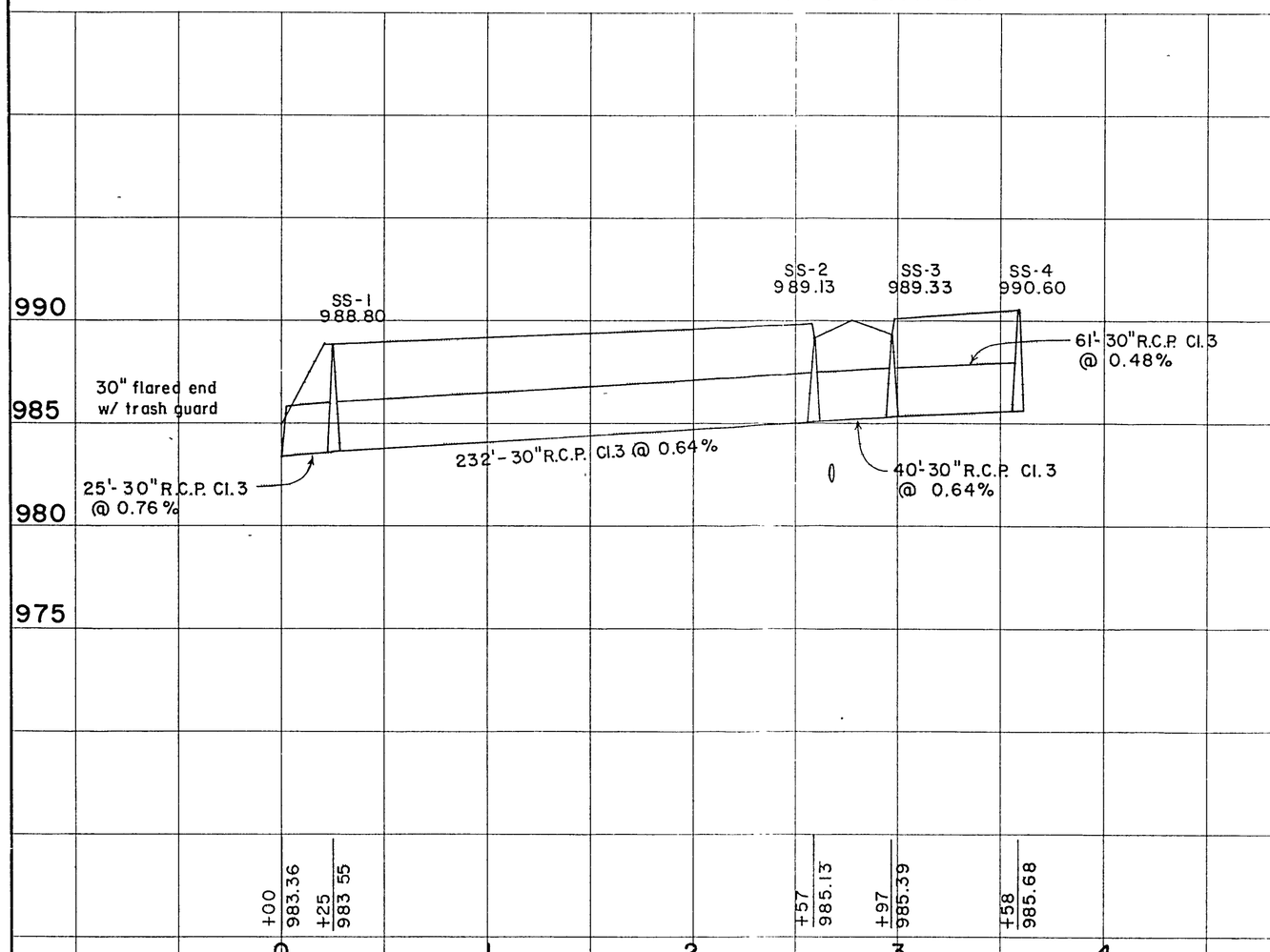


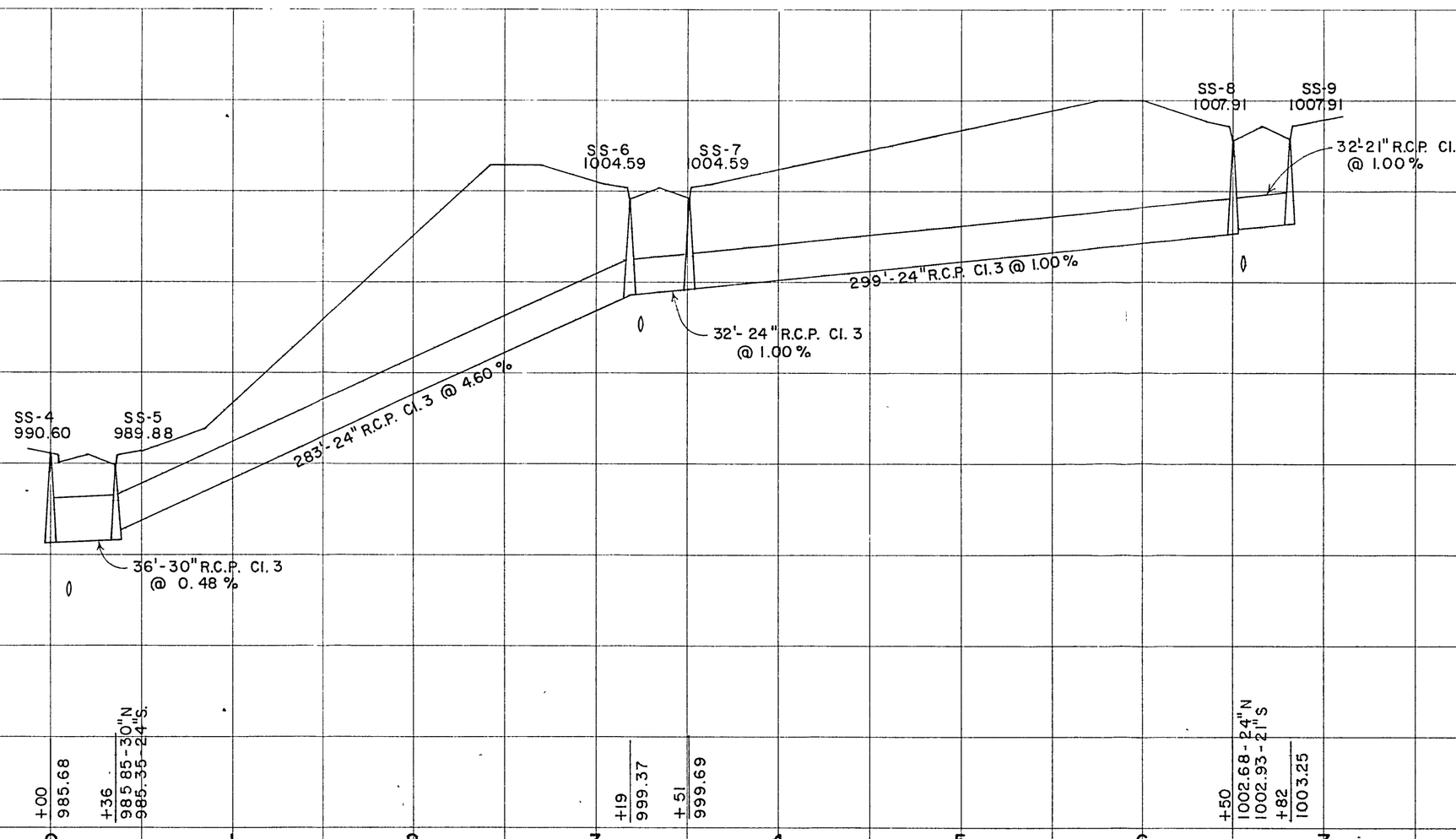
RIVIERA DRIVE N. STORM SEWER



EASEMENT STORM SEWER

Scale: 1"= 50' Horz.
1"= 5' Vert.





I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
DATE 9-20-78 REG. NO 6971 Joseph B. Anderlik

SURVEY
DRAWN T.G.B.
DESIGN J.B.A.
APPROVED JBA

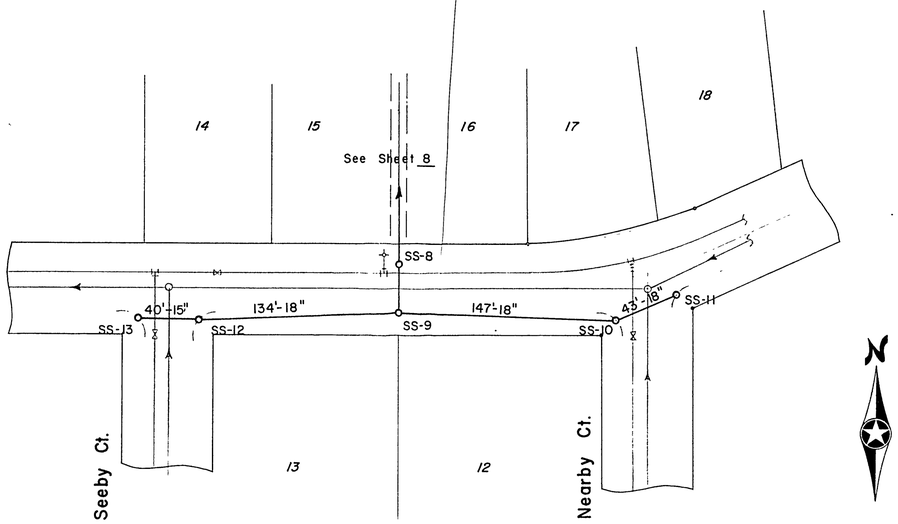
REVISIONS

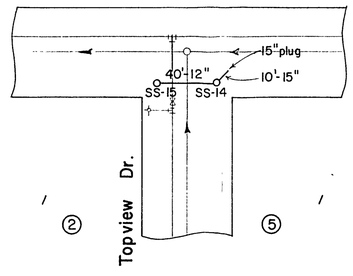
BONESTROO, ROSENE, ANDERLIK & ASSOC., INC.
ST PAUL, MINNESOTA

WHITE BEAR LAKE, MINNESOTA
DATE SEPT 20, 1978 COMM 2203

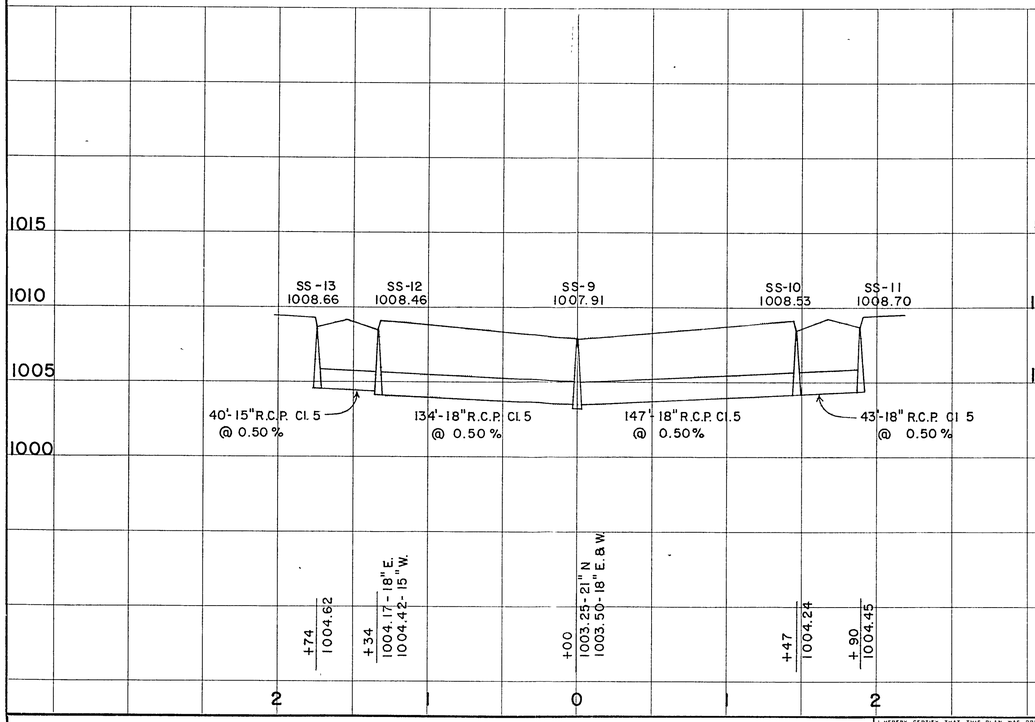
BACCHUS WHITE BEAR HILLS NO.2
SEWER & WATER EXTENSIONS

SHEET 8/9



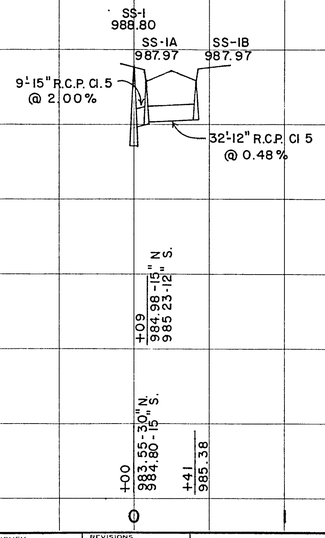


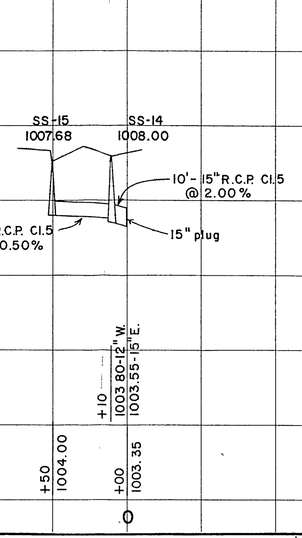
SUN TERRACE STORM SEWER



RIVIERA DRIVE N. STORM SEWER

Scale: 1"=50' Horz.
1"=5' Vert.





I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

DATE 9-20-78 REG. NO. 6971 Joseph A. Anderlik

SURVEY	
DRAWN	TGB
DESIGN	JCA
APPROV'D	JAA

REVISIONS

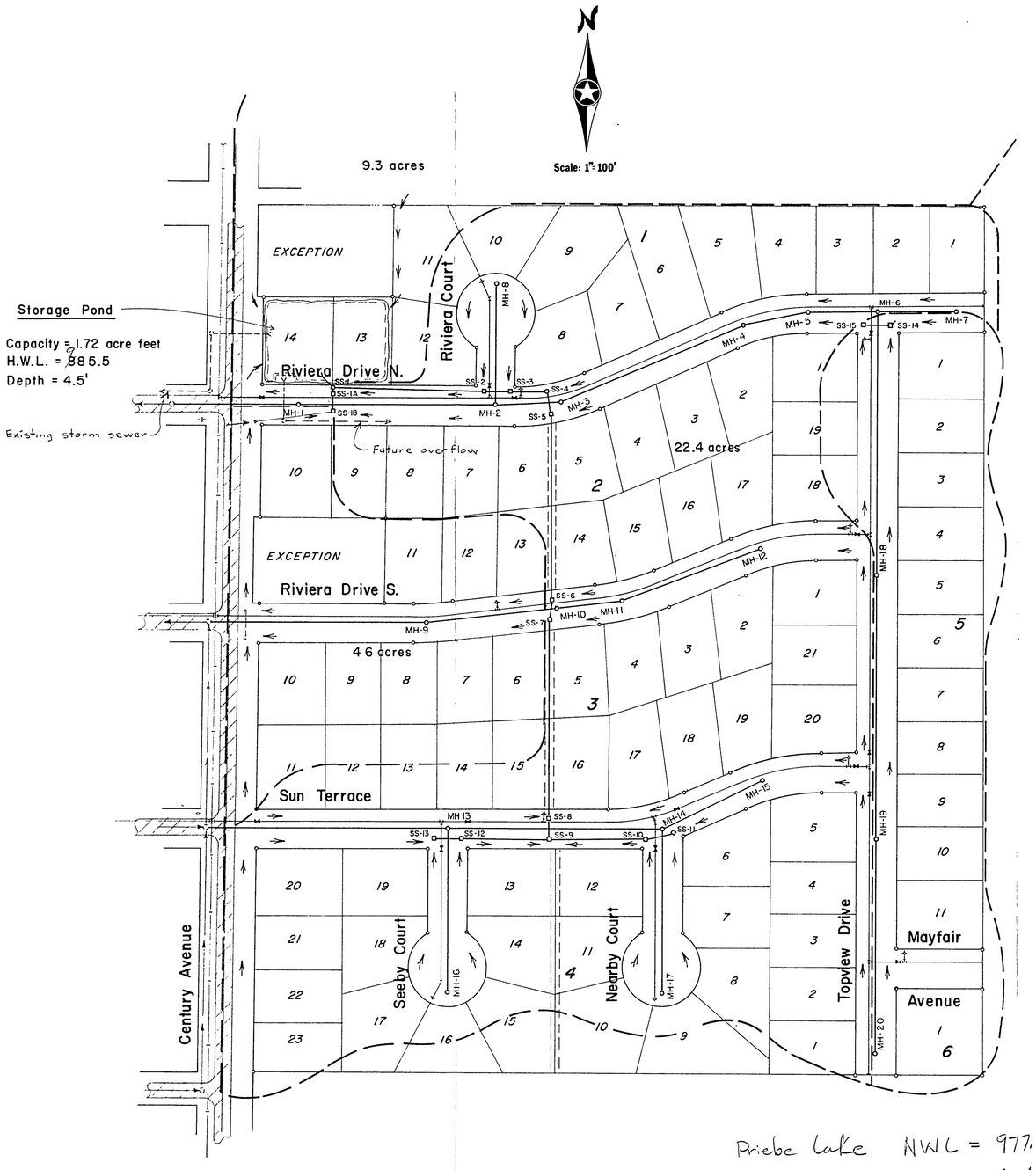
BONESTROO, ROSENE, ANDERLIK & ASSOC., INC.
ST PAUL, MINNESOTA

WHITE BEAR LAKE, MINNESOTA
DATE SEPT 20, 1978 COMM 2203

BACCHUS WHITE BEAR HILLS NO.2
SEWER & WATER EXTENSIONS

SHEET 9/9

78-111
Recd 11/10/78



Priebe Lake NWL = 977.5
100 yr WL = 981.1

STORM WATER DRAINAGE PLAN

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
DATE 9-20-78 REG. NO. 6971

SURVEY	
DRAWN	TAB
DESIGN	JCA
APPROV'D	

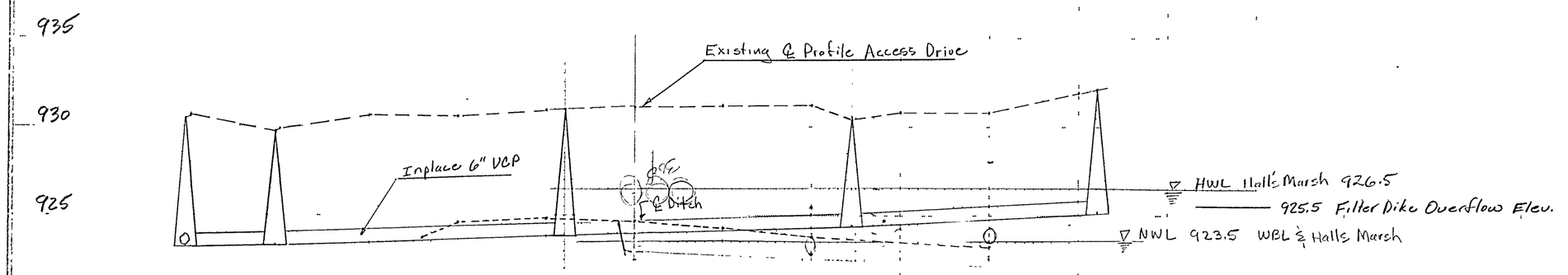
REVISIONS
Drainage Additions 11-3-78

BONESTROO, ROSENE, ANDERLIK & ASSOC., INC.
ST. PAUL, MINNESOTA

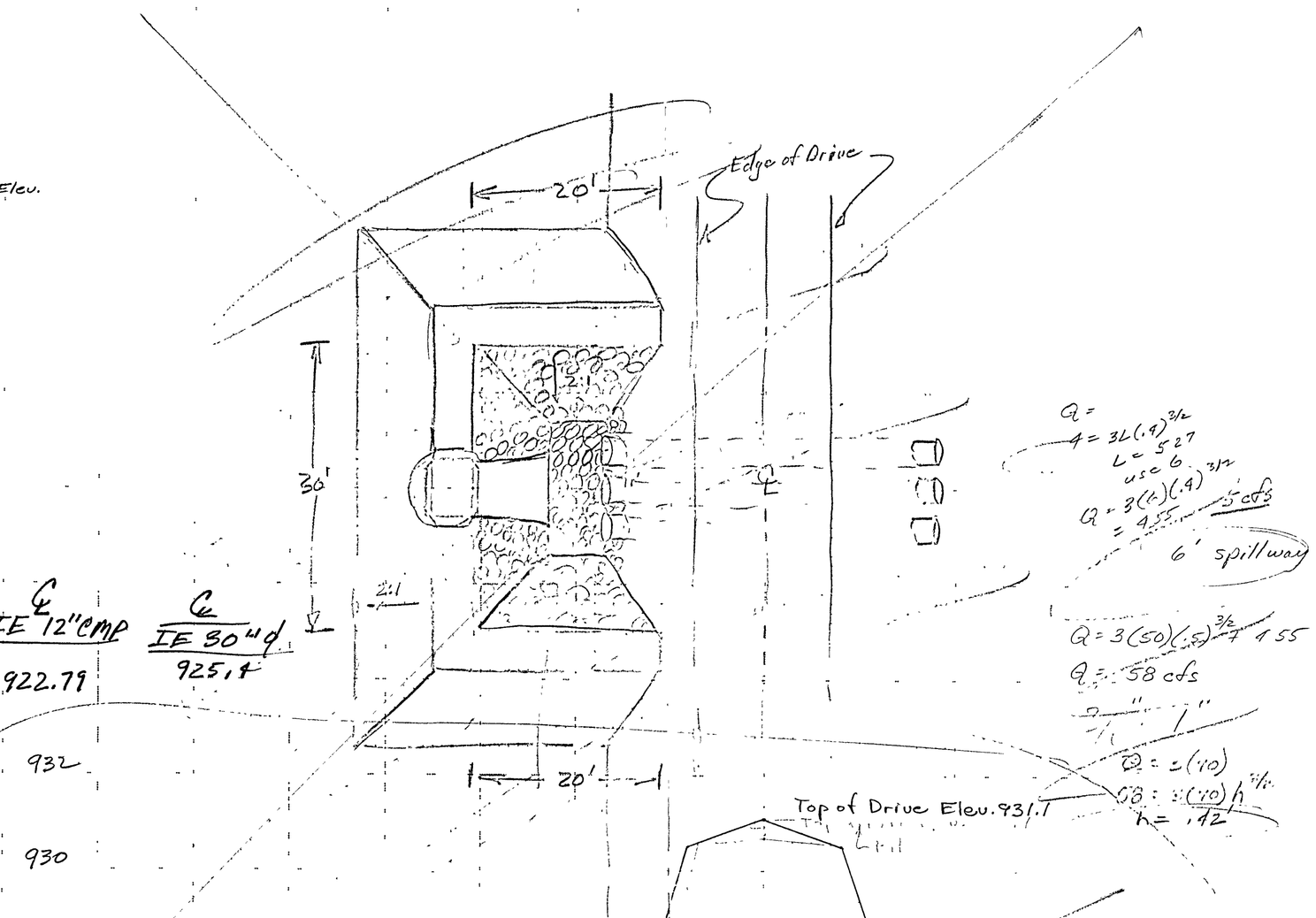
WHITE BEAR LAKE, MINNESOTA
DATE SEPT 20, 1978 COMM 2203

BACCHUS WHITE BEAR HILLS NO.2
SEWER & WATER EXTENSIONS

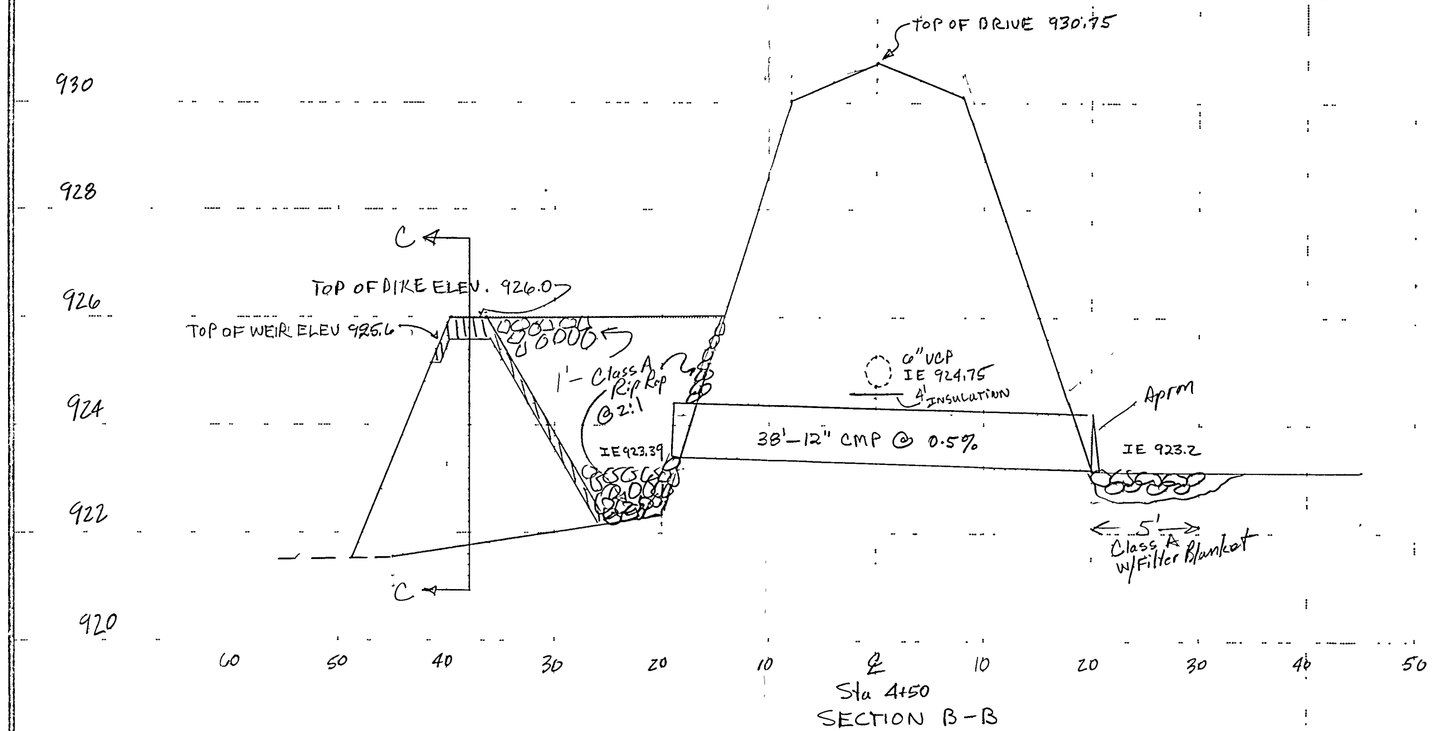
SHEET 2/9

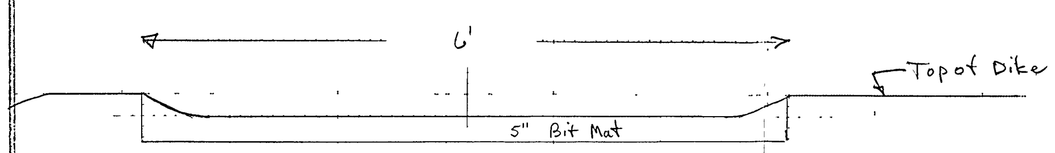


STA	TOP DR	IE 6" VCP	℄ IE 12" CMP	℄ IE 30" d
3+50	931.2	924.3	922.79	925.1±
3+90	930.7	924.54		



$Q = 4 = 3L(.9)^{3/2}$
$L = 5.27$
use 6
$Q = 3(6)(.9)^{3/2} = 4.55$ cfs
6' spillway
$Q = 3(50)(.5)^{3/2} + 4.55$
$Q = .58$ cfs
$Q = 3(10)$
$.58 = 3(10)h^{3/2}$
$h = .12$



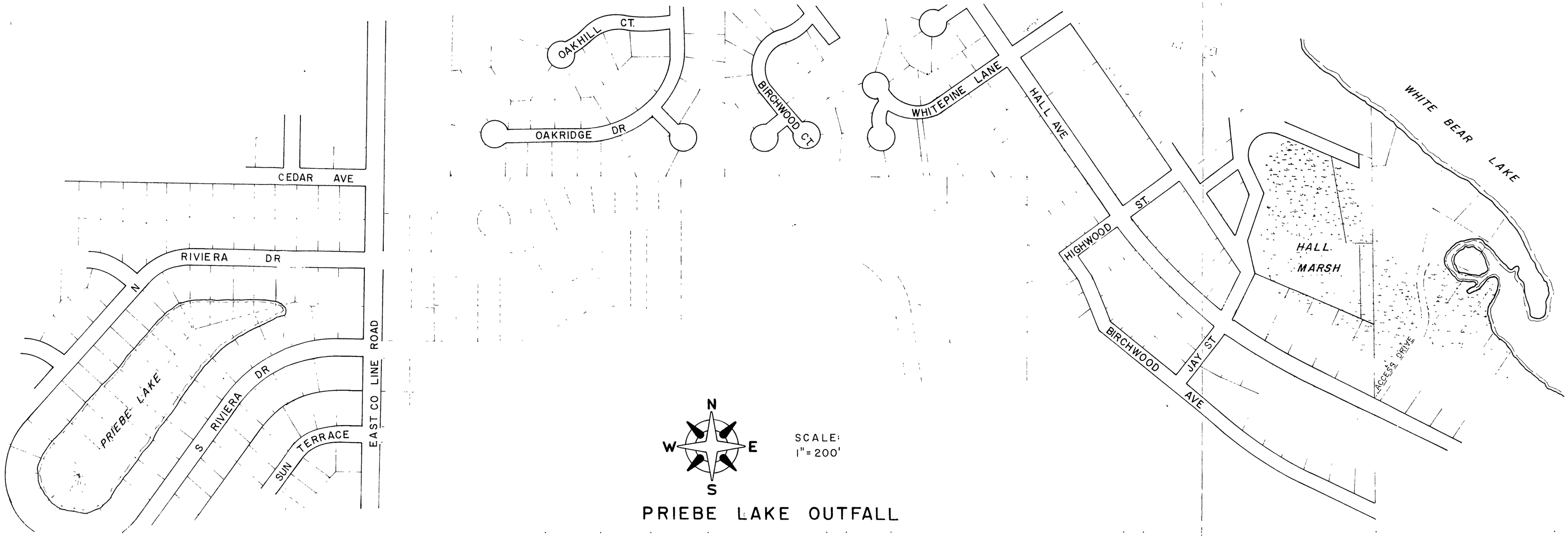


OK

State Proj. No.

Sheet No.

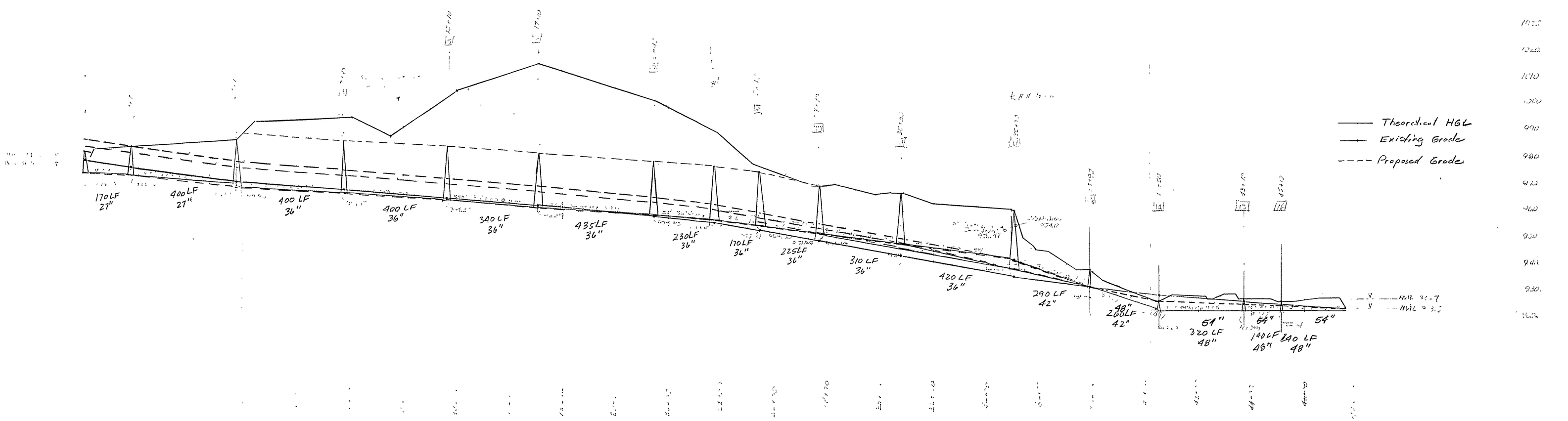
Fed. Proj. No.



N
W E
S

SCALE:
1" = 200'

PRIEBE LAKE OUTFALL



State Proj. No. | Sheet No. of Sheets

Fed. Proj. No.

OAKHILL CT.
OAKRIDGE DR
BIRCHWOOD CT.
WHITEPINE LANE
CEDAR AVE
RIVIERA DR
N
S RIVIERA DR
SUN TERRACE
EAST CO. LINE ROAD
PRIEBE LAKE
HALL AVE
HIGHWOOD ST.
BIRCHWOOD AVE.
JAY ST.
JACKSON DRIVE
HALL MARSH
WHITE BEAR LAKE
MH No1
MH No2
MH No3
MH No4
MH No5
MH No6
MH No7
MH No8
MH No9
MH No10
MH No11
MH No12
MH No13
MH No14

$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$

N
W E
S

SCALE:
1" = 200'

PRIEBE LAKE OUTFALL

Correct R.E. to Ground offset

0+00 M.H. No. 1 I.E. 975.5 R.E. 979.5
1+70 M.H. No. 2 I.E. 971.5 R.E. Manhole Existing
5+70 M.H. No. 3 I.E. 970.17 O.E. 979.50 R.E. 9.850
10+70 M.H. No. 4 I.E. 966.43 R.E. 980.57
13+68.32 M.H. No. 5 I.E. 963.63 R.E. 1002.39
16+10 M.H. No. 6 I.E. 960.27 R.E. 1003.16
23+31 M.H. No. 7 I.E. 955.22 R.E. 989.72
26+52 M.H. No. 8 I.E. 950.18 R.E. 979.18
29+65.5 M.H. No. 9 I.E. 947.27 R.E. 969.50
34+26 M.H. No. 10 At Hall Avenue I.E. 938.10 O.E. 969.50 R.E. 937.60
37+07 M.H. No. 11 I.E. 934.29 R.E. 939.0
39+55.50 M.H. No. 12 I.E. 932.89 O.E. 939.33 R.E. 939.0
42+67.50 M.H. No. 13 I.E. 929.02 R.E. 939.0
47+04.50 M.H. No. 14 I.E. 923.88 R.E. 930.5

Proposed Street Grade Beaches, White Bear Hills #2
Proposed Street Grade 1020 M. Finzer
Existing Profile
Depth of Excavation

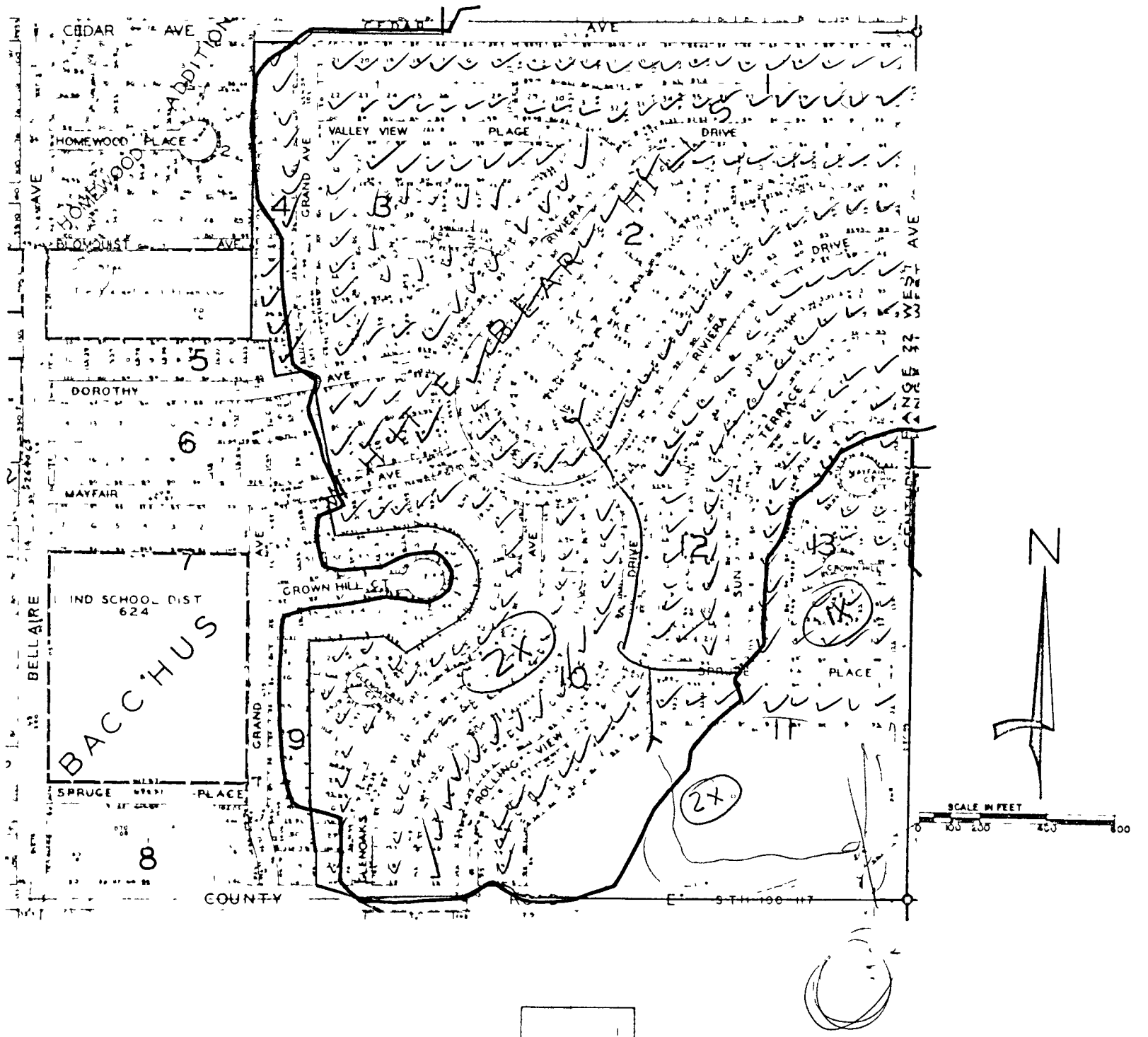
27" 0.8%
36" 0.8%
36" 0.8%
36" 0.8%
36" 1.2%
36" 1.56%
36" 1.2%
42" 2.67%
42" 2.67%
48" 0.1%
48" 0.1%
48" 0.1%

V.C. 600'

0+00 5+00 7+00 9+00 10+00 11+00 12+00 15+00 16+00 17+00 20+00 24+00 28+00 32+00 36+00 38+00 43+00 45+00 47+00

State Proj. No. Sheet No. of Sheets

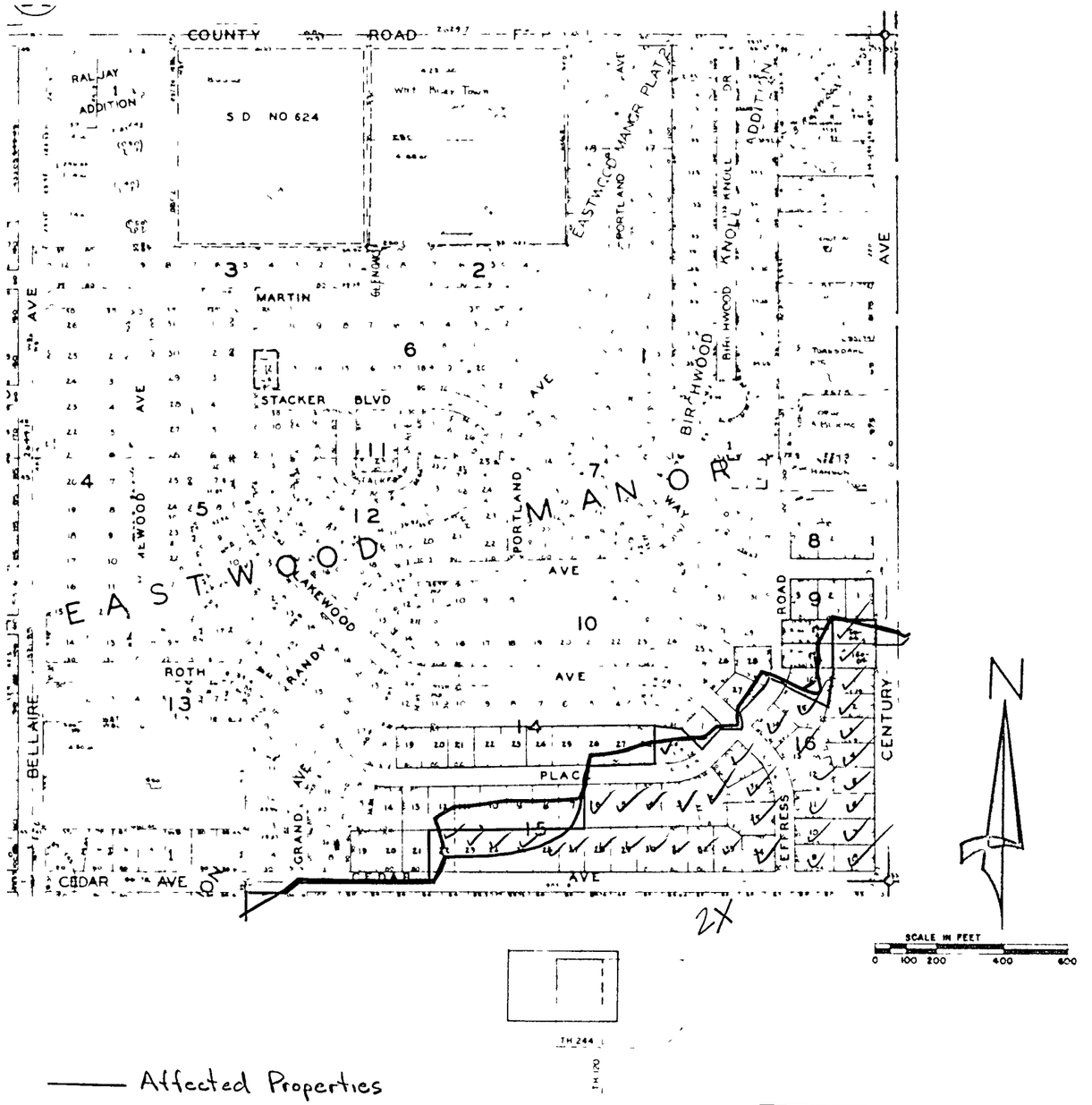
Notes
Viewing Lots
4/19/79.



——— Affected Properties
——— Existing Watershed

PRIEBE LAKE OUTFALL	Fig. No.
AFFECTED PROPERTY MAPS	13
	FEB 78

EUGENE A. NICKOK & Associates
Hydrologists Engineers Planners
Minneapolis Minnesota



—— Affected Properties

—— Existing Watershed

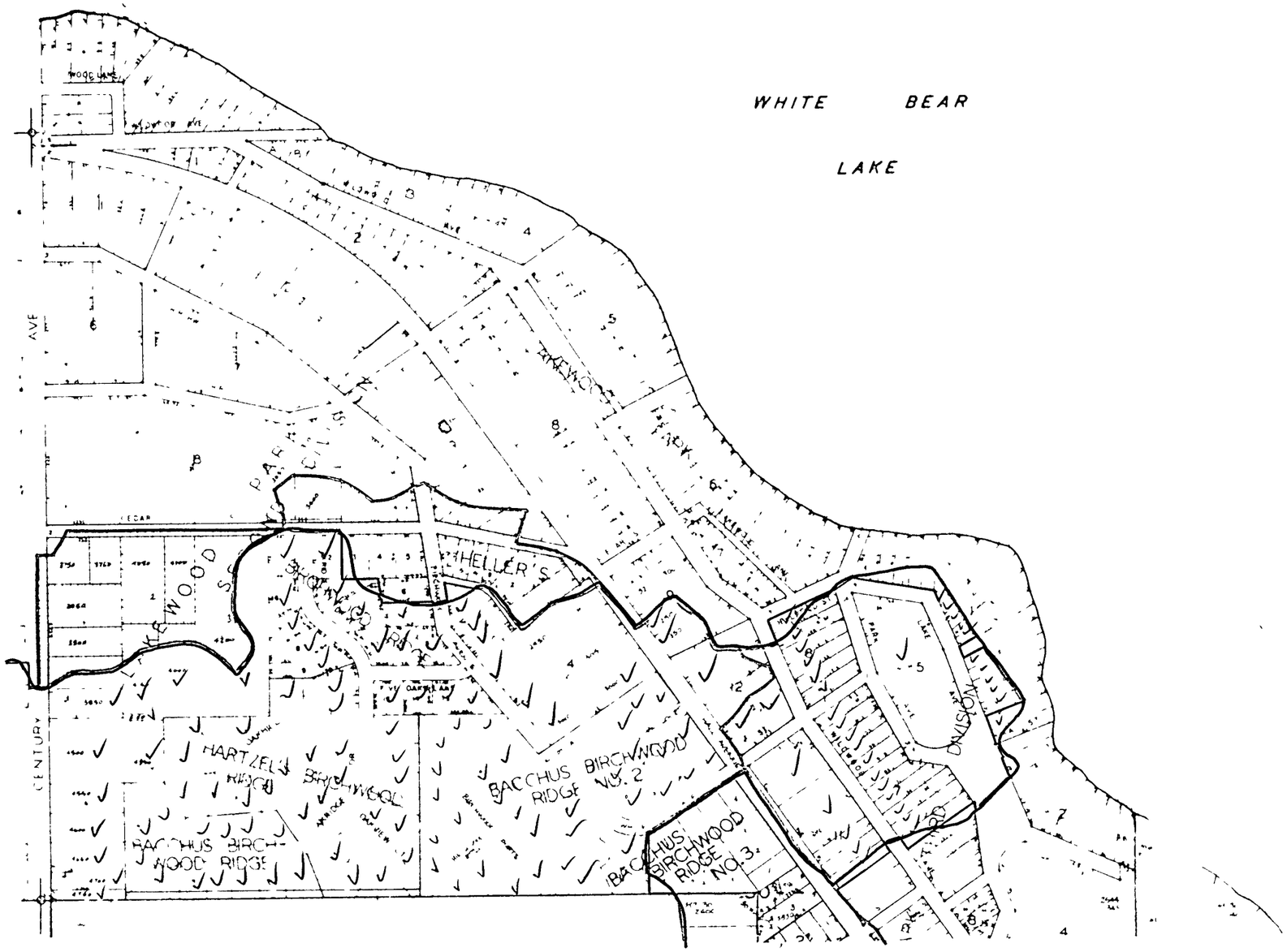
PRIEBE LAKE OUTFALL

AFFECTED PROPERTY MAPS

14

FEB 78

EUGENE A HICKOK & Associates
Hydrologists Engineers Planners
Minneapolis Minnesota



LEGEND

- AREA DELETED BY AMENDED WATERSHED BOUNDARY 300 000 s f
- AREA DELETED BY REALIGNMENT 956 000 s f
- AREA ADDED BY REALIGNMENT 706 000 s f
- Affected Properties
- Existing Watershed

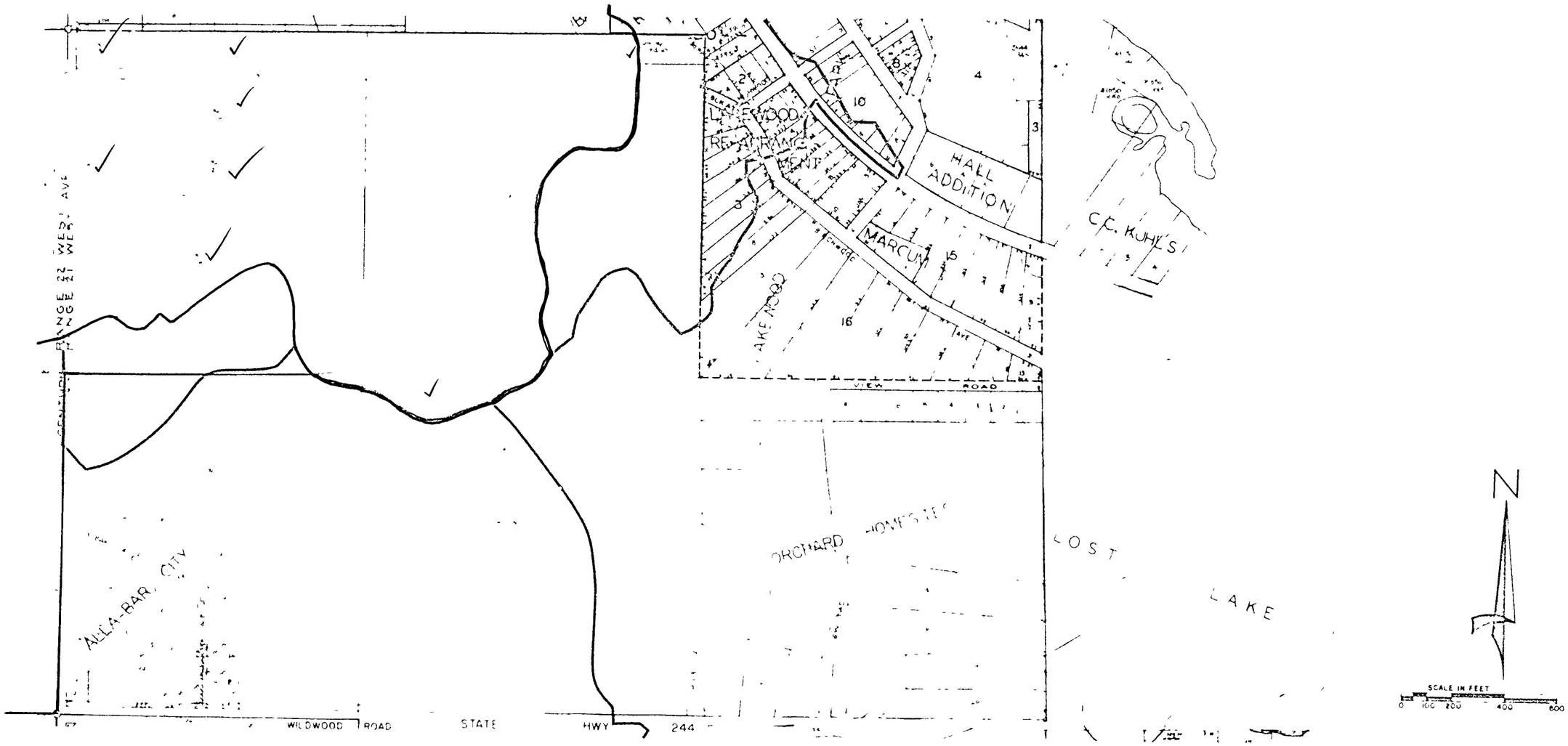
PRIEBE LAKE OUTFALL

AFFECTED PROPERTY MAPS

2A

MAR 1979

EUGENE A HICKOK & Associates
Hydrology etc Engineers Planners
Minneapolis Minnesota



LEGEND

AREA DELETED BY REALIGNMENT

Affected Properties

Existing Watershed

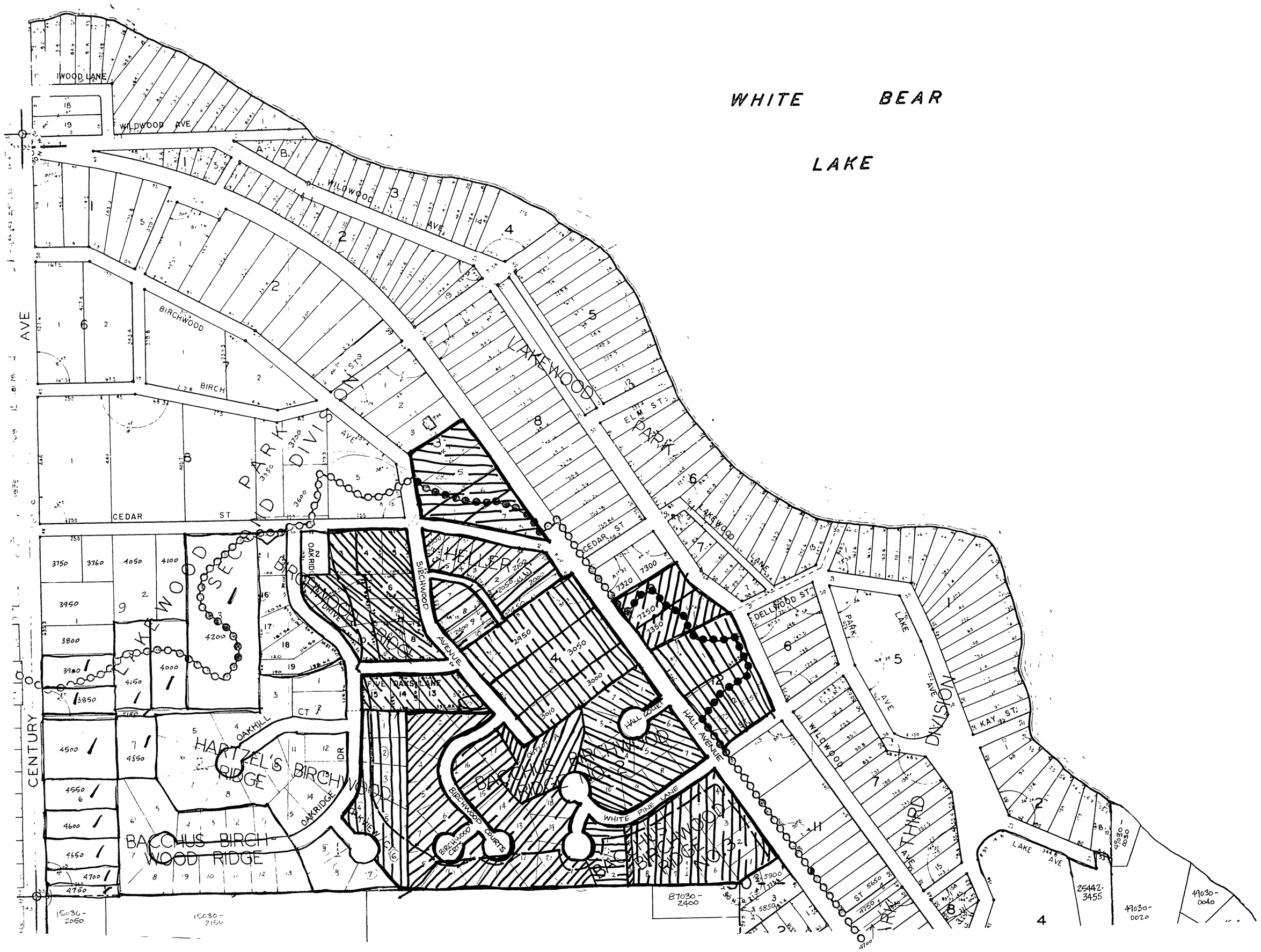
PRIEBE LAKE OUTFALL

AFFECTED PROPERTY MAPS

3A

MAR 1979

EUGENE A. NICKOK & Associates
Hydrologists Engineers Planners
Minneapolis Minnesota



PRIEBE LAKE OUTFALL

AFFECTED PROPERTY MAPS

Fig No. 9

FEB 78

EUGENE A. HICKOK & Associates
Hydrologists Engineers Planners
Minneapolis Minnesota

CENTURY AVE
RANGE 22 WEST
RANGE 21 WEST
WILDWOOD ROAD
STATE HWY 244
LAKEWOOD
LAKEWOOD RE-ARRANGEMENT
HALL ADDITION
C.C. KUHL'S
MARCUM
BIRCHWOOD
VIEW ROAD
ORCHARD HOMESITES
LOST LAKE
ALLA-BAR CITY
ALLA-BAR LANE
Lot A
87030-2350
87030-2300
87030-7300
87030-2250
87030-2400
15030-2100
15030-2200
15030-2000
15-30-2050
49030-0040
49030-0015
49030-0050
49030-0020
2544-3455
N
SCALE IN FEET
0 100 200 400 600

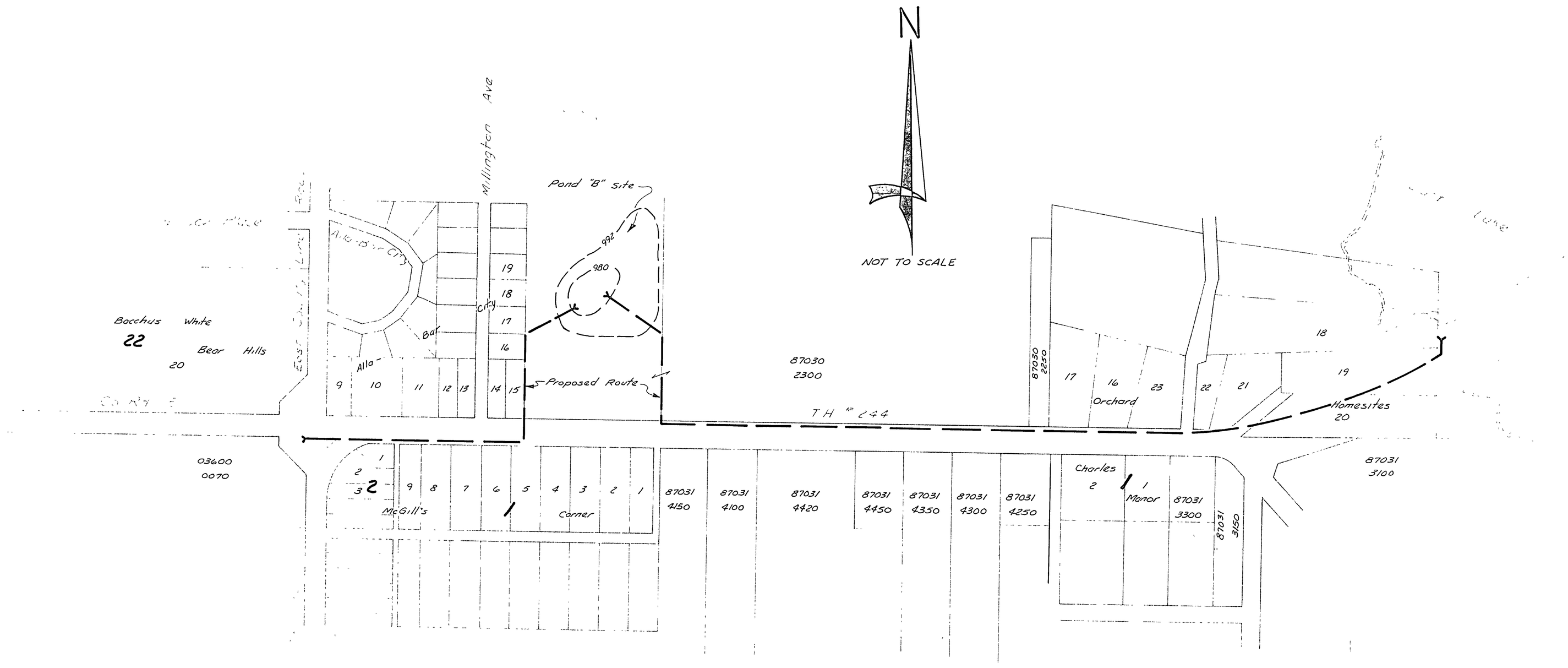
PRIEBE LAKE OUTFALL

AFFECTED PROPERTY MAPS

Fig. No. 10

FEB 78

EUGENE A. HICKOK & Associates
Hydrologists Engineers Planners
Minneapolis, Minnesota



PRIEBE LAKE OUTFALL	Fig No.
RECOMMENDED ROUTE E-1	E-1
PROPERTY OWNERS ALONG ROUTE	JAN 78

EUGENE A. HICKOK & Associates
Hydrologists Engineers Planners
Minneapolis, Minnesota


Cedar St.
Hall
Grotto
Wildwood Ave.
Birchwood Ave.
Five Oaks
Lane
Oakhill Ct.
Hall Ct.
Whitepine
Lane
Oakridge Ct.
Bacchus Ct.
Birchwood
Oakridge Dr.
Hartzell's Ct.
Birchwood Ridge
Birchwood Ridge No. 2
Birchwood Ridge No. 3
Lakewood Park
Lakewood Park Third Division
Lake Highwood
Lakewood Park Third Division 4
Hall Addition
Rearrangement
C.C. Kuhl's Subdivision
Access Drive
15030 2050
15030 2150
Proposed Route
15030 2000
15030 2100
15030 2200
87030 2400
87030 2350
25442 3455
49030 0040
49030 0015
49030 0050
49030 0020
N
NOT TO SCALE
Cedar
Homewood Place
Riviera Ct.
N. Riviera Dr.
S. Riviera Dr.
Bacchus
White Bear
Co. Rd. E
T.H. # 244

PRIEBE LAKE OUTFALL

RECOMMENDED ROUTE C-1

PROPERTY OWNERS ALONG ROUTE

Fig No C-1

JAN 78

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SCALE: HORIZ. 1"=50'
VERT 1"=5'

NOTE SANITARY SEWER SERVICE LOCATIONS ARE ONLY APPROXIMATE. CONTRACTOR SHALL ASSUME RESPONSIBILITY OF CONTACTING MUNICIPALITY FOR EXACT LOCATIONS. CONTRACTOR SHALL EXPOSE SANITARY SEWER SERVICES FOR LOTS 1 THRU 4, BLOCK 2 WHITE BEAR HILLS PRIOR TO INSTALLATION OF STORM SEWER UPSTREAM OF M.H. NO. 12 FOR THE POSSIBILITY OF LOWERING THE STORM SEWER UPSTREAM OF M.H NO. 12

NOTE STA 5+76 TO STA 17+05 TREES TO BE REMOVED BY OTHERS

INSTALL: 3-36" RCP LONG RADIUS BENDS 30.5° RADIUS

SEE SHEET 3 OF 6

NORTH RIVIERA DRIVE

PROPOSED ℄ NO RIVIERA DR

PROPOSED 36" RCP

INSTALL: 3-36" RCP LONG RADIUS BENDS 30.5° RADIUS

RIVIERA CIRCLE EAST

OAKRIDGE LANE

EXIST 9" SAN SEWER

EXIST 21" STORM DRAIN

EXIST 8" WM

EXIST 12" STORM DRAIN

EXIST 9" SAN SEWER @ 0.30%

EXIST UNDERGROUND TELEPHONE

END OF DRIVE LANE

END OF PAVED SHOULDER

EXIST 6" W.M

PROPOSED 27" RCP

REMOVE AND REPLACE EXIST HYDRANT AT STA 4+80

E. CO. LINE ROAD (CENTURY AVE.)

NOTE: STA 5+08 TO STA. 5+48 CONTRACTOR SHALL JACK 27" RCP UNDER E. CO LINE ROAD

NOTE: CONSTRUCT ANTI-SEEPAGE DAM (TO BE FIELD LOCATED BY THE ENGINEER OR INSPECTOR)

EXIST 21" STORM DRAIN

PROPOSED 27" RCP

EXIST SAN SEWER SERVICES (TYP)

EXISTING 15' DRAINAGE AND UTILITY EASEMENT

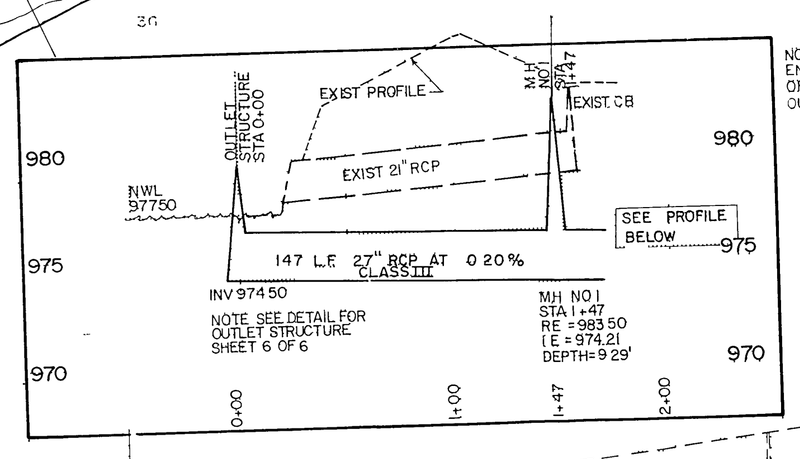
OUTLET STRUCTURE STA 0+00
SEE DETAIL SHEET 6 OF 6

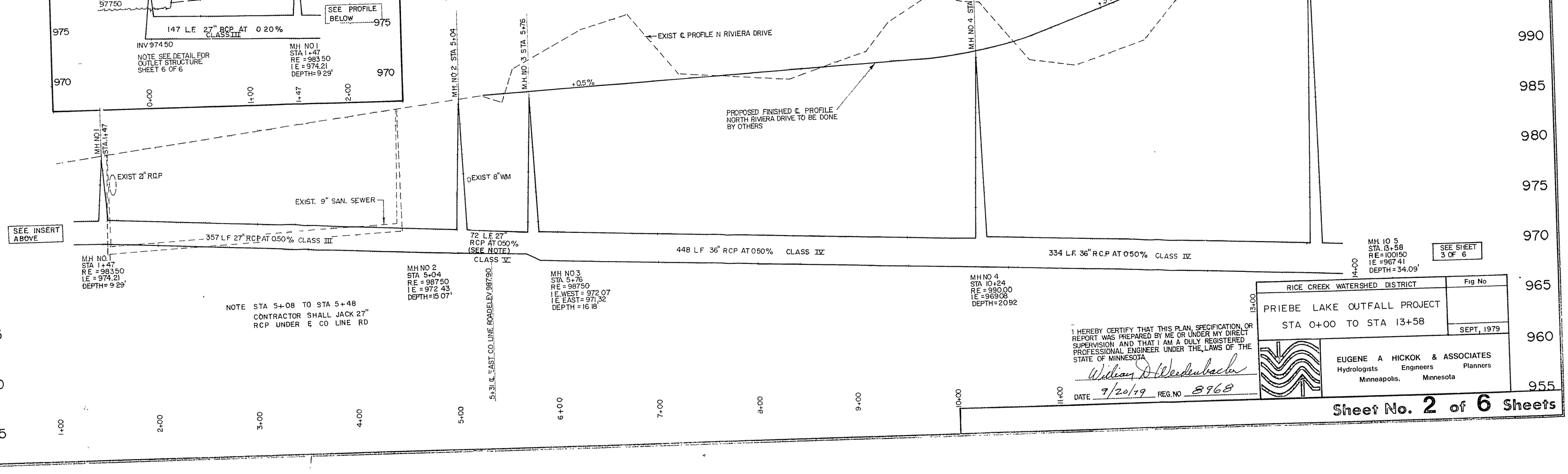
PRIEBE LAKE

BEAR HILLS

NOTE CONTRACTOR MAY BE REQUIRED AT THE ENGINEERS DIRECTION TO SUBCUT TO A DEPTH OF 5' BELOW PROPOSED PIPE FROM THE PROPOSED OUTLET STRUCTURE OF PRIEBE LAKE TO M H NO 1

NOTE: ROUGH GRADING OF NORTH RIVIERA DRIVE TO BE DONE BY OTHERS PRIOR TO STORM DRAIN CONSTRUCTION CONTRACTOR SHALL RESTORE PROFILE OF NORTH RIVIERA DRIVE TO ROUGH GRADE PROFILE WHICH WILL BE 0.7' LOWER THAN PROFILE SHOWN,





NOTE STA 5+08 TO STA 5+48
CONTRACTOR SHALL JACK 27" RCP UNDER E CO LINE RD

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

William D Weedenbacher

DATE 9/20/79 REG. NO 8968

RICE CREEK WATERSHED DISTRICT

PRIEBE LAKE OUTFALL PROJECT
STA 0+00 TO STA 13+58

Fig No

SEPT, 1979

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Hydrologists Engineers Planners
Minneapolis, Minnesota

Sheet No. 2 of 6 Sheets

SACCHUS WHITE

BEAR HILLS

NO. 2

OAKRIDGE LANE

CITY OF WHITE BEAR LAKE

CITY OF MAHTOMEDI

CITY OF BIRCHWOOD VILLAGE

CITY OF MAHTOMEDI

SACCHUS BIRCHWOOD RIDGE NO. 3

SEE SHEET 2 OF 6

SEE SHEET 4 OF 6 FOR PROFILE VIEW FROM MH NO 8 TO MH NO 9

INSTALL 3-36"RCP LONG RADIUS BENDS 30.5 RADIUS

INSTALL 12-36" RCP LONG RADIUS BENDS 30.5 RADIUS

NORTH RIVIERA DRIVE

60' R.O.W.

30'

10'

B-5

B-6

B-7

B-8

B-9

MH 5

MH6

MH7

MH 8

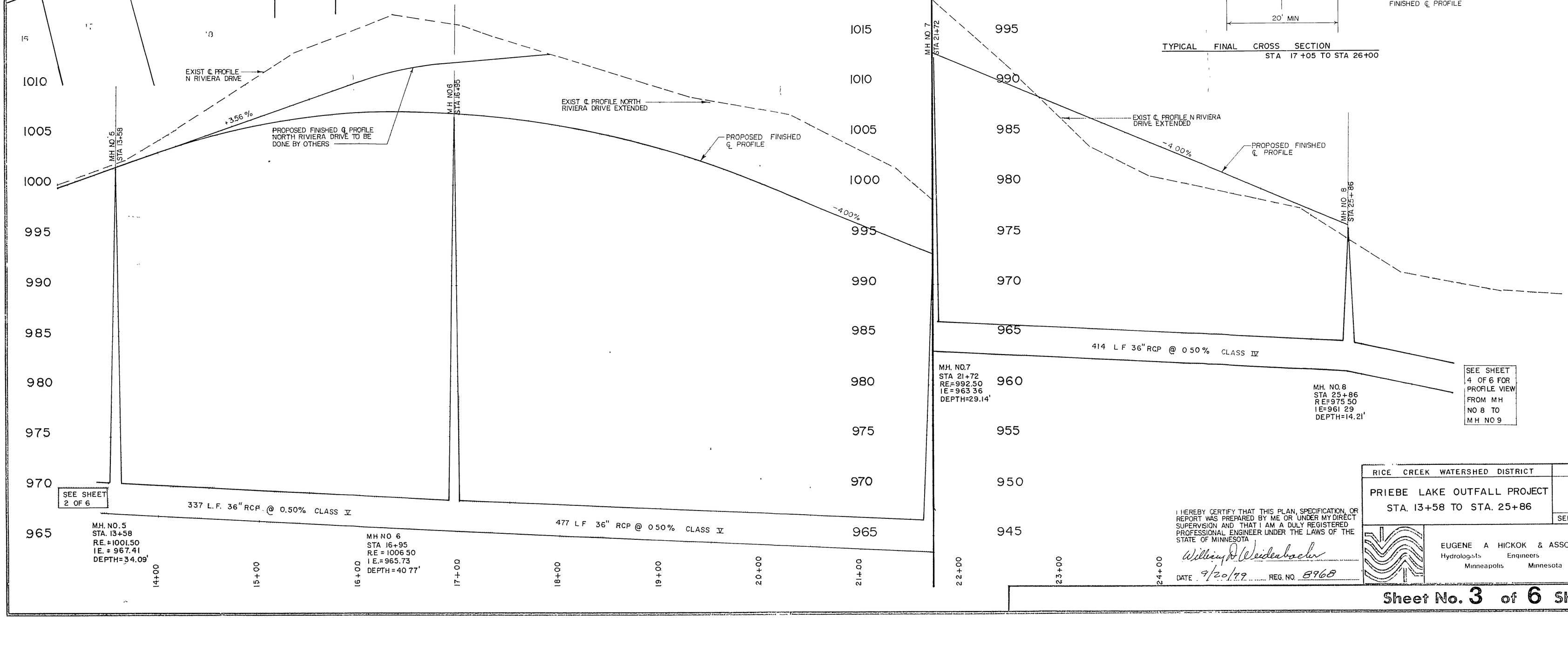
MH 9

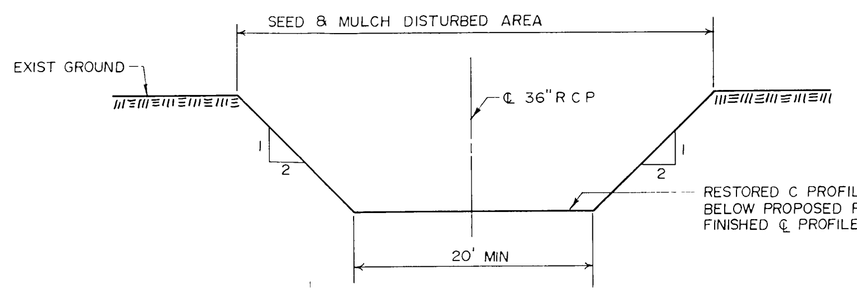
PROPOSED 36"RCP

℄ NO RIVIERA DR EXTENDED

NOTE COST OF TREE REMOVAL STA 21+00 TO STA 28+00 SHALL BE MERGED WITH UNIT PRICE FOR 36" RCP CLASS V INSTALLATION

NOTE ROUGH GRADING OF N. RIVIERA DRIVE TO BE DONE BY OTHERS PRIOR TO STORM SEWER CONSTRUCTION CONTRACTOR SHALL RESTORE PROFILE OF NORTH RIVIERA DRIVE TO ROUGH GRADE PROFILE WHICH WILL BE 0.7' LOWER THAN PROFILE SHOWN (STA 5+76 TO STA 17+05)





TYPICAL FINAL CROSS SECTION
STA 17+05 TO STA 26+00

SCALE: HORIZ 1"=50'
VERT 1"=5'

RICE CREEK WATERSHED DISTRICT

PRIEBE LAKE OUTFALL PROJECT
STA. 13+58 TO STA. 25+86

SEPT, 1979

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William D Weidenbach

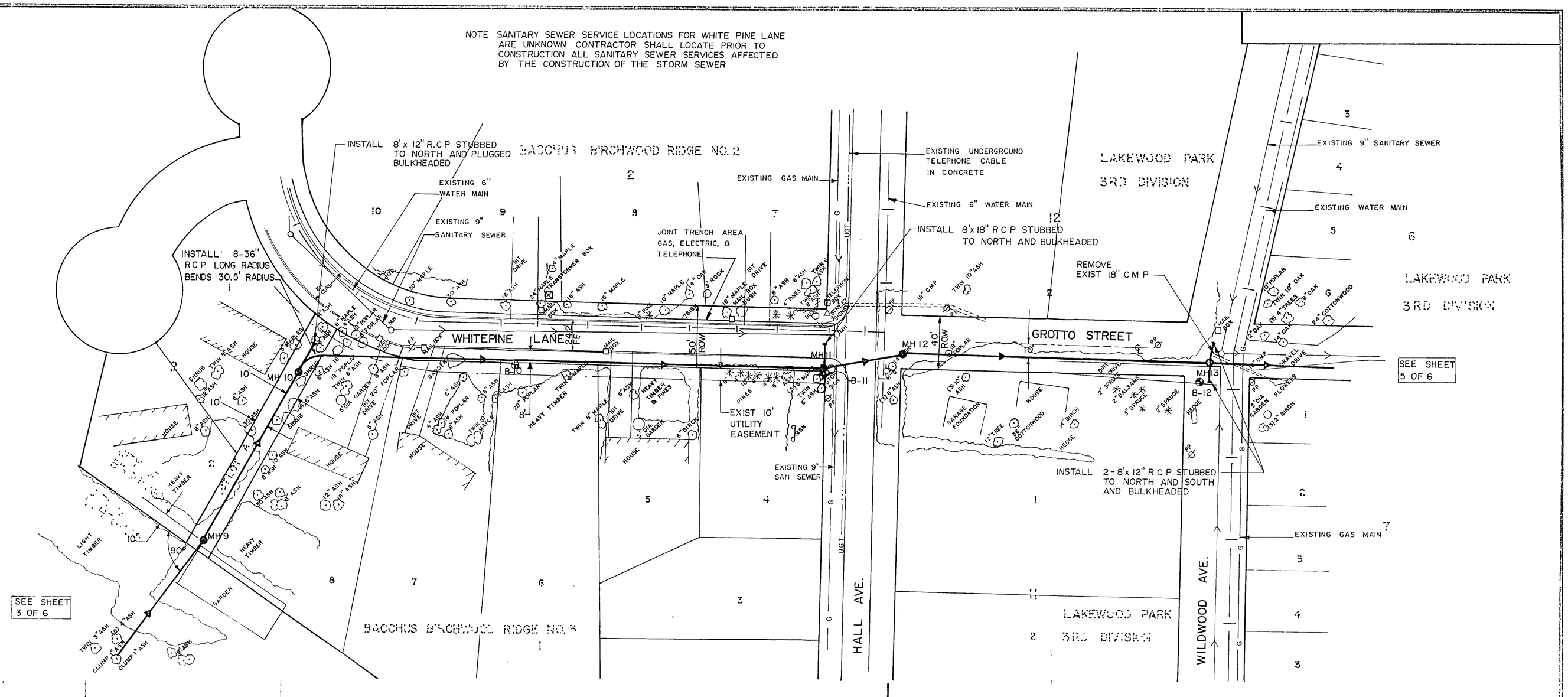
DATE 9/20/79 REG. NO. 8968

EUGENE A HICKOK & ASSOCIATES
Hydrologists Engineers Planners
Minneapolis Minnesota

Sheet No. 3 of 6 Sheets

NOTE SANITARY SEWER SERVICE LOCATIONS FOR WHITE PINE LANE ARE UNKNOWN CONTRACTOR SHALL LOCATE PRIOR TO CONSTRUCTION ALL SANITARY SEWER SERVICES AFFECTED BY THE CONSTRUCTION OF THE STORM SEWER

SCALE 1"=50' HORIZ
1"=5' VERT



RICE CREEK WATERSHED DISTRICT | Fig No

PRIEBE LAKE OUTFALL PROJECT
STA. 25+86 TO STA. 36+65

SEPT, 1979

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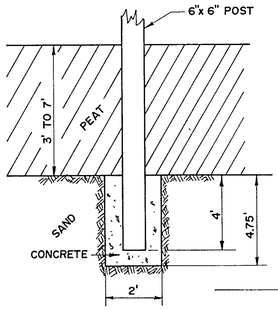
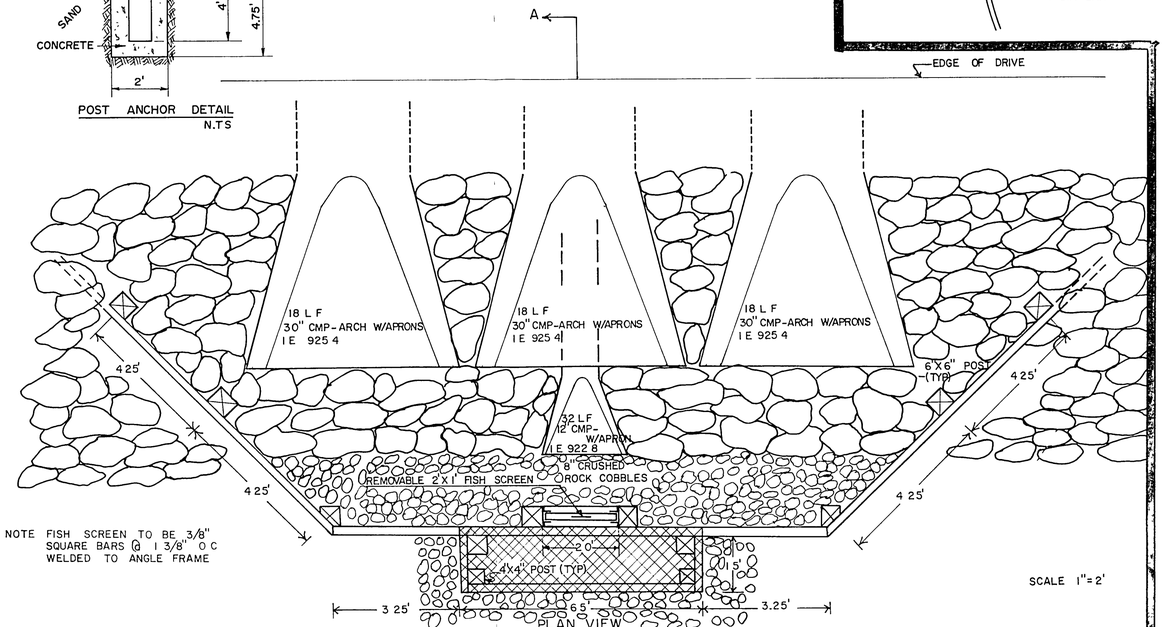
William D. Weideulocher

DATE 9/20/79 REG NO. 8968

EUGENE A HICKOK & ASSOCIATES
Hydrologists Engineers Planners
Minneapolis Minnesota

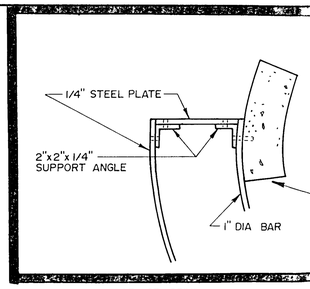


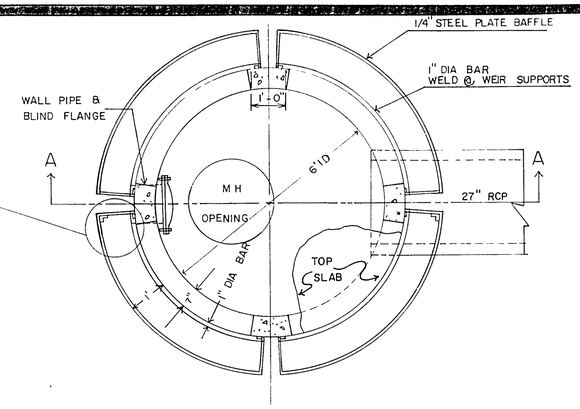
POST ANCHOR DETAIL
N.TS



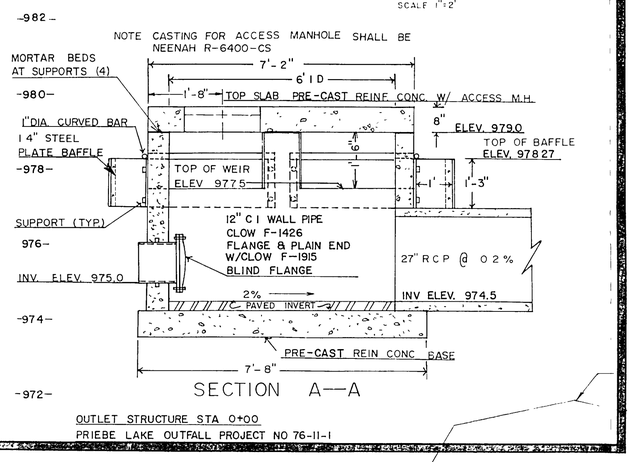
NOTE FISH SCREEN TO BE 3/8" SQUARE BARS @ I 3/8" O C WELDED TO ANGLE FRAME

SCALE I"=2'



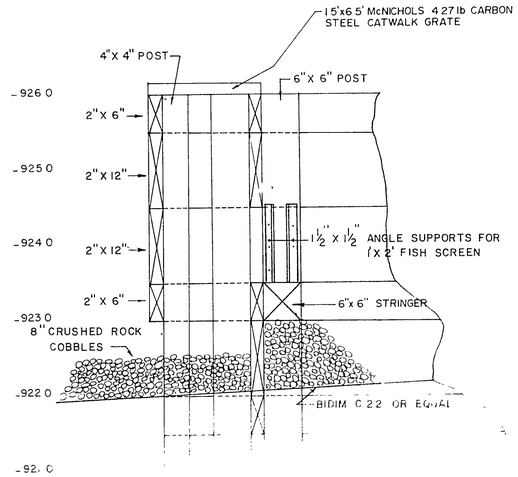


OUTLET STRUCTURE STA 0+00
PRIEBE LAKE OUTFALL PROJECT NO. 76-11-1

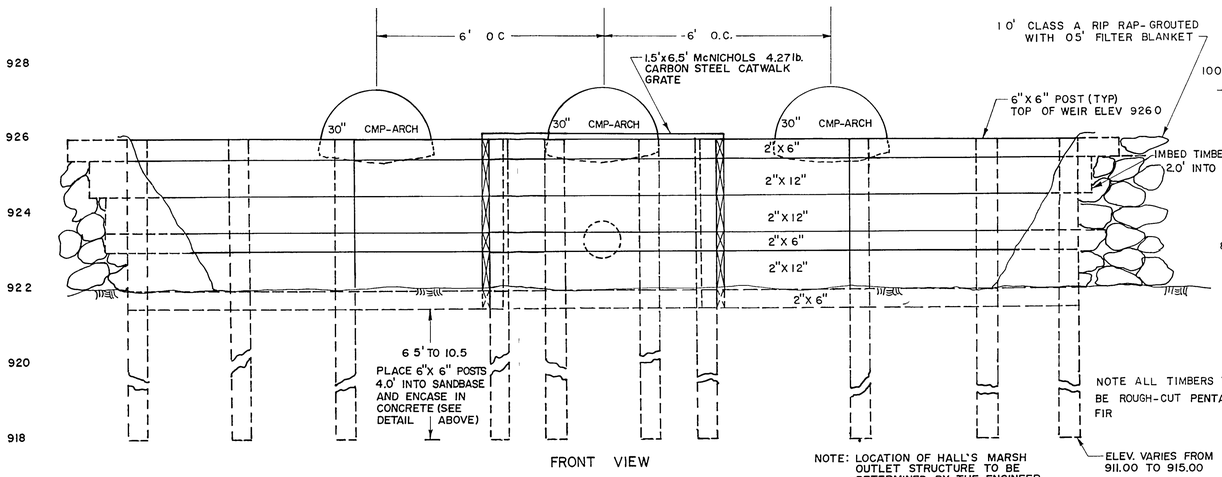


SECTION A—A

OUTLET STRUCTURE STA 0+00
PRIEBE LAKE OUTFALL PROJECT NO 76-11-1



SECTION A-A DETAIL

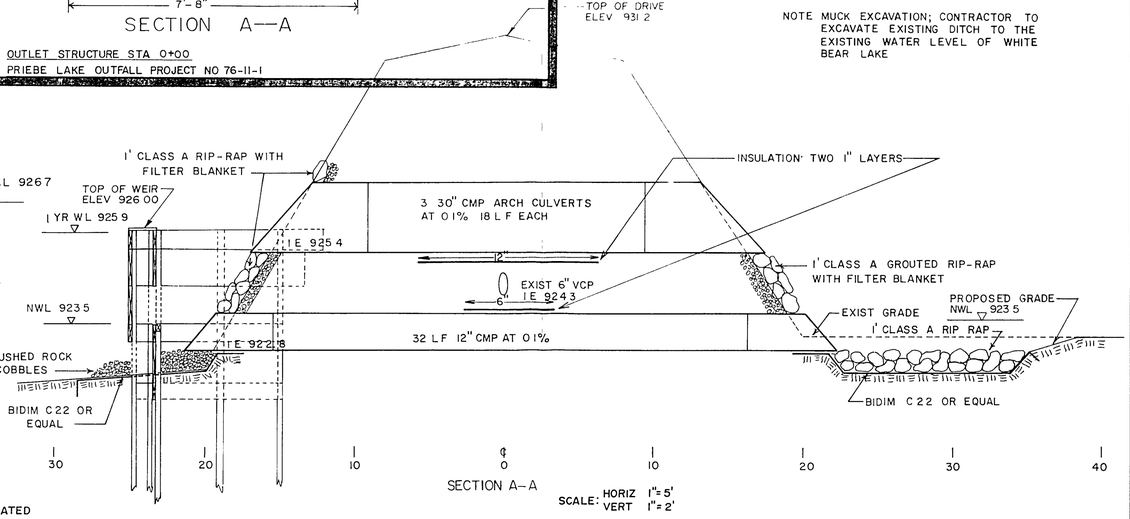


FRONT VIEW

NOTE: LOCATION OF HALL'S MARSH OUTLET STRUCTURE TO BE DETERMINED BY THE ENGINEER

HALL'S MARSH OUTLET STRUCTURE

SCALE: I"=2'



SECTION A-A

SCALE: HORIZ I"= 5'
VERT I"= 2'

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William D Wickenbocker

DATE 9/20/79 REG NO 8968

Revisions	RICE CREEK WATERSHED DISTRICT	No
	MISC. DETAILS	Dwg 6/6
Drawn By		Date
Designed By	E. A. HICKOK & ASSOCIATES	
Checked By	Hydrologists - Engineers Minneapolis, Minnesota	