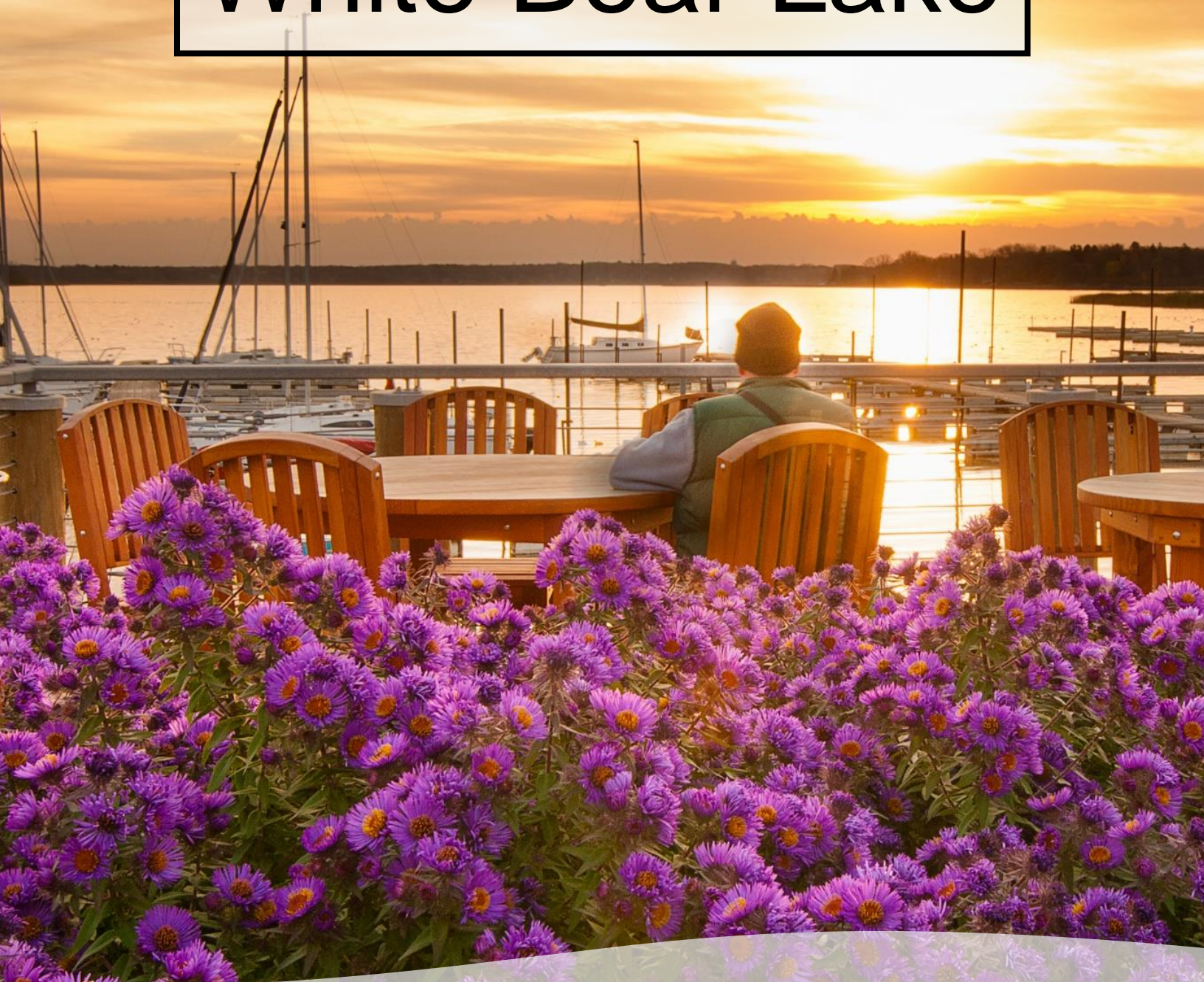


City of

White Bear Lake



2021-2030

Surface Water Management Plan

May 25, 2021

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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



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:

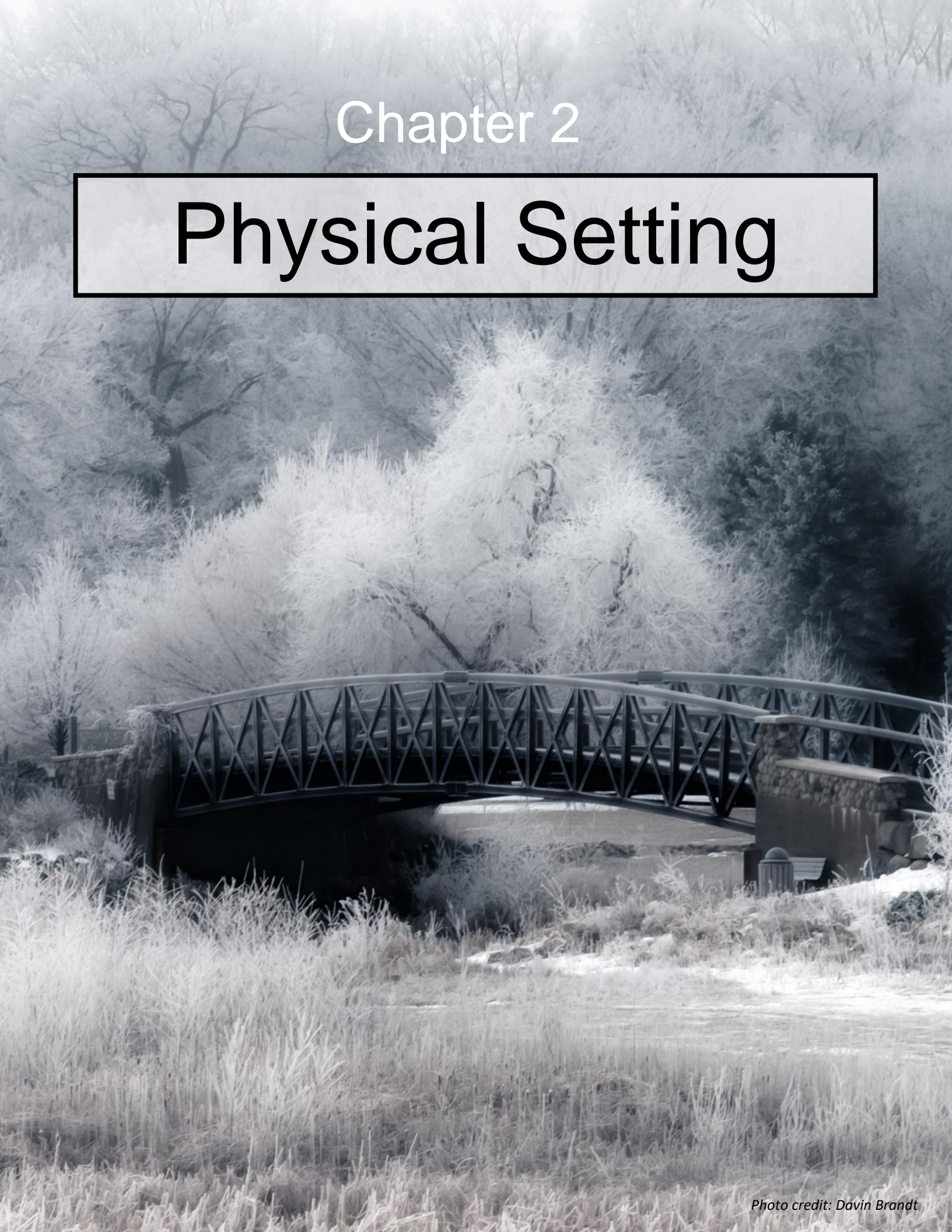
- ◆ Information on the types of best management practices to be used to improve stormwater quality and quantity. A five-year establishment period is recommended for native plantings and bioengineering practices.
- ◆ The maintenance schedule for the best management practices consistent with BMP inspection 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



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.

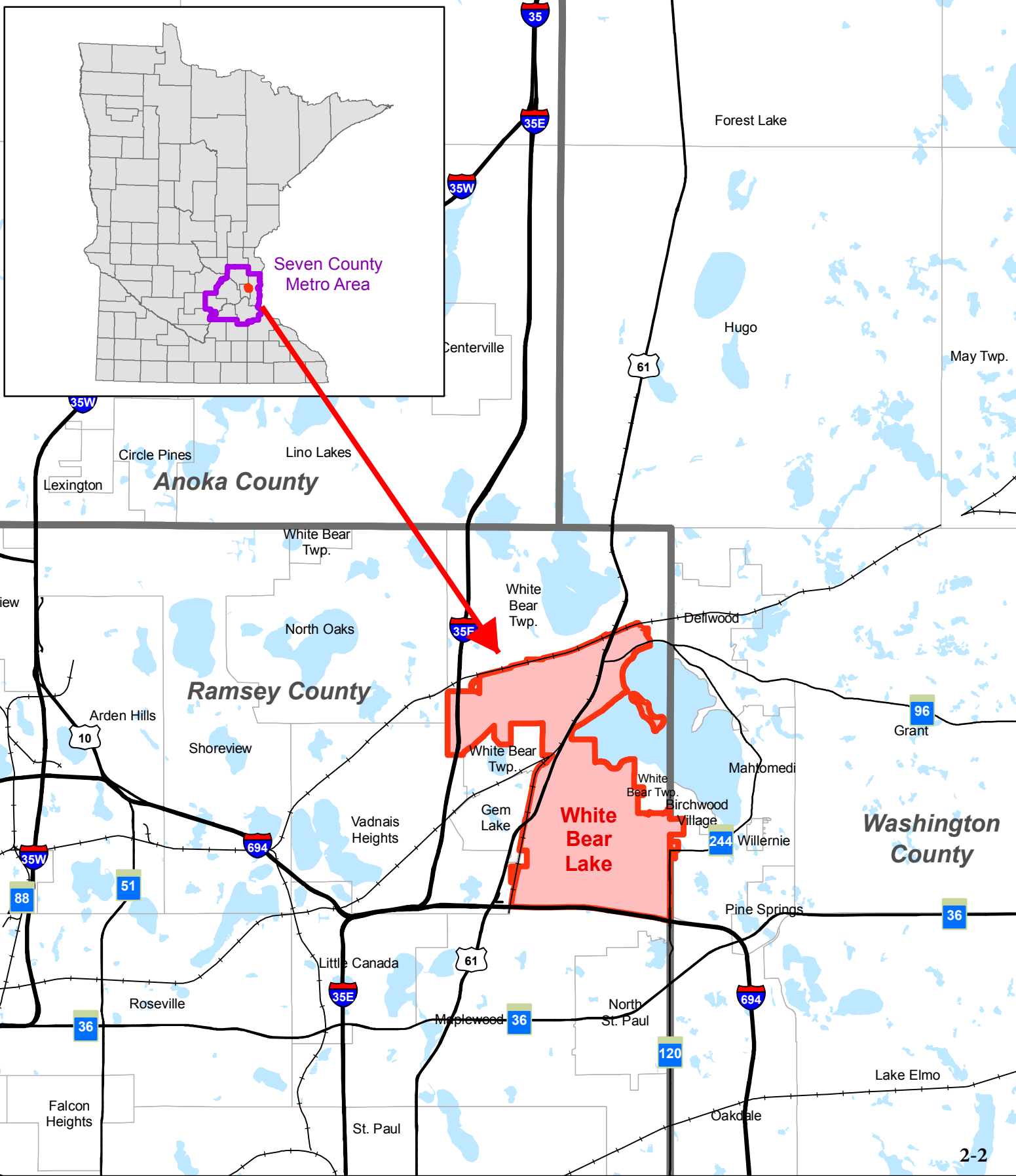
The earliest inhabitants of the White Bear Lake area were the Dakota and the Ojibway Indians who used the area for their migratory hunting and harvesting grounds. The United States government designated the area as Dakota land in an 1825 treaty, but later purchased all Dakota Territory east of the Mississippi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

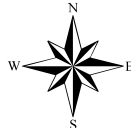


Looking toward Manitou Island, circa 1885



Legend

-  White Bear Lake Boundary
-  County Boundaries
-  Municipal Boundaries



0 1 2 Miles



Figure 1
LOCATION MAP
City of White Bear Lake
Surface Water Management Plan
 Source: White Bear Lake, MetroGIS, MN DNR

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

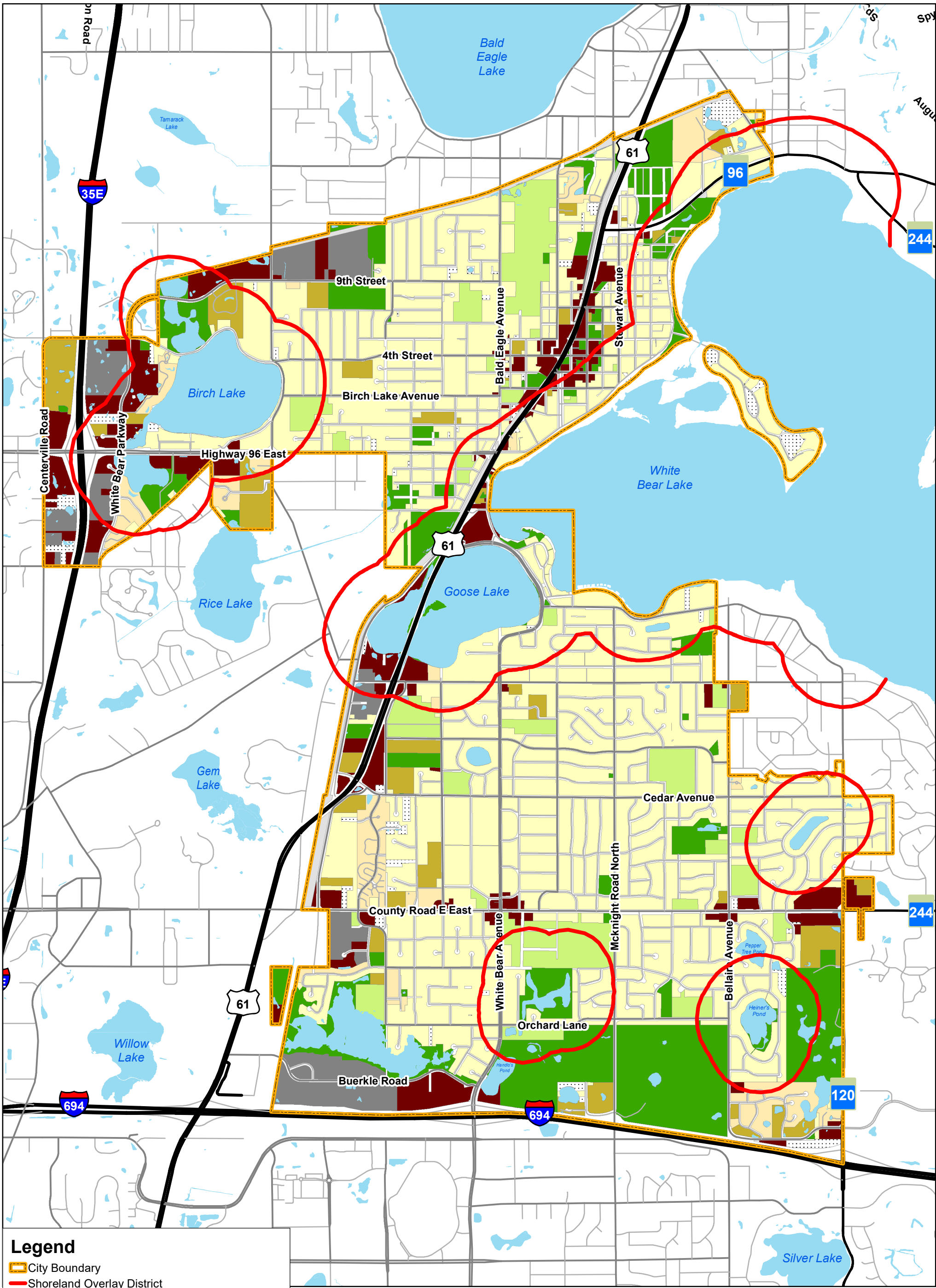
Source: City of White Bear Lake 2030 Comprehensive Plan, City of White Bear Lake Draft 2040 Comprehensive Plan, Metropolitan Council 2018

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.



1908 Map of White Bear Lake



Legend

- City Boundary
- Shoreland Overlay District
- Vacant (77.7 ac)
- Single Family (2085.6 ac)
- Single Family Attached - Townhomes (168.9 ac)
- Multi Family - Apartments and Condos (215.5 ac)
- Commercial (310.6 ac)
- Industrial (182.3 ac)
- Public (643.1 ac)
- Semi-Public (297.7 ac)
- Rail ROW (63.4 ac)
- Road ROW (1032 ac)
- Water (431.9 ac)

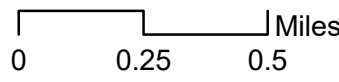
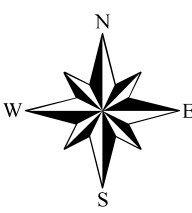
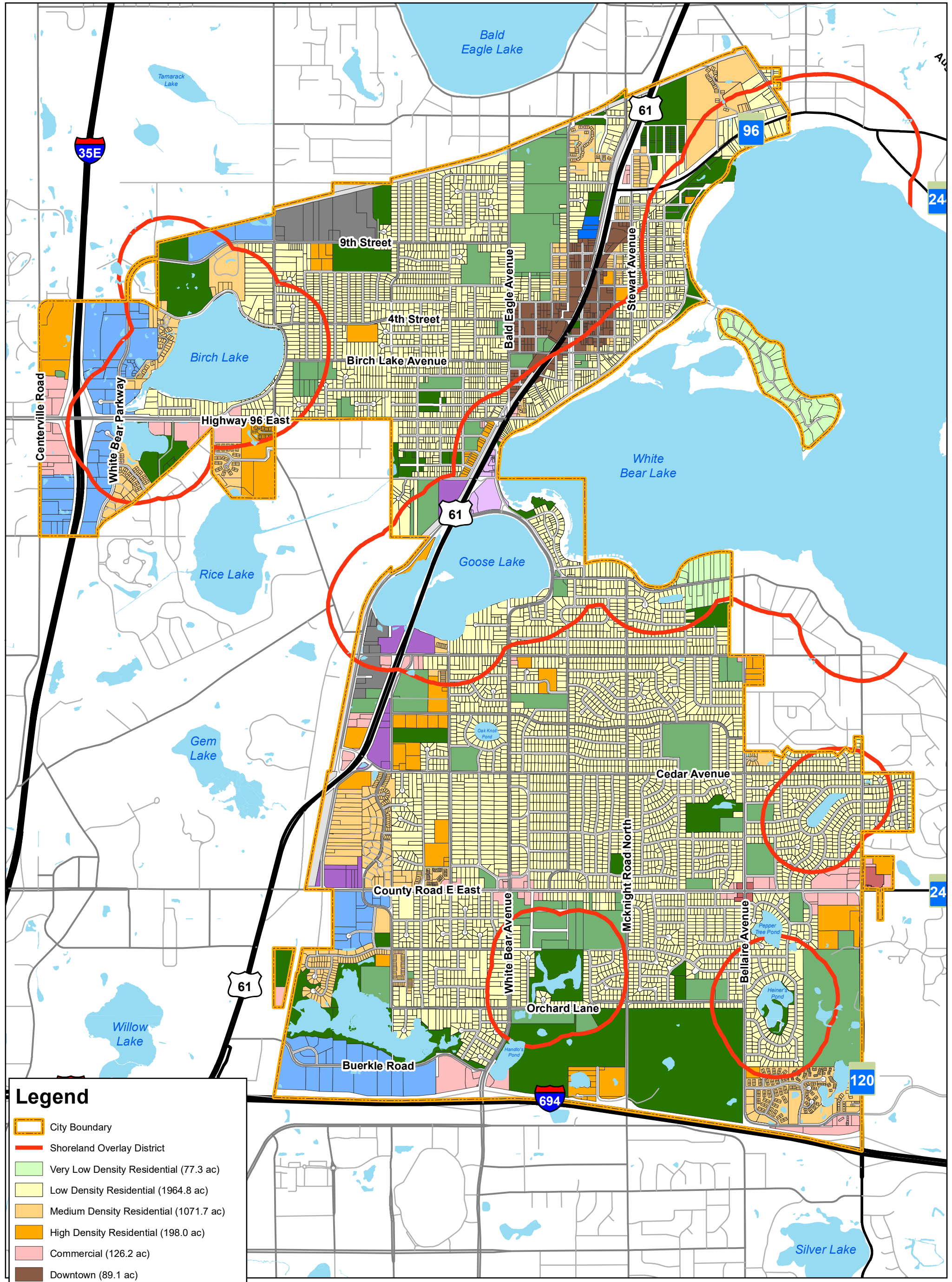


Figure 2
EXISTING LAND USE
City of White Bear Lake
Surface Water Management Plan
 Source: City of White Bear Lake



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)

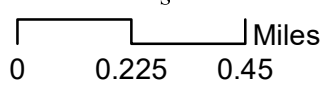
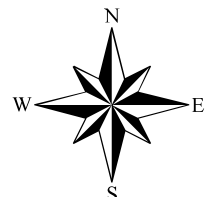


Figure 3
FUTURE LAND USE
City of White Bear Lake
Surface Water Management Plan

Source: City of White Bear Lake, Ramsey County

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.

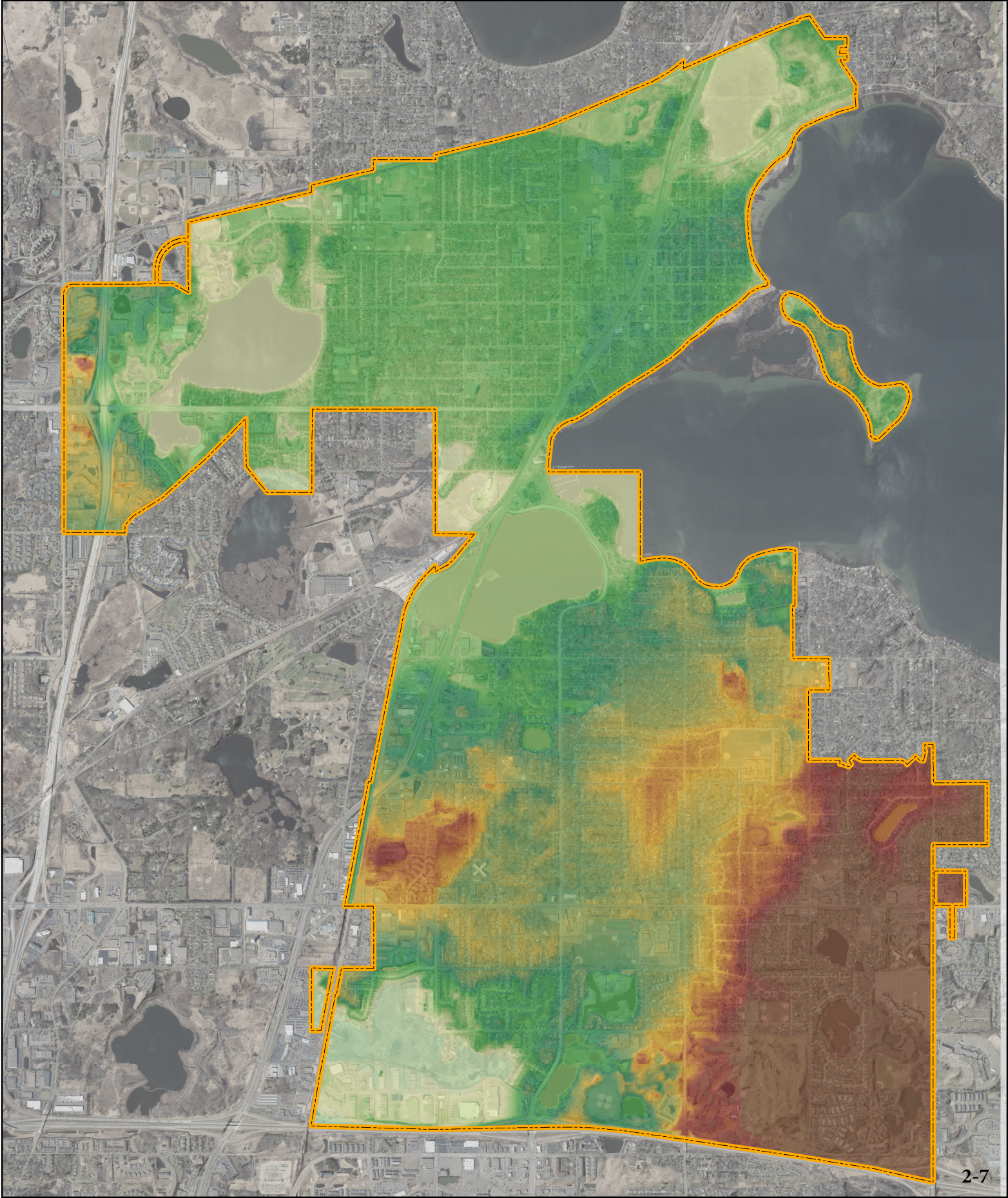
Surface water flows through storm sewers and wetlands on its way to Willow Creek, an intermittent stream that was previously classified as County Ditch 18. The creek continues west and exits the City before flowing under Highway 61 in Vadnais Heights. The RWMWD divided the Willow Creek subwatershed into 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

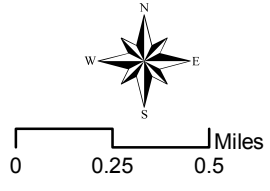
Jurisdiction: Valley Branch Watershed District (VBWD)

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.



Legend

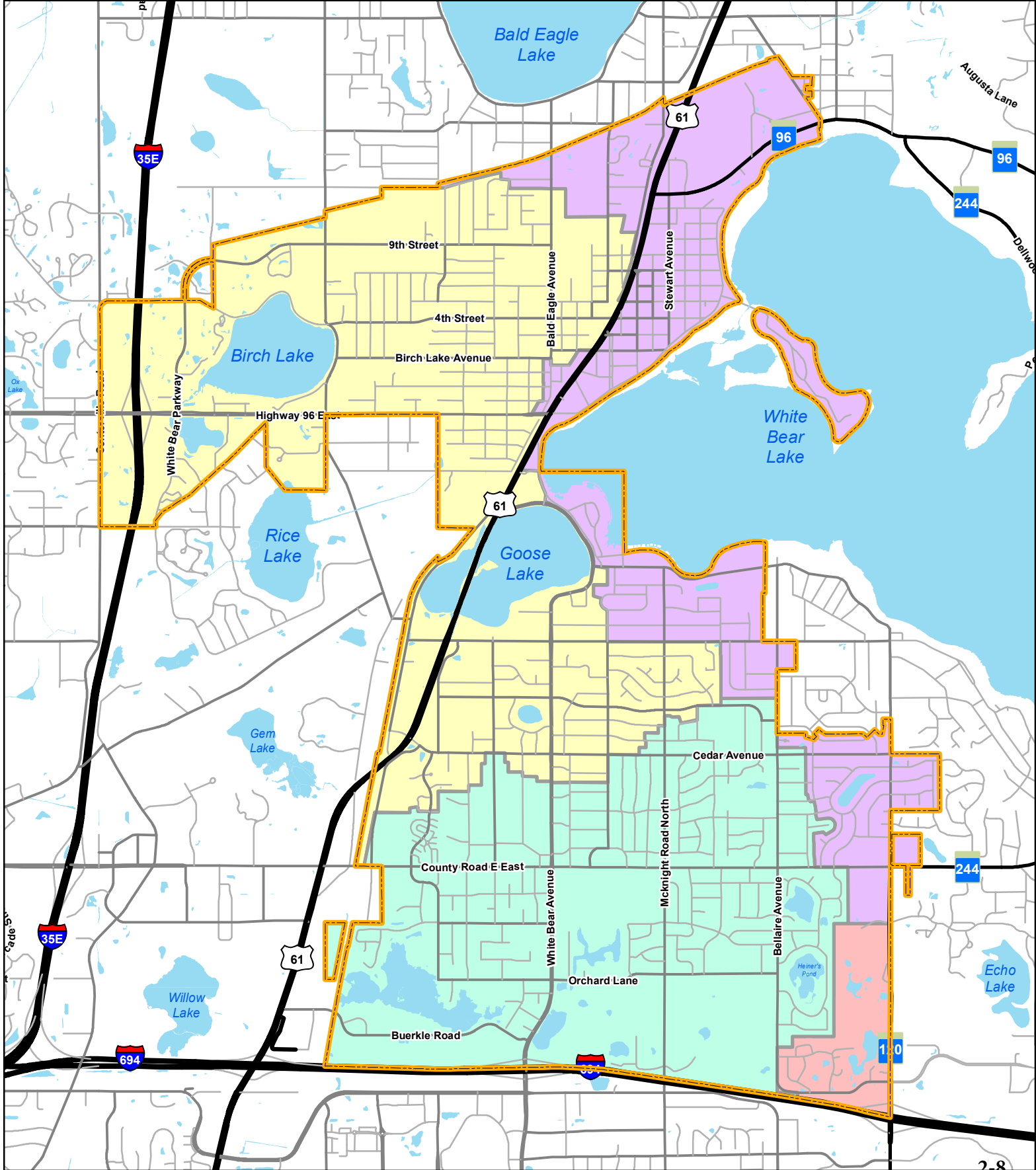
-  City Boundary
- Elevation (ft)**
-  High : 1070
-  Low : 895



A north arrow pointing upwards, with 'N' at the top, 'S' at the bottom, 'E' on the right, and 'W' on the left. Below it is a scale bar showing 0, 0.25, and 0.5 miles.



Figure 4
TOPOGRAPHY
City of White Bear Lake
Surface Water Management Plan
 Source: MNGEO, City of White Bear Lake



Legend

- RCWD
- RWMWD
- VLAWMO
- VBWD
- City Boundary

N
W E
S

0 0.25 0.5 Miles



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)

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 partially 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.

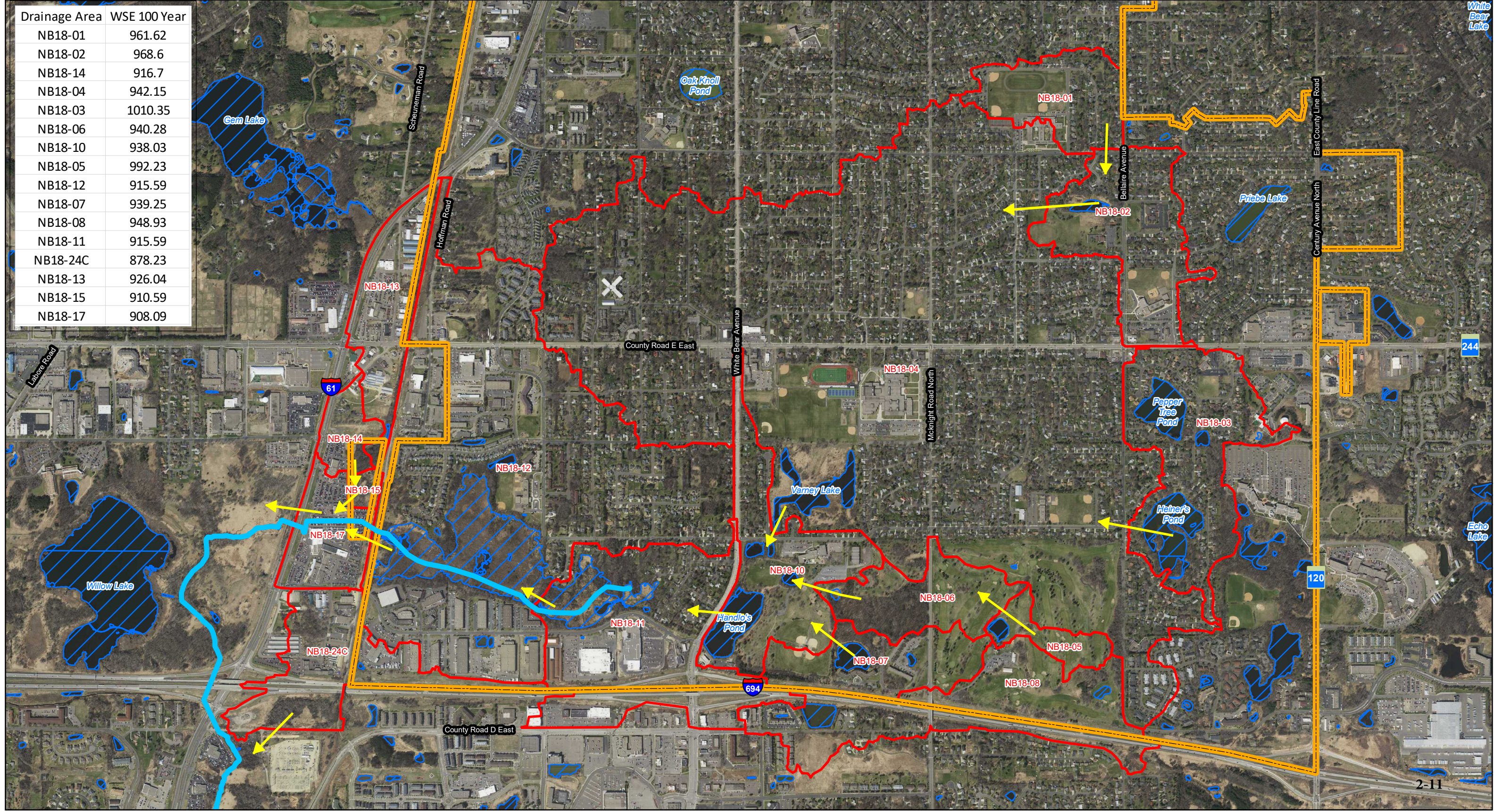
Public Ditches

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 1800s 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 $\frac{3}{4}$ of a mile. County Ditch 13 is part of the Lake Vadnais subwatershed of Vadnais Lake Area Water Management Organization (Figure 9).

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
- City Boundary
- Waterbody
- ➔ Drainage Area Outflow

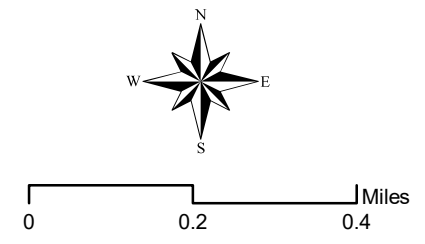


Figure 6

WILLOW CREEK SUBWATERSHED

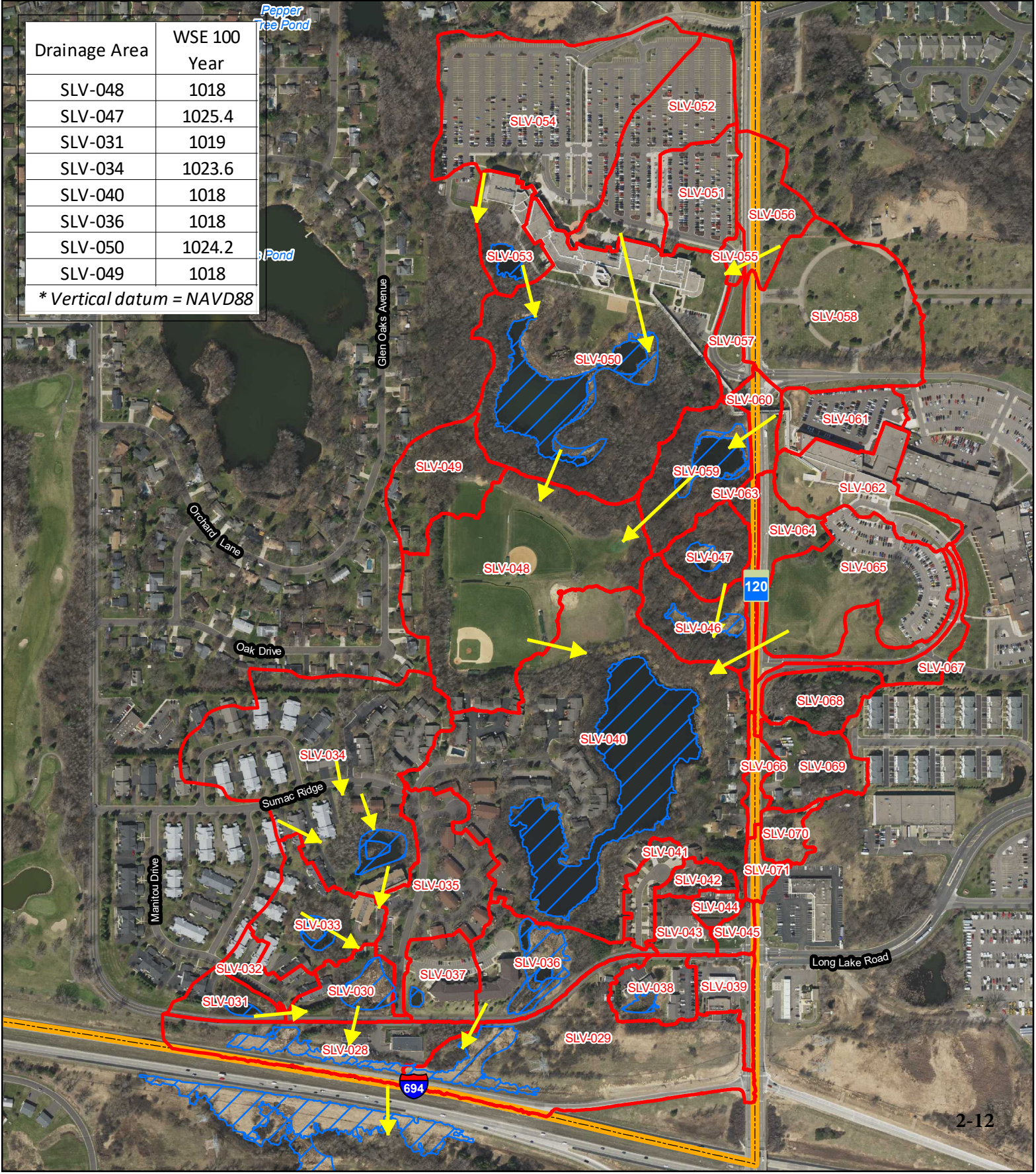
City of White Bear Lake

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

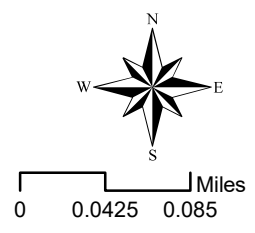
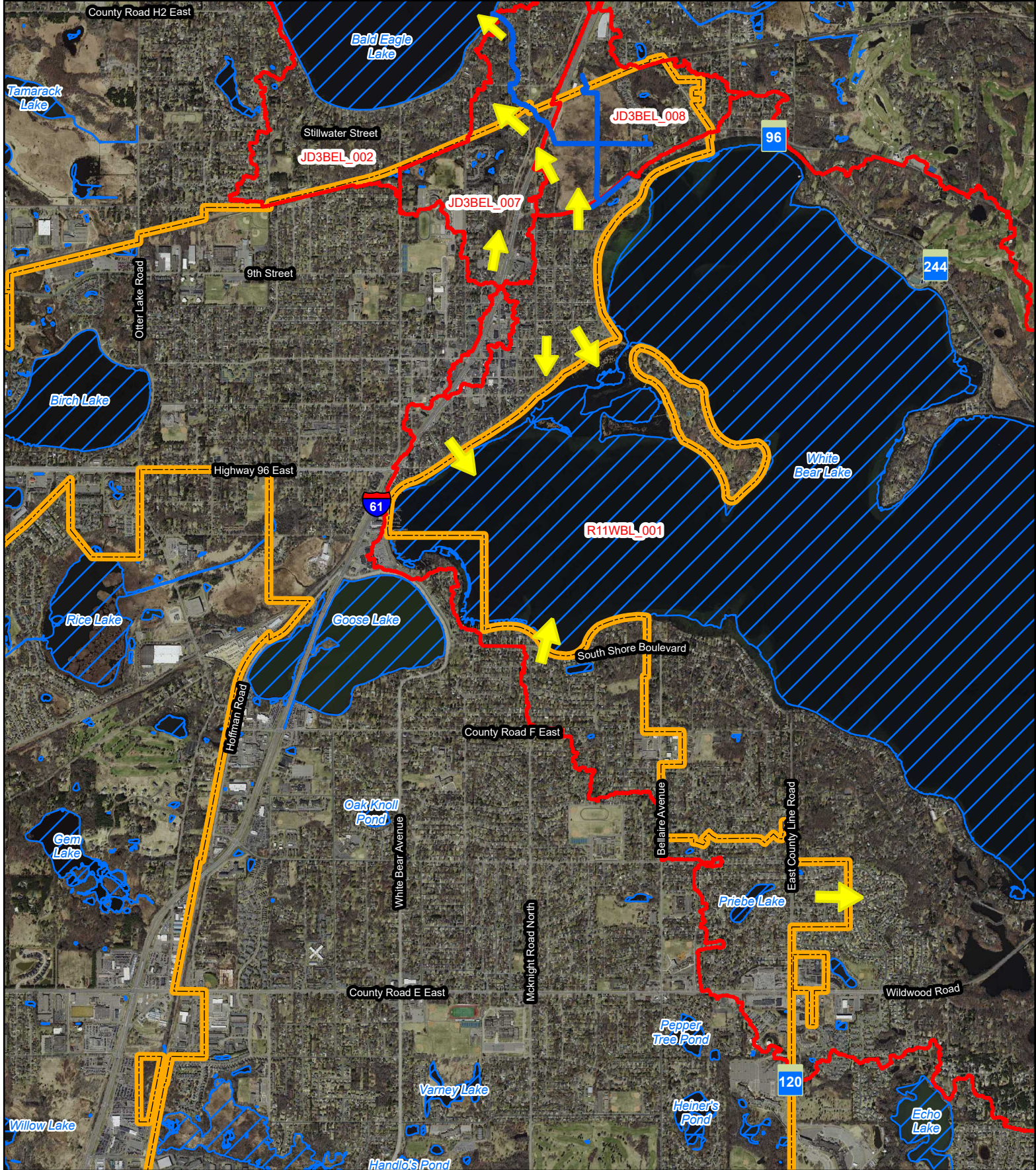


Figure 7
SILVER LAKE SUBWATERSHED
City of White Bear Lake
Surface Water Management Plan

Source: Valley Branch Watershed District (VBWD)



Legend

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

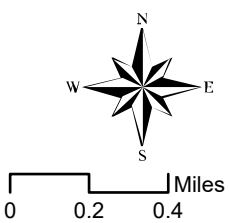
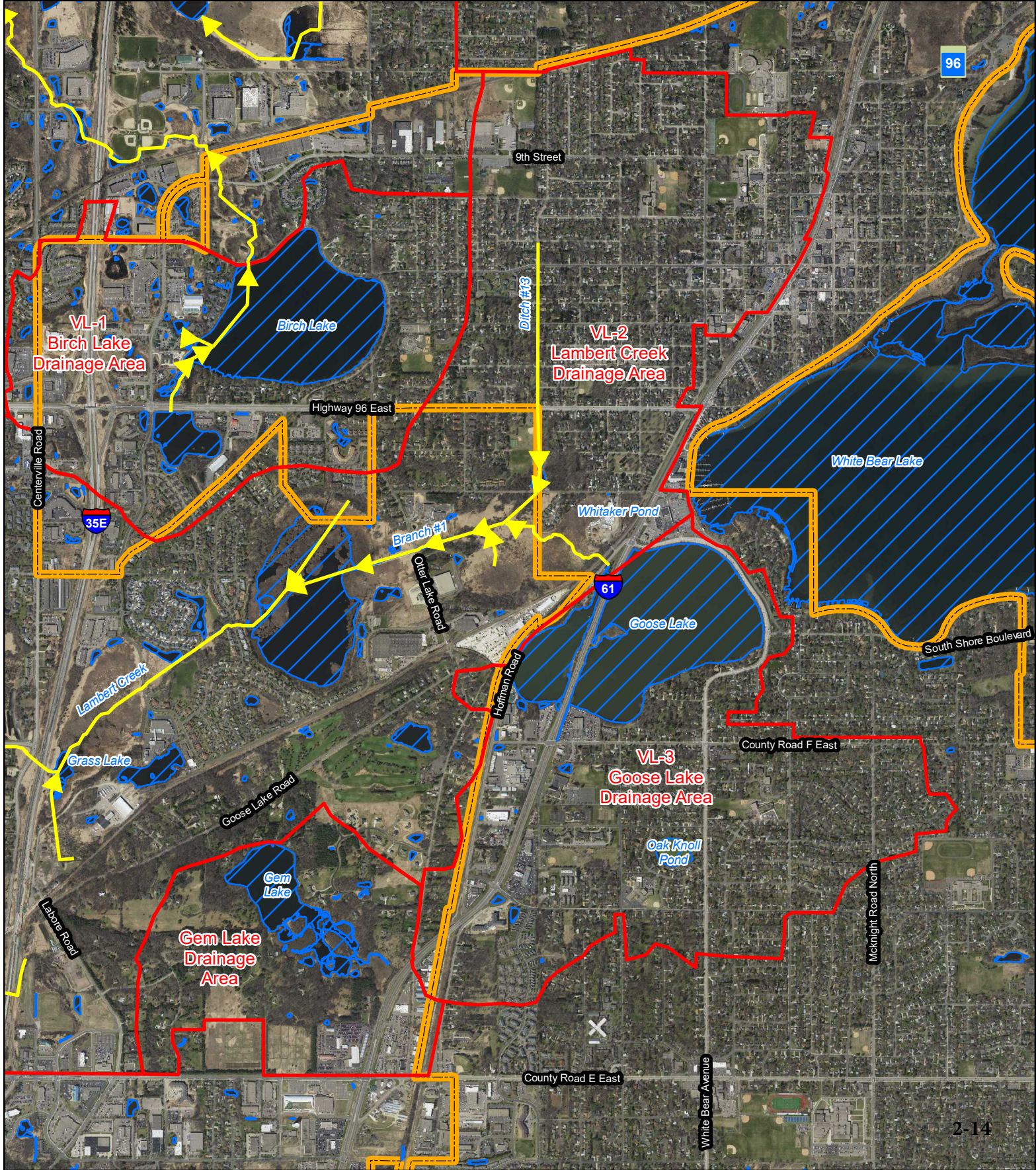


Figure 8
BALD EAGLE LAKE SUBWATERSHED
City of White Bear Lake
Surface Water Management Plan

Source: Rice Creek Watershed District (RCWD)



96

9th Street

VL-1
Birch Lake
Drainage Area

Birch Lake

VL-2
Lambert Creek
Drainage Area

Highway 96 East

Ditch #13

White Bear Lake

35E

Branch #1

Whitaker Pond

Centerville Road

Cher Lake Road

61

Goose Lake

South Shore Boulevard

Lambert Creek

Grass Lake

Goose Lake Road

Hoffman Road

VL-3
Goose Lake
Drainage Area

County Road F East

Oak Knoll
Pond

Gem Lake

Gem Lake
Drainage
Area

McKnight Road North

County Road E East

White Bear Avenue

2-14

Legend

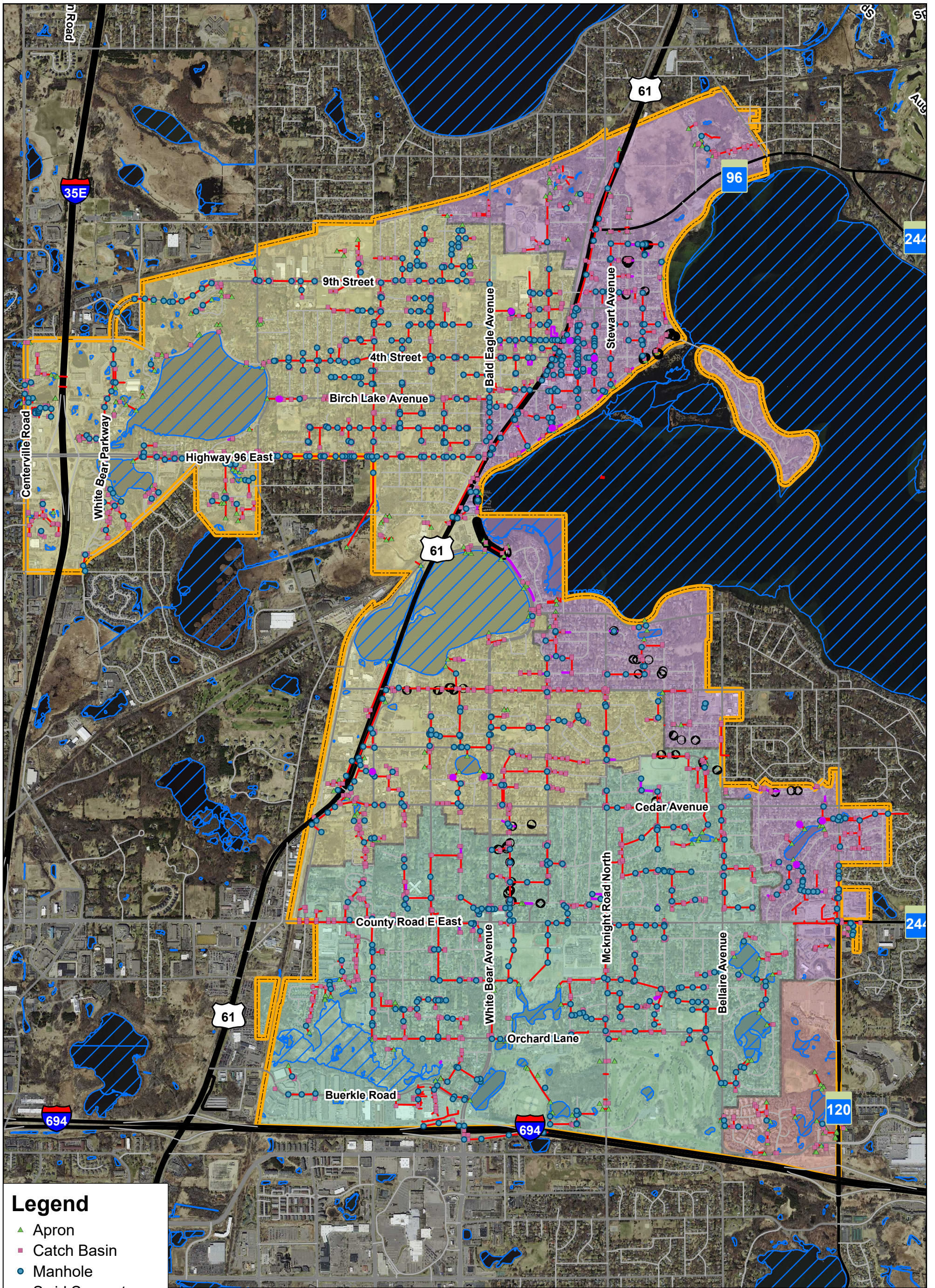
- Drainage Areas
- ➔ Stream Flow Arrows
- City Boundary
- Waterbody

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)



Legend

- ▲ Apron
- Catch Basin
- Manhole
- Swirl Separator
- Infiltration Pipe
- Storm Sewer Pipe
- ▭ Raingarden
- ▭ City Boundary
- ▭ Water
- ▭ RCWD
- ▭ RWMWD
- ▭ VLAWMO
- ▭ VBWD

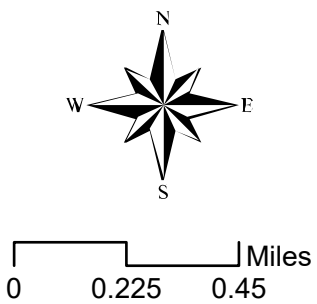


Figure 10
STORM SEWER
City of White Bear Lake
Surface Water Management Plan

Source: City of White Bear Lake

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 have 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.



2-17

Legend

-  City Boundary
-  Special Flood Hazard Area

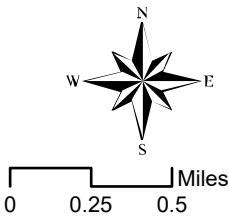


Figure 11
SPECIAL FLOOD HAZARD AREAS

City of White Bear Lake
Surface Water Management Plan

Source: MnDNR

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).

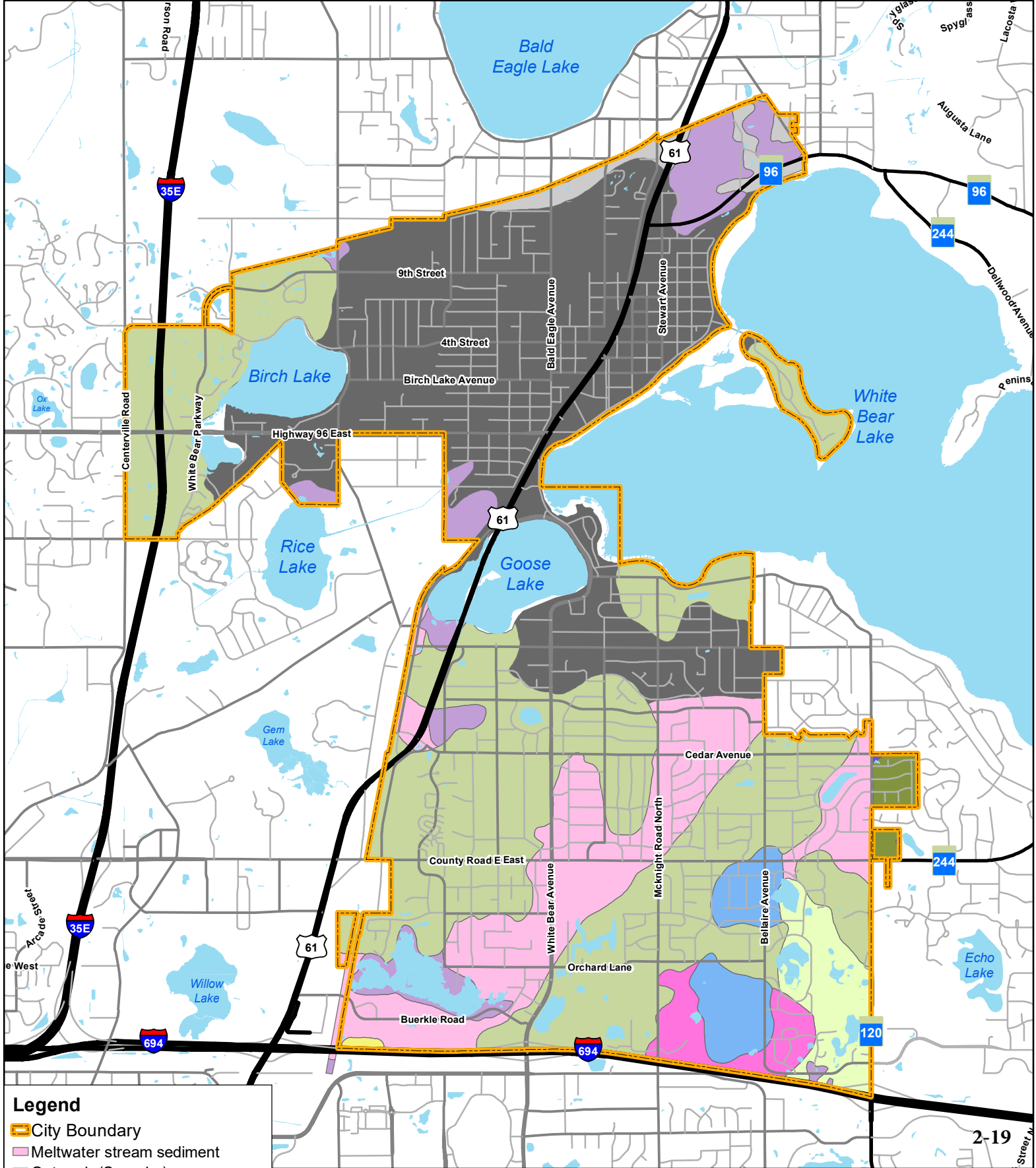
The Saint Paul Sand Flats marks an outwash plain formed on primarily coarse-grained sediments deposited by streams that drained meltwater from the Grantsburg Sublobe (Patterson, 1992). A finger of this outwash plain cuts through the uplands to the south of White Bear Lake. The area to the east of White 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 soil's 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.



- 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

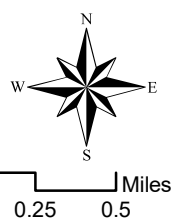
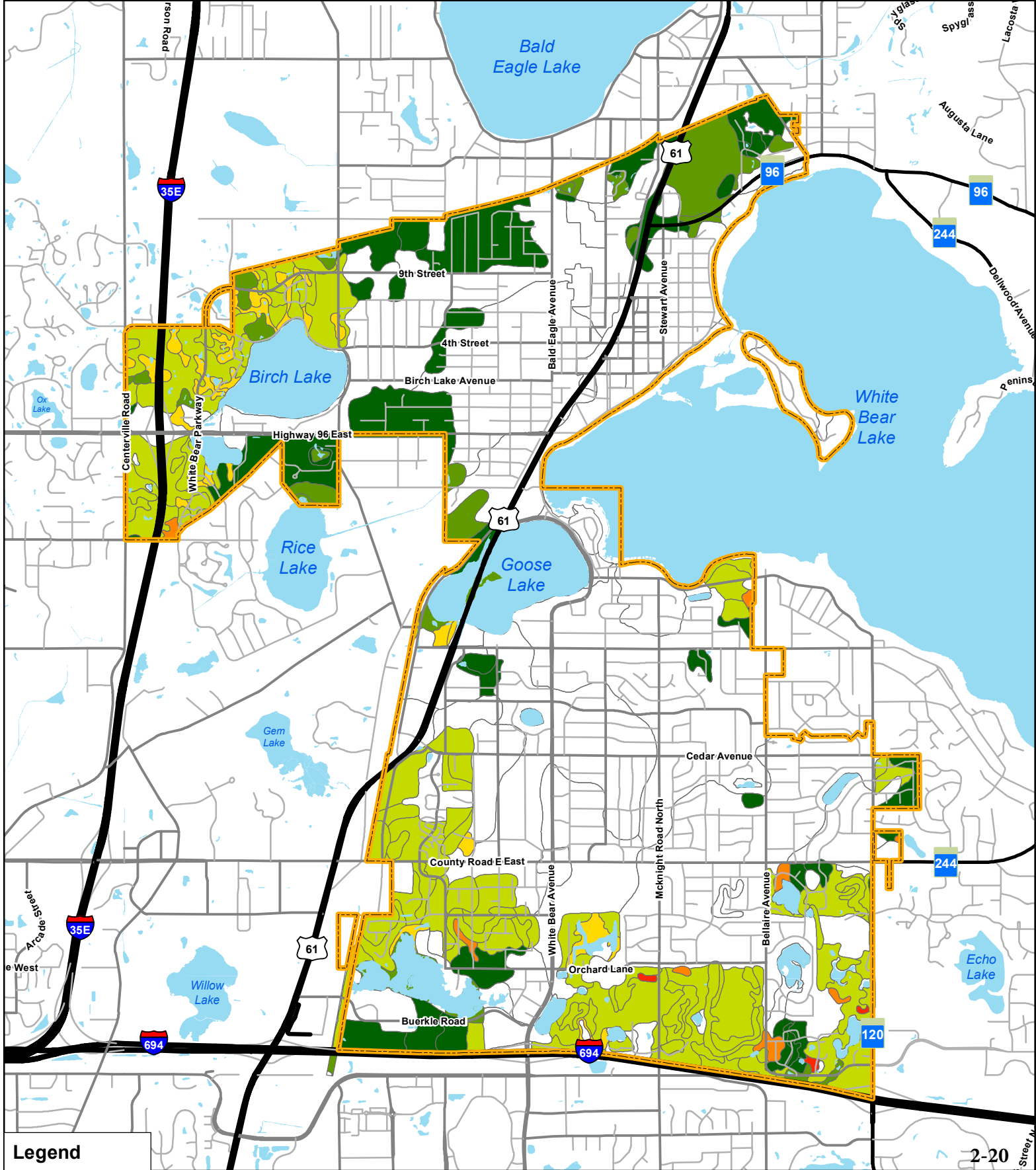


Figure 12
SURFICIAL GEOLOGY
City of White Bear Lake
Surface Water Management Plan

Source: MNGS



Legend

- City Boundary
- HSG**
- No Rating
- A
- A/D
- B
- B/D
- C
- C/D

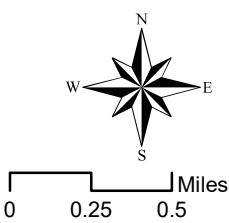


Figure 13
HYDROLOGIC SOIL GROUPS
City of White Bear Lake
Surface Water Management Plan

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 Platteville formation is the youngest laterally extensive bedrock unit remaining in the White Bear Lake area. Remnants of the younger overlying 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)

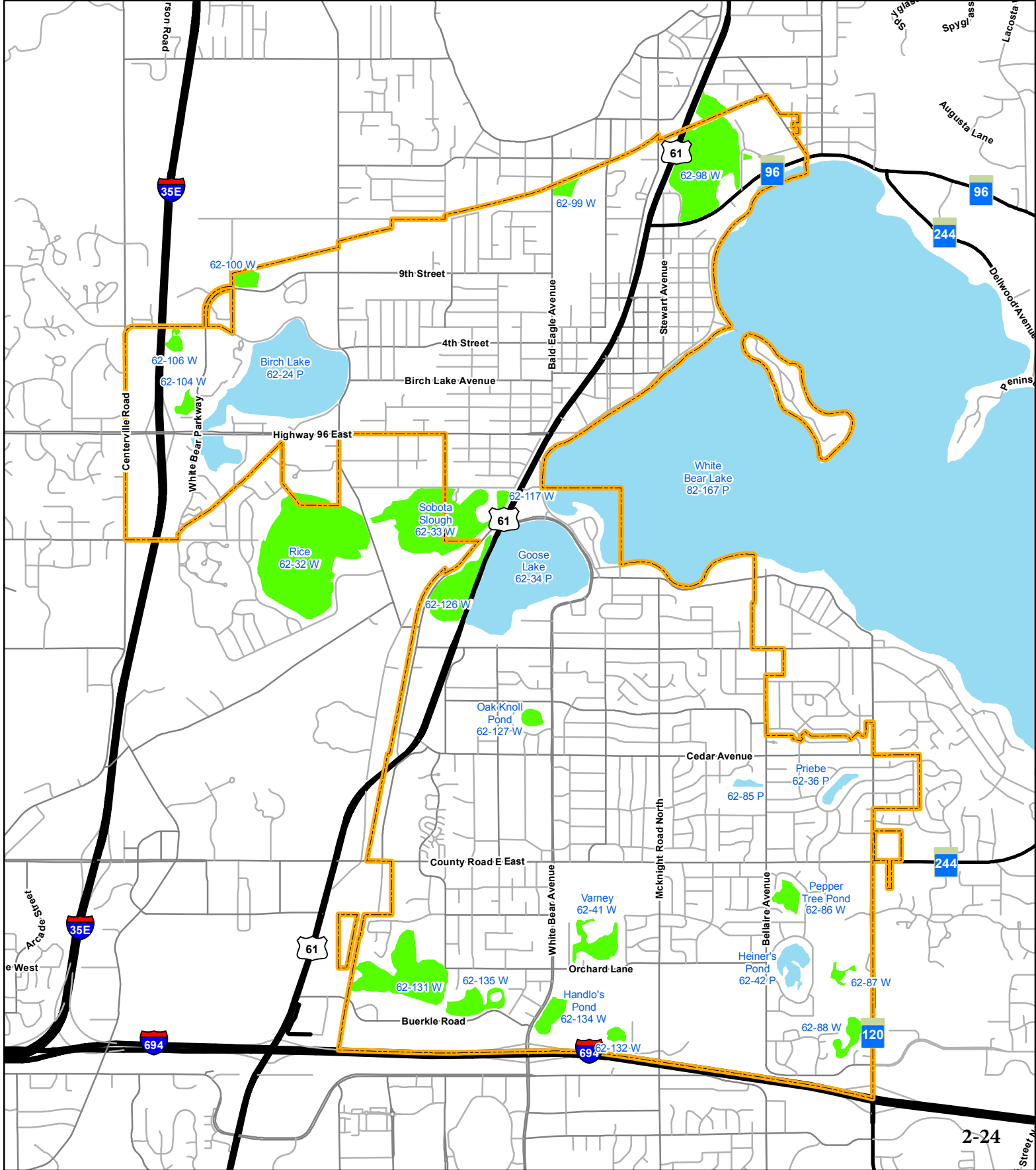
2.7 Surface Water Resources

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 includes 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.



Legend

-  City Boundary
- Public Waters Classification**
-  Public Water Basin
-  Public Water Wetland

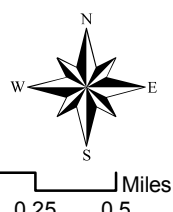
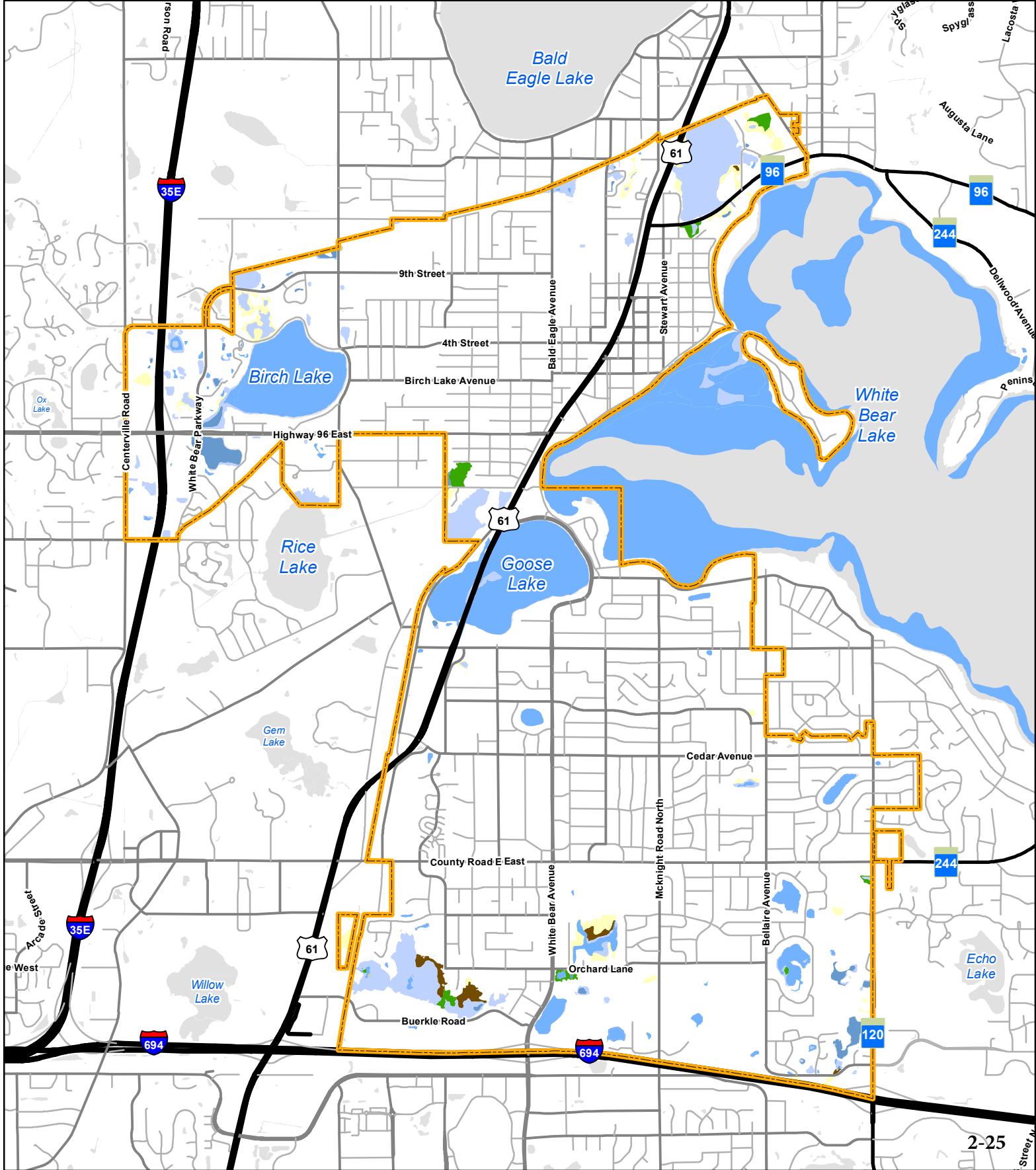


Figure 14
PUBLIC WATERS INVENTORY
City of White Bear Lake
Surface Water Management Plan

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

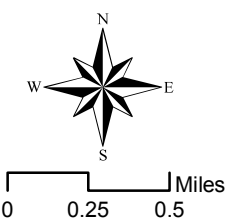


Figure 15
NATIONAL WETLANDS INVENTORY
City of White Bear Lake
Surface Water Management Plan

Source: Minnesota 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.

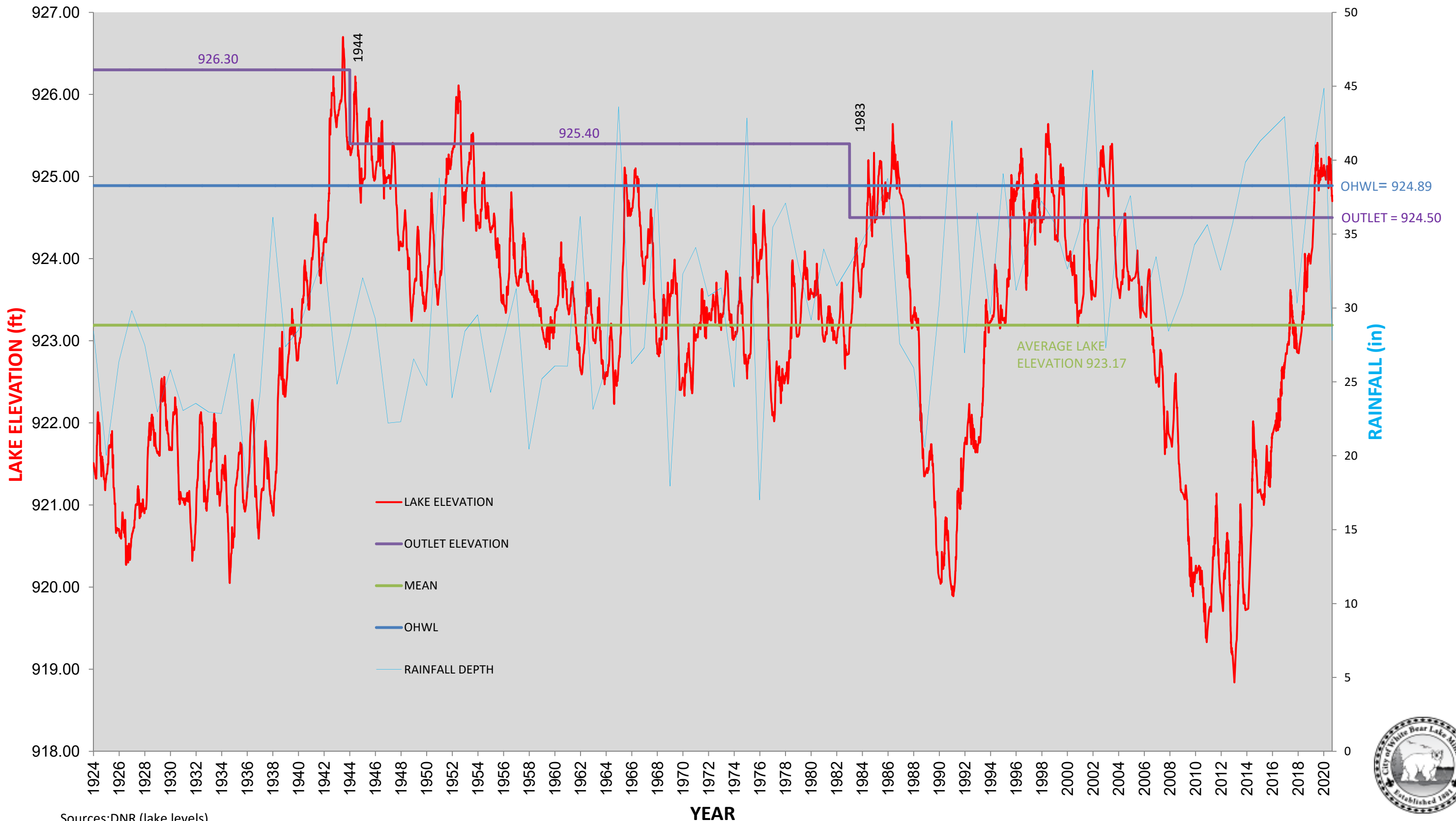
The water level in White Bear Lake, as with other lakes, naturally fluctuates. Lake level has been tracked by the DNR since 1924. The lowest recorded lake level of 918.84 was observed on January 10, 2013, but with increasing precipitation, the lake has rebounded up to the outlet elevation of 924.5 on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



Boatworks Commons, White Bear Lake

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



Sources: DNR (lake levels)
 Meteorologist Frank Watson Climate Data for WBL. <http://weathermanwatson.com> (rainfall data from 2008- 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.



Birch Lake

Photo credit: VLAWMO

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. A history of the sewer project can be found in Appendix F.



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

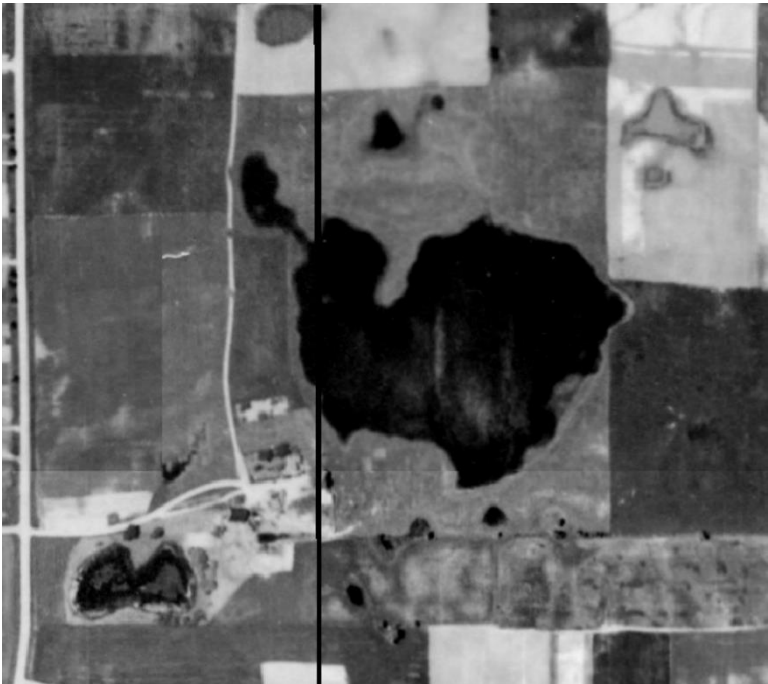
Varney Lake

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

Heiner's Pond

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, ¹VLA WMO, ²RCWD

Notes: ³MSL 1912 datum, ⁴NGVD 29, ⁵excludes 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.



Underwater, June 12, 2020

Source: VLAWMO

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.



Photo Credit: Harvey Bartz

Table 7. Rare Plants and Animals and Significant Natural Communities

Common Name	Scientific Name	State Status	Preferred Habitat
Animals			
Blanding’s Turtle	<i>Emydoidea blandingii</i>	Threatened ¹	Wetland complexes and adjacent sandy uplands; calm, shallow waters, including wetlands associated with rivers and streams with rich aquatic vegetation.
Western Foxsnake	<i>Pantherophis ramspotti</i>	Watchlist	Forest edge habitats. Often found along forested edges of larger rivers.
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	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	<i>Limnephilus secludens</i>	Endangered ³	Riparian stream habitat
Mussels	<i>Lampsilis siliquoidea</i>	Additional species of concern reported in the City with no status information available from the DNR	Lakes, rivers, streams and quiet water
	<i>Pyganodon grandis</i>		Large rivers
	<i>Pyganodon lacustris</i>		Lakes, (seldom rivers); substrates with mud bottoms
Plants			
White Wild Indigo	<i>Baptisia lactea</i> var. <i>lactea</i>	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	<i>Juncus articulatus</i>	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

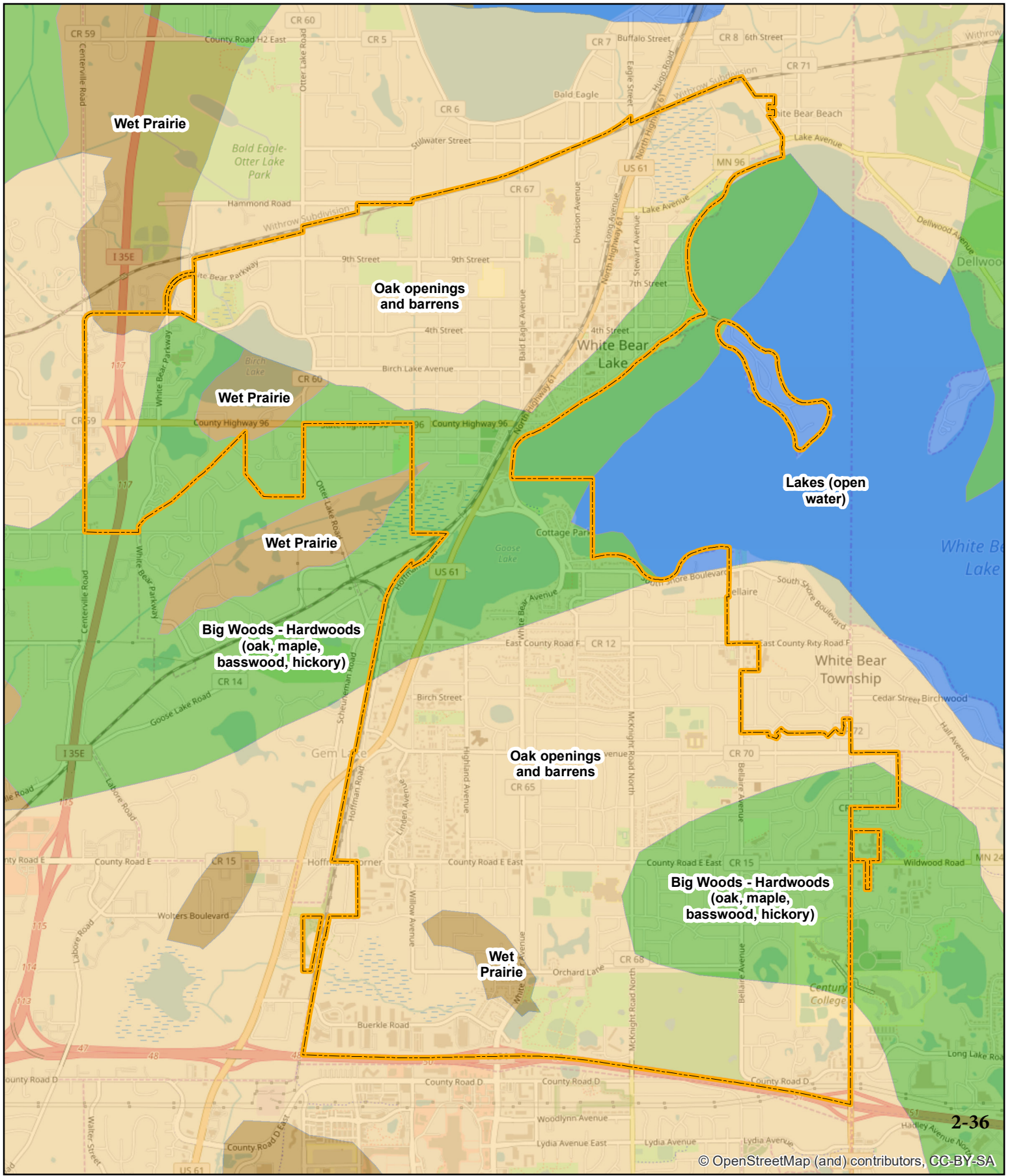
Source: DNR Natural Heritage Information System (NHIS) database for White Bear Lake

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.

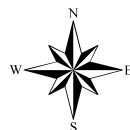


2-36

© OpenStreetMap (and) contributors, CC-BY-SA

Legend

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



0 0.25 0.5 Miles



Figure 17
PRESETTLEMENT VEGETATION
City of White Bear Lake
Surface Water Management Plan

Source: MnDNR

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.

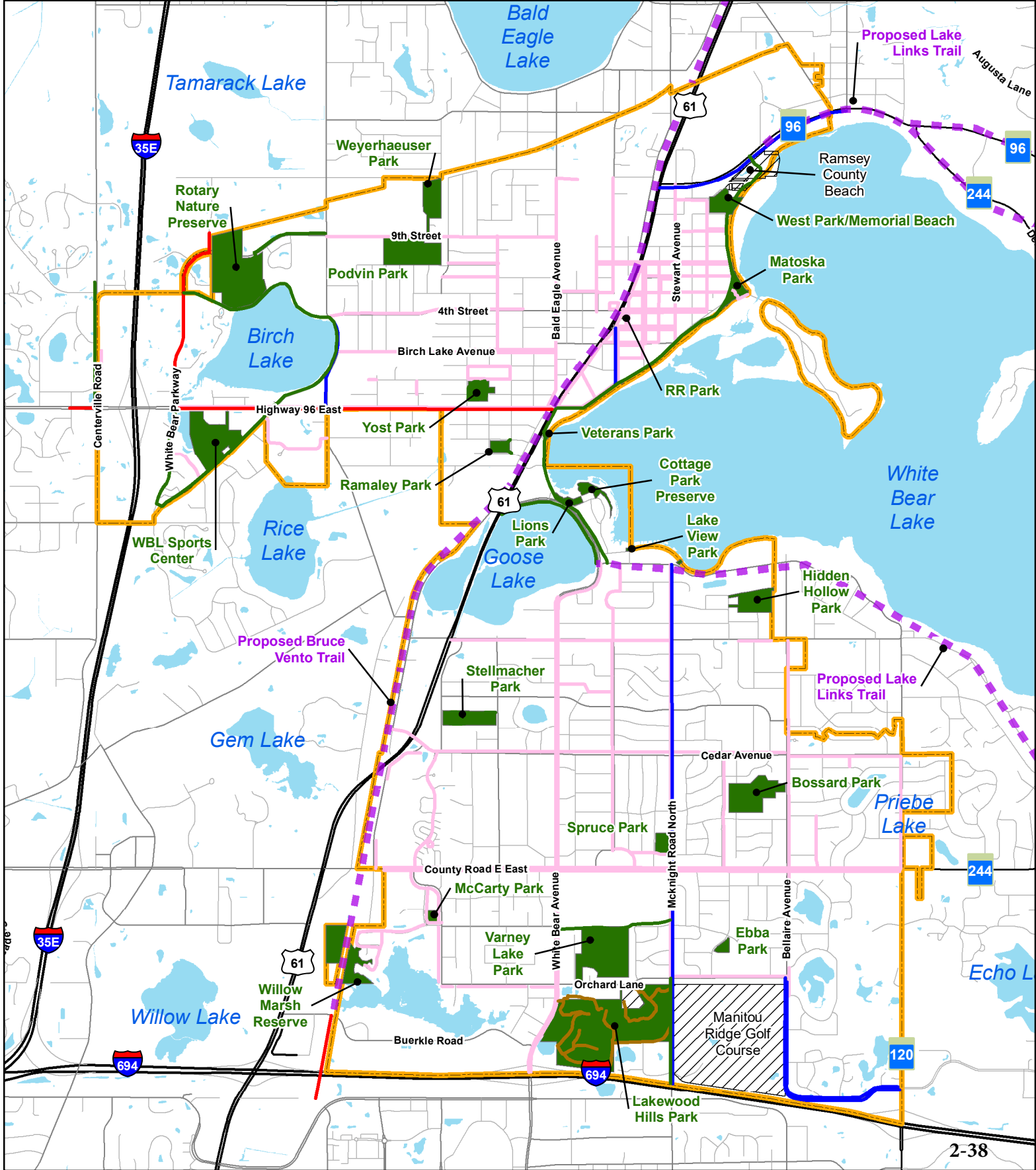
Table 8. Water-based Recreational Facilities

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.



2-38

- Legend**
- Mixed Use Trail
 - On-Road Bike Lane
 - Regional Trail
 - Sidewalk
 - Woodchip Trail
 - Proposed Trail
 - Parks
 - County Facilities
 - City Boundary

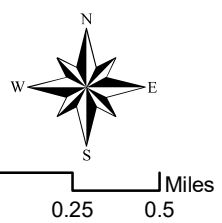
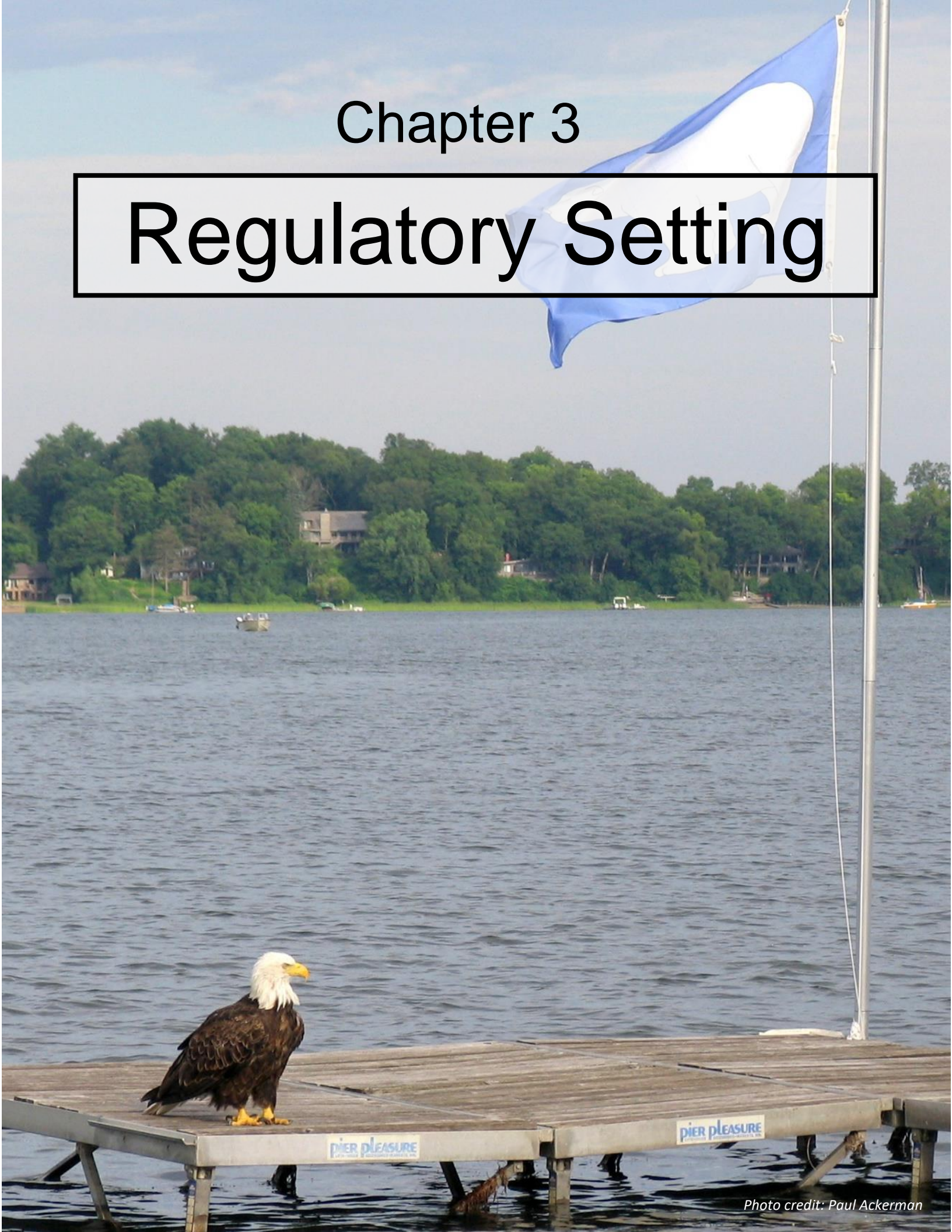


Figure 18
Parks and Trails
City of White Bear Lake
Surface Water Management Plan

Source: City of White Bear Lake

Chapter 3

Regulatory Setting



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 who are concerned about 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

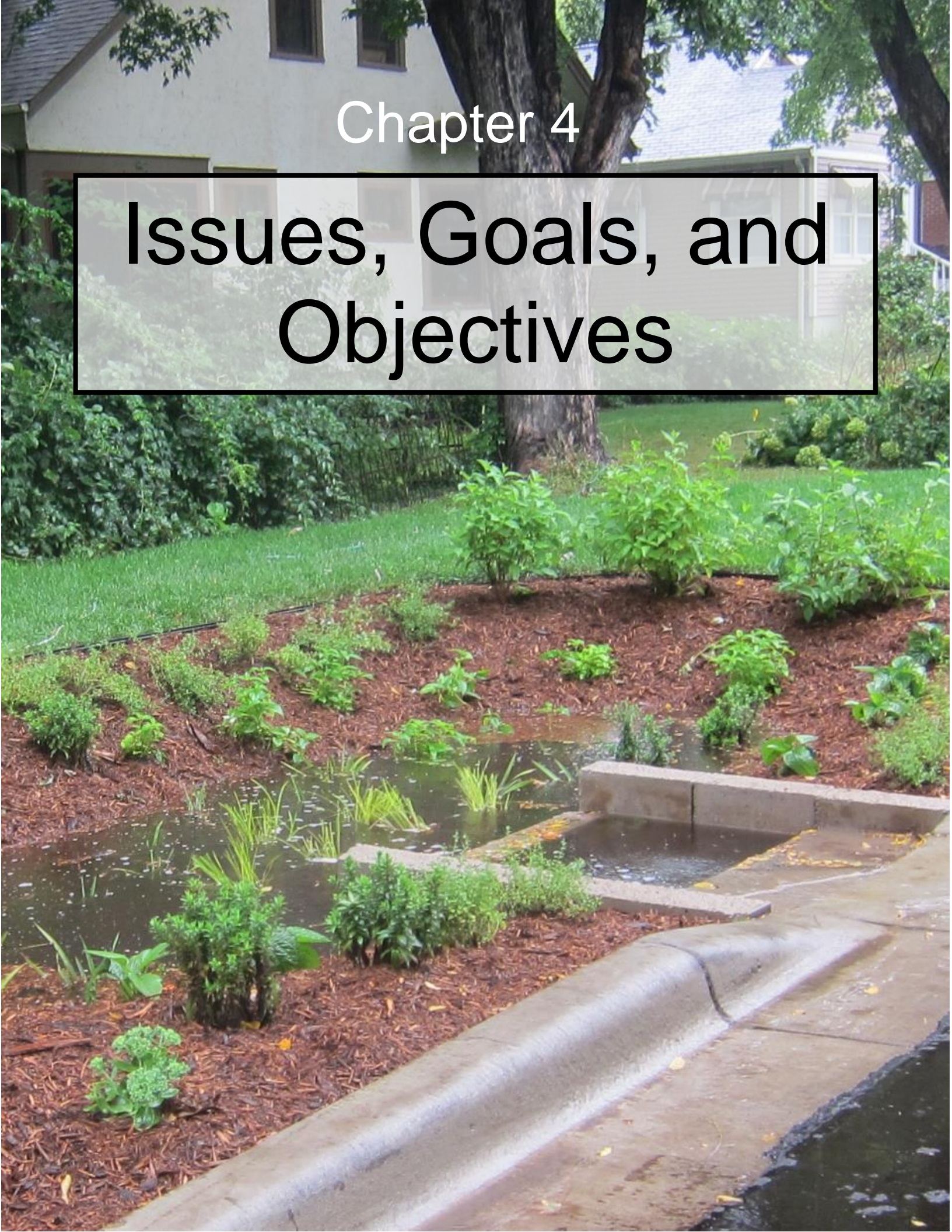
A summary of water governance in Minnesota is included on the following page. The MPCA contracted with the East Metro Water Resource Education Program to create this flowchart for their MS4 toolkit.

Water Governance in Minnesota



Chapter 4

Issues, Goals, and Objectives



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 problems (labeled as ‘issues’), 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 Chapter 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 an approximately 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. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2)</i>

<p><u>Volume Control</u> - Reduce the volume of stormwater runoff discharging to surface waters.</p>	1.3	Expand the City owned stormwater reuse system at Lakewood Hills Park to irrigate soccer field turf.
	1.4	Promote WMO 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. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2).</i>
	-	Consider adopting stormwater reuse standards for development and redevelopment projects. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2).</i>
Issue: Stormwater Runoff Quality		
Policy: Reduce pollutants that discharge to surface waters from the City's storm sewer system.		
Goal	Objective	
<p><u>Water Quality Control</u>– Protect surface water quality by reducing total suspended solids, phosphorus, trash, and other pollutants in stormwater.</p>	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/parking lots if feasible (1280 Birch Lake Blvd N, Lakewood Hills Park and others)
	-	Incorporate temporary and permanent erosion and sediment control practices as part of public and private development and redevelopment projects. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2).</i>
	-	Incorporate stormwater quality treatment practices as part of private development and redevelopment projects. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2).</i>
	-	Require a stormwater operations and maintenance agreement for private post construction stormwater management practices. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2).</i>

	-	Maintain City owned buildings, parks, and streets to minimize pollutants entering the City's Stormwater System. <i>Addressed through implementation of the City's operations and maintenance program (Subsection 4.7.2).</i>
	-	Maintain City owned stormwater management practices. <i>Addressed through implementation of the City's operations and maintenance program (Subsection 4.7.2).</i>
Issue: Localized Flooding		
Policy: Minimize localized flooding		
Goal	Objective	
<u>Localized Flooding</u> – 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	
<u>Future Flooding Risk</u> - Identify and decrease the risk of future flooding risk that may result from changing precipitation patterns.	1.13	Work with WMOs 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. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2).</i>

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 Ave., 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 from a VLAMWO 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 (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 requirements 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.



County Road F Raingardens

Receiving Water: Goose Lake

The raingardens on County Road F between Highway 61 and McKnight Road were originally constructed as part of the 2003 County Road F reconstruction project. A total of six raingardens were installed to capture and treat runoff from County Road F and City streets. The County and City entered into a cooperative agreement in 2003 to share the ongoing operation and maintenance costs associated with the raingardens. The County currently contracts with a landscape company to perform yearly maintenance, and the City reimburses the County for its share. The cooperative agreement is included in Appendix D.

In 2020, Ramsey County completed a maintenance and retrofit project to restore the functionality of the County Road F raingardens. The project included dredging accumulated sediment from the raingardens, installing curb cuts to improve the flow of water into the raingardens, installing Rainguardian structures to capture sediment from the road, and replanting. The 2020 County Road F raingarden retrofit project was funded by Ramsey County, the City of White Bear Lake, and a VLAWMO Grant.



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.



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

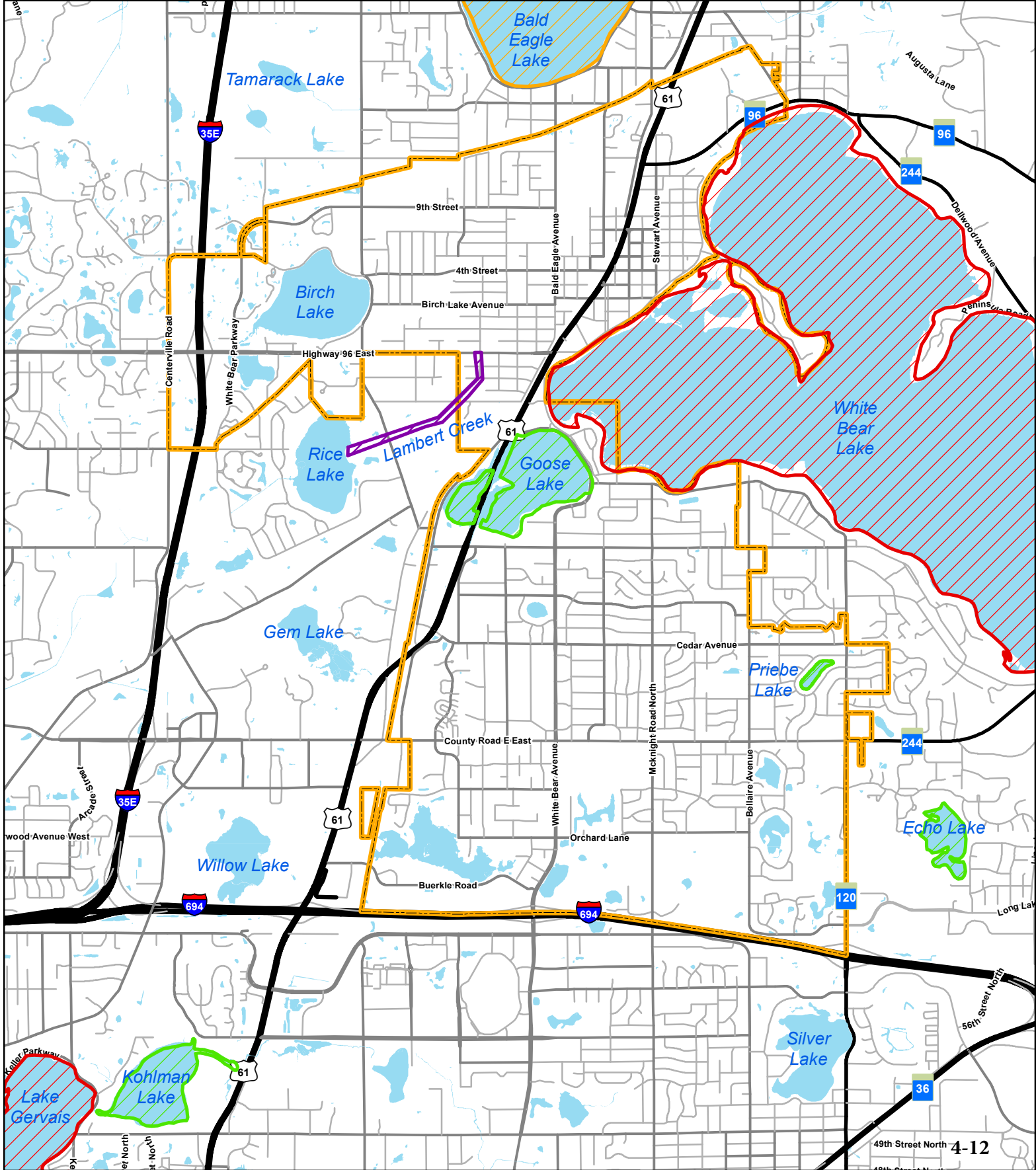
RCWD	Priebe Lake	2014	Aquatic Recreation	Nutrients/Eutrophication	Target Start Date 2024
	White Bear Lake	1998	Aquatic Consumption	Mercury in Fish Tissue ¹	2007
	Bald Eagle Lake	2002	Aquatic Recreation	Nutrients/Eutrophication	2012
		1998	Aquatic Consumption	Mercury in Fish Tissue ¹	2008
	Peltier Lake 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

¹Mercury 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.

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

¹⁰Mississippi River-St Croix River to Chippewa River (WI).

¹¹Delisted in 2018.



- Legend**
Pollutant or Stressor
- ▭ Fecal Coliform
 - ▭ Mercury
 - ▭ Nutrients
 - ▭ Mercury & Nutrients
 - ▭ City Boundary

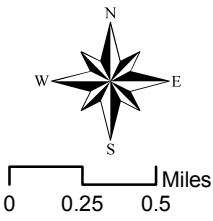


Figure 19
IMPAIRED WATER BODIES
City of White Bear Lake
Surface Water Management Plan

Source: MPCA

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

¹Delisted in 2018.

²Waste 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

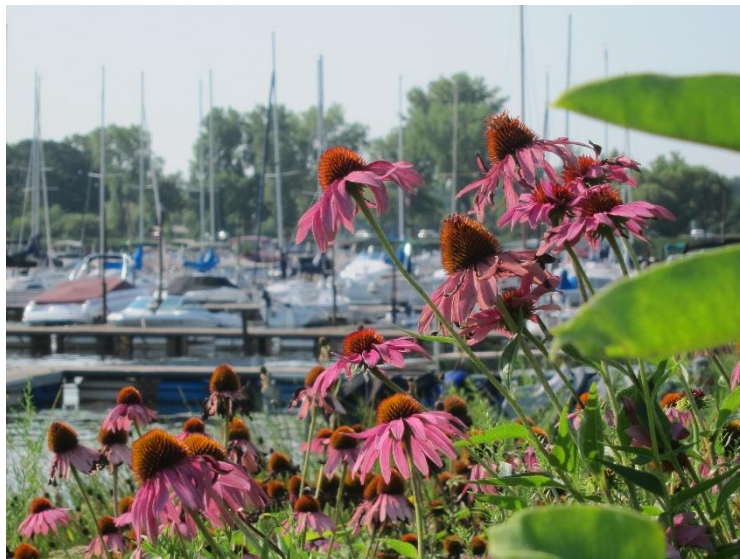
Waterbody	Annual Chloride Load			WLA Type
	MS4 WLA (lbs)	Load Reduction (lbs)	% Reduction	
South Long Lake	21,534,261	NA	NA	Categorical
Kohlman Lake	3,106,733	NA	NA	Categorical

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 Veteran's 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	
<p><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.</p>	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. <i>Refer lake and wetland buffer objectives in Table 15. Natural Resources Management and Recreation.</i>
	-	Consider additional street sweeping in the Goose Lake subwatershed. <i>Refer to street sweeping objectives in Table 19: Pollution Prevention, Operations and Maintenance.</i>
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. <i>Addressed 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.</i>
	-	Inspect and maintain existing stormwater treatment practices <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>
<p><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.</p>	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. <i>Addressed 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.</i>

	-	Inspect and maintain existing stormwater treatment practices <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>
<u>Priebe Lake & Clearwater Creek</u> - Cooperate with lead agency to develop a future TMDL study.	2.4	Participate in the TMDL process with the lead agency.
<u>Bald Eagle Lake</u> - 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 Stormwater Retrofit Analysis.
	-	Consider additional street sweeping in the Bald Eagle Lake subwatershed. <i>Refer to street sweeping goals and objectives in Table 6.7 Pollution Prevention, Operations and Maintenance.</i>
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. <i>Addressed 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.</i>
	-	Inspect and maintain existing stormwater treatment practices <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>
<u>Peltier Lake</u> - 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. <i>Addressed 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.</i>
	-	Inspect and maintain existing stormwater treatment practices. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>

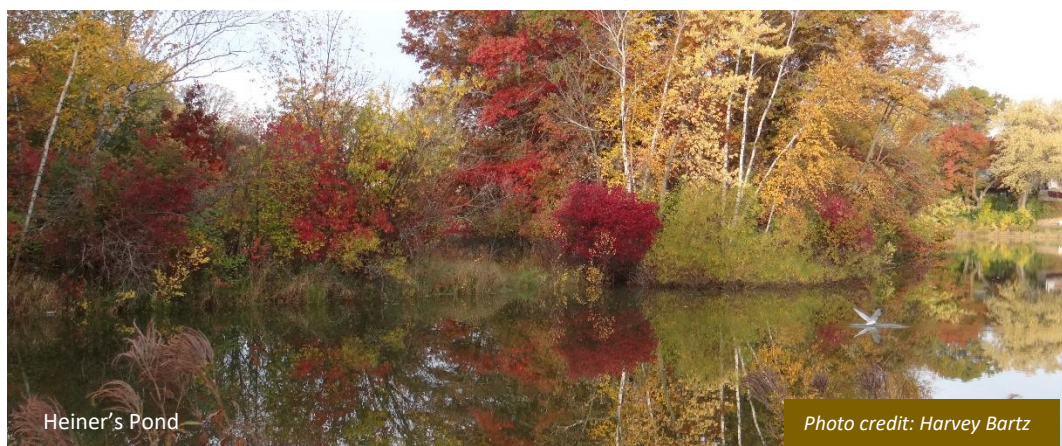
<p><u>Kohlman Lake</u> - Meet the total phosphorus WLA assigned to the City of 129 lbs/yr for Kohlman Lake, located in the City of Maplewood.</p>	2.6	Collaborate with RWMWD to evaluate opportunities for stormwater treatment practices to treat runoff from commercial properties on Buerkle Road.
	-	Collaborate with RWMWD to evaluate opportunities for stormwater treatment practices at Lakewood Hills Park. <i>Refer to water quality control objective 1.9 in Table 9.</i>
	-	Consider additional street sweeping in the Kohlman Lake subwatershed. <i>Refer to street sweeping program objectives in Table 21 Pollution Prevention, Operations and Maintenance.</i>
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects <i>Addressed 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.</i>
	-	Inspect and maintain existing stormwater treatment practices. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>
<p><u>Lake St. Croix</u> - 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.</p>	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. <i>Addressed 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.</i>
	-	Inspect and maintain existing stormwater treatment practices. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>
<p><u>Lambert Creek</u> - Meet the bacterial WLA assigned to the City for Lambert Creek.</p>	2.7	Support VLAWMO projects in the Lambert Creek subwatershed.
	2.8	Partner with VLAWMO to investigate the feasibility of retrofitting the Whitaker Park wetland stormwater treatment facility.
	2.9	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.

<p><u>Rice Creek</u> - 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.</p>	2.10	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.
	2.11	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.
<p><u>South Long Lake</u> - 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.</p>	-	As per MS4 General Permit requirements, refine winter salt application procedures to minimize salt use without negatively impacting safety. <i>Addressed through implementation of the City's Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>
<p><u>Kohlman Lake</u>- 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.</p>	-	As per MS4 General Permit requirements, refine winter salt application procedures to minimize salt use without negatively impacting safety. <i>Addressed through implementation of the City's Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>
<p><u>Mississippi River</u>- Work with partners to achieve a categorical TSS WLA of 154 lbs/acre to the Mississippi River.</p>	-	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. <i>Addressed through implementation of the City's Public Education and Participation program (Subsection 4.5.2)</i>
	-	Continue to sweep all streets at least twice per year. <i>Addressed through implementation of the City's Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects <i>Addressed 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.</i>
	-	Inspect and maintain existing storm sewer system. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>

<u>Tracking</u> - Track the progress of WLA goals.	2.12	Track load reductions of BMPs constructed within watersheds of impaired waters as a condition of the MS4 General Permit and TMDLs. Collaborate with WMO's to evaluate loadings annually.
Issue: High Quality Lakes		
Policy: Protect high quality lakes.		
Goal	Objective	
<u>White Bear Lake</u> - 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.	2.13	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. <i>Addressed 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, 1.6, 1.7 and 1.8.</i>
	-	Inspect and maintain existing stormwater treatment practices <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>
<u>Birch Lake</u> - 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.	2.14	Birch Lake subwatershed retrofit projects
	-	Consider additional street sweeping in the Birch Lake subwatershed. <i>Refer to street sweeping objectives in Table 19 Pollution Prevention, Operations and Maintenance.</i>
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects. <i>Addressed 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.</i>
	-	Inspect and maintain existing stormwater treatment practices. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>

Issue: Wetlands		
Policy: Protect high quality wetlands and restore degraded wetlands within the City.		
Goal	Objective	
<u>Wetland Functions and Values</u> - Enhance the functions and values of wetlands within the City.	2.15	Create a wetland restoration and management plan.
	2.16	Collaborate with VLAWMO on a wetland restoration project at 4 th and Otter.
	2.17	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.
	2.18	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. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2).</i>
	-	Inspect and maintain existing stormwater treatment practices. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2) and Pollution Prevention, Operations, and Maintenance program (Subsection 4.7.2).</i>
	-	Increase the quality of wetland buffers and control invasive species. <i>Refer to lake and wetland buffer objectives and invasive species management objectives in Table 15 Natural Resources and Recreation.</i>
	-	Remove accumulated sediment in wetlands at storm sewer outfalls. <i>Refer to City-owned stormwater facilities objectives in Table 21 Pollution Prevention, Operations and Maintenance.</i>

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



Heiner's Pond

Photo credit: Harvey Bartz

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.



Sand Iron Filter at City outfall, looking east towards 4th Street

Photo Credit: 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.

As of the date of this SWMP, VLAWMO and the City are collaborating on an East Goose Lake Adaptive Lake 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 (<i>Myriophyllum spicatum</i>)	Aquatic plant	In-lake	Birch Lake; White Bear Lake
Curly-Leaf Pondweed (<i>Potamogeton crispus</i>)	Aquatic plant	In-lake	Goose Lake
European Common Reed (<i>Phragmites australis</i>)	Aquatic plant	Shorelines	White Bear Lake, south shore
Purple Loosestrife (<i>Lythrum salicaria</i>)	Aquatic plant (DNR) Terrestrial plant (MDA)	Shorelines	Heiner’s Pond; Rotary Wetland; White Bear Lake at Boatworks Marina and Lions Park; Goose Lake; Birch Lake
Knotweed (<i>Polygonum sp.</i>)	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 (<i>Dreissena polymorpha</i>)	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	
<u>Lake and Wetland Buffers –</u> 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. <i>Addressed through implementation of the City's Public Education and Participation program (Subsection 4.5.2).</i>
	-	Establish buffers on private property as part of development and redevelopment. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2).</i>
	-	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. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2).</i>
<u>Upland Habitat Establishment -</u> 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. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2, objective 6.4).</i>
<u>Vegetation Maintenance</u> - 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 Veteran's 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	4th and Otter - Continue to partner with VLAWMO to establish and maintain native vegetation on the City owned property at 4 th 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	
<u>Invasive Species Management</u> - 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	4 th 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. <i>Addressed through implementation of the City's Public Education and Participation Program (Subsection 4.5.2).</i>
<u>Invasive Species Management Partnerships</u> - 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	
<u>Recreation</u> – 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. <i>Addressed in the City's CIP.</i>
	-	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. <i>Addressed in the City's CIP.</i>
	-	Construct the trail segment on White Bear Parkway to connect Township Parkway and Rotary Park. <i>Addressed in the City's Comprehensive Plan and CIP.</i>
	-	Support the construction of the Lake Links Trail as part of the South Shore Blvd street reconstruction project. <i>Addressed in the City's Comprehensive Plan and CIP.</i>
	-	Support the construction of a County trail on the west side of Otter Lake Road from County 96 to Birch Lake Blvd North. <i>Addressed in the City's Comprehensive Plan and CIP.</i>
	-	

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

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 vision 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.



Photo Credit: 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, the Rotary Club 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 largely 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 was 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 Investigation 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	
<u>Groundwater Recharge</u> – Preserve existing recharge areas and manage stormwater to increase groundwater recharge where appropriate.	4.1	Collaborate with state agencies, Ramsey County, Washington County and WMOs to identify and preserve regional recharge areas.
	-	Promote WMO cost share programs to encourage residents and businesses to install infiltration practices where appropriate. <i>Addressed through implementation of the City's education and outreach program (Subsection 4.5.2).</i>
	-	Incorporate stormwater volume control/treatment practices as part of development and redevelopment projects (<i>addressed 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).</i>)
<u>Groundwater Withdrawal</u> – 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 WMOs, develop a reuse incentive program.

	-	Educate landowners, public officials, and staff on wise use of water and promote indoor and outdoor water conservation practices. <i>Addressed through implementation of the City's Education and Outreach program (Subsection 4.5.2).</i>
	-	Consider installing new stormwater reuse systems and expanding existing systems to irrigate City property. <i>Addressed in Table 9.</i>
Issue: Groundwater Quality		
Policy: Protect groundwater supplies by addressing and managing all potential sources of groundwater contamination.		
Goal	Objective	
<u>Groundwater Pollutants</u> – Prevent contamination of source water aquifers and manage these aquifers cooperatively with other agencies to assure sustainable drinking water supplies.	4.5	Collaborate with WMOs, 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. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2).</i>
	-	Develop and revise land-use regulations as necessary in the DWSMA to protect drinking water and public health. <i>Addressed through implementation of the City's regulatory program (Subsection 4.6.2).</i>

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.



Volunteer raingarden planting – 4th and Johnson

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
<p><u>Educational Resources</u> - Increase public awareness and understanding of stormwater issues by providing educational resources to City residents, business owners, and local organizations.</p>	<p>5.1</p> <p>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.</p>
	<p>5.2</p> <p>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.</p>

	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.
<p><u>Public Participation</u> - Increase public awareness and understanding of stormwater issues within the community by providing opportunities for public participation and involvement.</p>	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 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.
	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	
<u>Coordination</u> - Coordinate the development and implementation of the City's educational program with other organizations that focus on stormwater education to minimize duplication and ensure a consistent message.	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 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. <i>Addressed as part of objective 8.7 in Table 22.</i>

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 create 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, 2020

Annual Report



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 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 (FIRMs), identify the land areas to which the City's floodplain regulations apply. Having been last updated in June 2010, there is concern that the FIRMs 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
<p><u>Official Controls</u> – Revise ordinances and stormwater design standard documents in 2021 and review every 5 years to remain consistent with Federal, State, and Watershed District regulations.</p>	<p>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.</p>
	<p>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.</p>
	<p>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.</p>
	<p>6.4 Include a guideline 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.</p>
	<p>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.</p>

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	
<p><u>Plan Review</u> - Review development and redevelopment plans for sites that include land disturbing activities.</p>	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.
<p><u>Site Inspections</u> - Minimize the transport of sediment and other pollutants into the City's storm sewer system through regular construction site inspections.</p>	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 Stormwater Permit/project SWPPP, City 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. <i>Addressed in objective 7.39.</i>
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. <i>Addressed as part of objective 6.1.</i>

Issue: Shoreland Management		
Policy: Guide land development in shoreland areas that is consistent with state shoreland rules.		
Goal	Objective	
<u>Shoreland Overlay District</u> - 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. <i>Addressed as part of objective 6.1.</i>
Issue: Wetland Management		
Policy: Guide land development near wetlands and drainage ways		
Goal	Objective	
<u>Wetlands Overlay District</u> – 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. <i>Addressed as part of objective 6.1.</i>
<u>WCA</u> – 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 properly. 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	
<u>City Facilities</u> - 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.
	7.3	Implement BMPs that prevent or reduce pollutants in stormwater discharge from landscaping, park, and lawn maintenance, road maintenance, and ROW maintenance. Create standard operation procedures for these activities.

<p><u>City-owned Stormwater Facilities</u> - Preserve the performance of City owned stormwater management facilities through regular inspection and maintenance.</p>	7.4	Maintain storm sewer conveyance infrastructure (pipes, catch basins, manholes, ditches)
	7.5	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.
	7.6	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.
	7.7	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.
	7.8	Continue to maintain City owned raingardens each season. Maintenance includes weeding, mulching, and removing sediment from pretreatment devices.
	7.9	Annually inspect stormwater reuse systems at Lakewood Hills and Boatworks and maintain as needed.
	7.10	Remove sediment deltas at storm sewer outfalls in White Bear Lake. Identify outfall locations that need armoring.
	7.11	Record inspections, follow-up actions, and completed maintenance in the City's MS4 software.
	7.12	Develop a GIS database for inspections and maintenance which includes a mobile application for field inspections.
	7.13	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.
	7.14	Develop procedures for determining treatment capacity (TSS and TP treatment effectiveness) of city-owned stormwater ponds/receiving waters.
	7.15	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.

<u>Stormwater Related Maintenance Agreements</u> - Collaborate with partners to ensure that stormwater facilities are maintained as detailed in the stormwater maintenance agreements (Appendix D).	7.16	4th and Otter iron sand filter maintenance PW2019-14.
	7.17	Whitaker Pond PW2009-19.
	7.18	County Road F Raingardens PW2002-17.
	7.19	Priebe Lake Outlet
	7.20	Central Middle School stormwater BMP “Water Tracks” inspection and maintenance of sumps and underground pipe via vac truck (verbal agreement with VLAWMO).
	7.21	South Heights Stormwater Pond Maintenance Agreement PW2020-02M (not executed)
7.22	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	
<u>Maintenance Access</u> - Strive to provide adequate maintenance access to all existing City-owned stormwater management facilities.	7.23	Identify receiving waters and storm sewer infrastructure with no access easements. Review possible access locations on a project-by-project basis. Establish permanent 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	
<u>PAH Contamination</u> – Determine the extent of PAH contamination in City receiving waters and the available funding sources for proper removal and disposal of PAH contaminated sediment.	7.24	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.
	7.25	Secure funding to properly dispose of PAH contaminated sediment.

Issue: Road Salt		
Policy: Minimize salt use while maintaining safe roadways.		
Goal	Objective	
<u>Winter Street Maintenance Program</u> – Strive to reduce salt use through smart salt training and implementation.	7.26	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.
	7.27	Document the amount of deicer applied each winter maintenance season on all City owned surfaces. Determine an effective method for tracking salt use.
	7.28	Annually assess 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 WMA tool to assess existing practices, identify areas for improvement, and track progress.
Issue: Street Sweeping		
Policy: Continue to implement the City’s street sweeping program in accordance with the City’s MS4 Permit.		
Goal	Objective	
<u>Street Sweeping Program</u> - 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	
<u>IDDE Program</u> - 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	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 MS4 General Permit.

	7.33	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 MS4 General Permit.
	7.34	Work with Police, Fire, Engineering, and Public Works staff to revise the standard operating procedures (SOPs) for: 1) investigating, locating, and eliminating the sources of illicit discharges; 2) spill response procedures; and 3) enforcement procedures, and 4) documentation, to be in compliance with the requirements of the reissued MS4 General Permit.
	7.35	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. <i>Addressed through implementation of the City's regulatory program (section 6.2).</i>
<u>Storm Sewer Map</u> - Maintain a map of all storm sewer infrastructure including pipes, catch basin sumps, ponds, outfalls, and structural stormwater BMP's.	7.36	Annually update the storm sewer map to reflect newly constructed/modified pipes, outfalls, and structural stormwater BMP's.
	7.37	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, asbuilt information, inspection results, and any maintenance performed or recommended.
	7.38	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.

<u>Waste Disposal</u> - Provide opportunities for residents to properly dispose of pharmaceuticals, household hazardous waste, and yard waste.	7.39	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.
	7.40	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	
<u>Staff Training</u> - 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.	7.41	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.
	7.42	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.
	7.43	Continue to require at least one City parks staff member to maintain a pesticide applicator certification.
	7.44	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.
	7.45	Provide illicit discharge training to individuals commensurate with their responsibilities, including those responsible for investigating, locating, and eliminating illicit discharges, and enforcement. Previously trained individuals shall attend a refresher course every 3 years following the initial training. Document date, names and departments of attendees, and subject matter.
	7.46	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.
	7.47	Provide other training as needed.
	7.48	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

South Heights-Myrle Ave Pond Maintenance

Receiving Water: Land locked basin

In the winter of 2020-2021, the City installed a drop manhole structure at the South Heights Addition outfall to fix severe soil erosion that was occurring downstream of the existing outfall. This outfall is one of three that conveys stormwater from City and County contributing drainage areas into an existing stormwater pond located at County Road F and Myrle Avenue. 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. Outlot A was tax forfeited by the residential developer landowner in 2014 and is now listed as State of MN Trust Exempt. Prior to the outfall repair, the County and City prepared an agreement to establish cost participation and responsibilities for operation and maintenance activities of the pond and associated elements. This agreement, found in Appendix D, was drafted by Ramsey County and City staff but was not executed because the City chose not to take ownership of Outlot A at this time. Staff will continue to use the unexecuted agreement as a guide for partner maintenance responsibilities.



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 contaminants 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 Riviera 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.



White Bear Press, Nov 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	
<u>Alternate Funding Sources</u> - 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	
<u>Partnerships</u> – Leverage partnerships with watershed organizations, neighboring communities, and other organizations that share common water resource protection and education goals.	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.
	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 and attend monthly meetings.
	8.9	MS4 General Permit fee

Chapter 5

Implementation



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 oversight 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	25,115
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 2019 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 are 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, or 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 identified in the City public survey was addressed when storm sewer was installed in the alley as part of the 2018 street reconstruction project. Localized flooding at Lakeview Avenue and Cottage Park Road identified in the City public survey was addressed as part of the 2020 street reconstruction project. 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 Lake 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 policies 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.



Purple Loosestrife removal on Heiner's Pond

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 is 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 to manage 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 mussel 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 DNR per 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 GWMA's. 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. Watershed 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		
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 encourage the use of native plants (including trees) for pollinators.
- Preserve natural areas or restore 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).

- Include a 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.

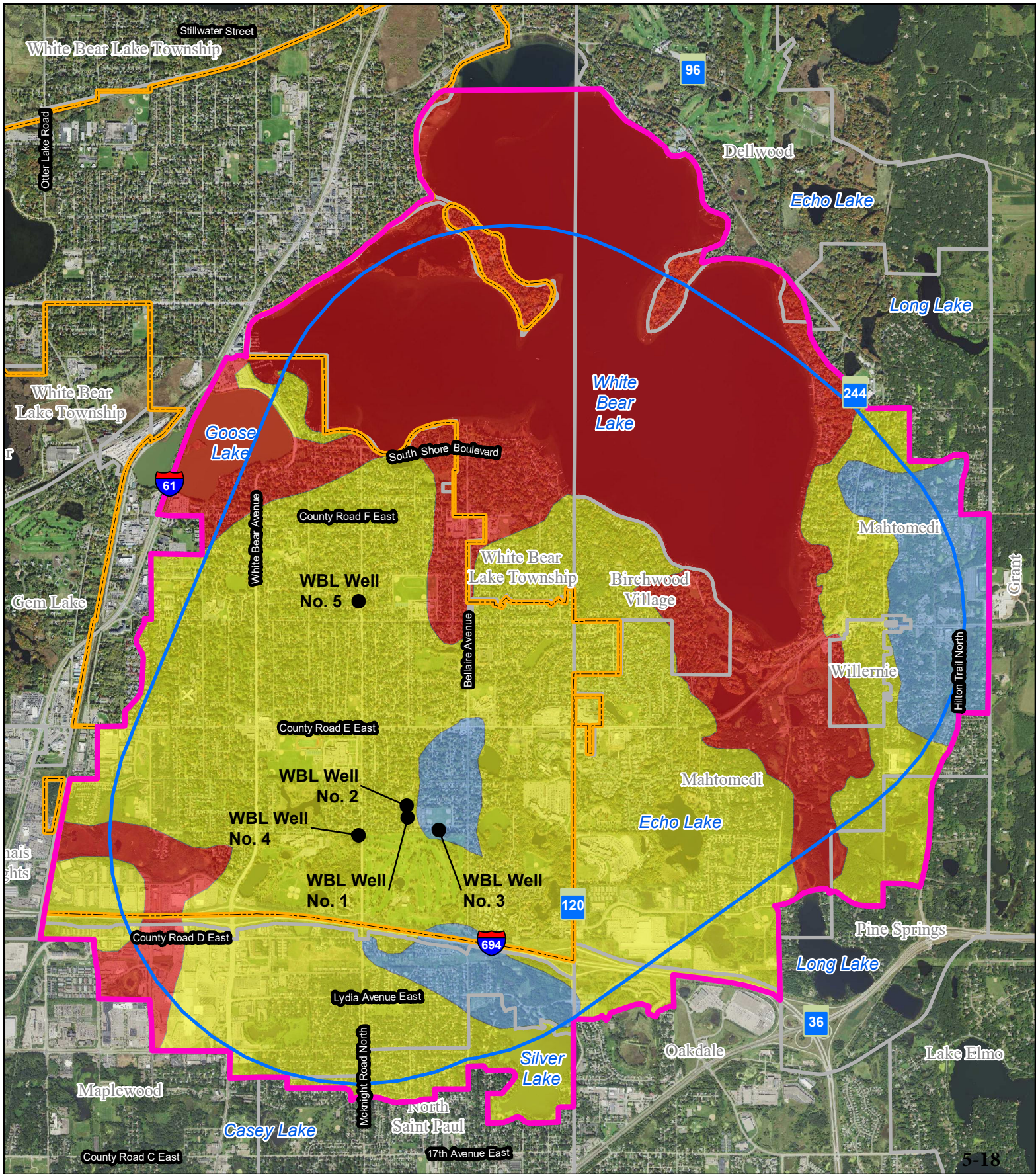
Floodplain Management

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 events 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.



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

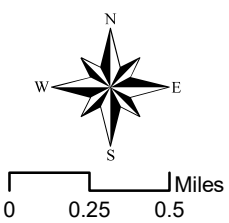


Figure 20
WHPA, DWSMA AND
DWSMA VULNERABILITY
City of White Bear Lake
Surface Water Management Plan

Source: City of White Bear Lake Wellhead Protection Plan

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) establish 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 WMOs 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 Watershed 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.

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.



Public Works Salt Storage Facility

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 Maintenance 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. Newer plow trucks are also equipped with instrumentation that changes the rate of salt application based on driving speed. 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 WMA_t for use by winter maintenance professionals. The WMA_t 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

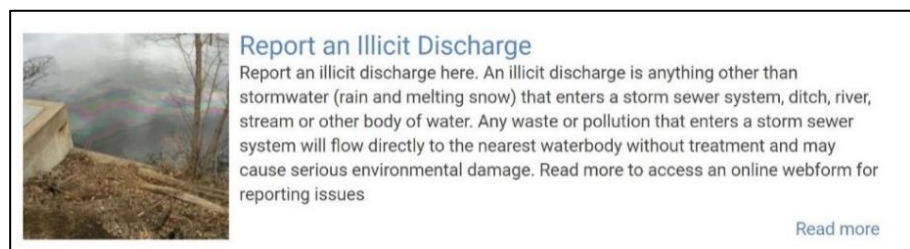
The City owns and operates one regenerative air street sweeper. Public Works Streets Department staff is responsible for the City's street sweeping program. Streets are cleaned in the spring and fall as weather allows, with at least two passes through all City streets. The sweeping program also includes 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.

A screenshot of a website banner. On the left is a photograph of a stormwater pipe outlet on a concrete curb, with a rainbow visible in the background. To the right of the photo is the text: "Report an Illicit Discharge" in blue, followed by a paragraph: "Report an illicit discharge here. An illicit discharge is anything other than stormwater (rain and melting snow) that enters a storm sewer system, ditch, river, stream or other body of water. Any waste or pollution that enters a storm sewer system will flow directly to the nearest waterbody without treatment and may cause serious environmental damage. Read more to access an online webform for reporting issues". At the bottom right of the text area is a "Read more" link.

As part of the storm sewer inspection program, City Public Works crews inspect the stormwater system 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 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 partially or fully 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 State’s Local Government Aid was allocated each year to replenish the SWPP fund budget. As a result of a decrease in the 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 to 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 as a 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 additional 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).



Edgewater ROW Prairie Planting - partially funded by a grant from RWMWD

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 WMO 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 (1280 Birch Lake Blvd N, Lakewood Hills Park and others)	Engineering	RCWD, RWMWD, VBWD, VLAWMO	\$20,000	\$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, Kohlman Lake Total Maximum Daily Load Report	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
	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.

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					
Future Flooding Risk	1.13	Work with WMOs 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		\$125,000	\$410,000	\$400,000	\$410,000	\$400,000	\$410,000	\$400,000	\$410,000	\$400,000	\$410,000	10-year total =		\$3,365,000		
			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	\$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		
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 Stormwater Retrofit Analysis.	Engineering	RCWD	X	X	X	X	X	X	X	X	X	X		CIP. South Bald Eagle Lake Subwatershed Assessment	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			
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.
Lambert Creek	2.7	Support VLAWMO projects in the Lambert Creek subwatershed.	Engineering	VLAWMO			\$5,000	\$5,000							SWPP fund, grants	CIP, VLAWMO TMDL Implementation Plan & CWMP	
	2.8	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
	2.9	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	2.10	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	
	2.11	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	2.12	Track load reductions of BMPs constructed within watersheds of impaired waters as a condition of the MS4 General 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	2.13	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.
Birch Lake	2.14	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

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				
Wetland Functions and Values	2.15	Create a wetland restoration and management plan.	Engineering	RCWD, RWMWD, VBWD, VLAWMO									\$20,000			SWPP Fund	CIP	Consultant fees
	2.16	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.
	2.17	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
	2.18	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			\$100,000										10-year total =		\$100,000
			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	
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	\$4,000	SWPP Fund, grants	CIP	cost includes vegetation surveys and project installation

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				
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	\$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	\$500	SWPP Fund	SWPP Fund budget	
	3.8	Lions Park, Boatworks Marina, and Veteran's 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	\$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	\$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 4 th and Otter.	Engineering	VLAWMO	X	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	\$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	4 th 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

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				
Invasive Species Management Partnerships	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	X		from Ramsey County SWCD	staff time only
	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	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	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	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	\$10,000	\$10,000	10-year total =	
Groundwater Management																		
Groundwater Recharge	4.1	Collaborate with state agencies, Ramsey County, Washington County and WMOs to identify and preserve regional recharge areas.	Engineering	MDH, Counties, WMO's	X	X	X	X	X	X	X	X	X	X	X			Staff time only
Groundwater Withdrawal	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	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	X			Staff time only
	4.4	In collaboration with Ramsey County, Washington County, and WMOs, develop a reuse incentive program.	Engineering	Counties, WMO's		X	X											Staff time only
Groundwater Pollutants	4.5	Collaborate with WMOs, 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

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				
Public Education and Participation																		
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	\$3,000	SWPP Fund	MS4 SWPPP (16.3-16.6), TMDL implementation plans	Partial newsletter printing costs. Target audiences:
	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. Target audiences:
	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	\$100	SWPP Fund	SWPP Fund budget (EAC budget)	printing costs. Target audiences:

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	5.5	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. Target audiences:
	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	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				
Public Participation	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	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	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-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	

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					
Regulatory Permit and Review Program																			
Official Controls	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	
	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 guideline 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.	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	X			MS4 SWPPP (19.16, 20.23)	

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				
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	X				Staff time only
	6.10	Review and update engineering standard plates and 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	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 Stormwater permit/project SWPPP, City standards for erosion control monitoring, site inspections, and violations.	Engineering, Building		X	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.	

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			
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	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	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	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	X			Staff time only
Floodplain 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
	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	

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				
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	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	\$2,000	SWPP Fund	MS4 SWPPP (21.4), SWPP Fund budget	Consultant fee
	7.3	Implement BMPs that prevent or reduce pollutants in stormwater discharge 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.
City-owned Stormwater Facilities	7.4	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			
	7.5	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.	
	7.6	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.	
	7.7	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	
	7.8	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	
	7.9	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	

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	7.10	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.
	7.11	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
	7.12	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
	7.13	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
	7.14	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
	7.15	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
Stormwater Related Maintenance Agreements	7.16	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.
	7.17	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
	7.18	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.
	7.19	Priebe Lake Outlet	Engineering	RCWD	\$25,000										SWPP Fund	SWPP Fund budget	Outlet replacement planned for 2021. Agreement pending.
	7.20	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
	7.21	South Heights Stormwater Pond Maintenance Agreement PW2020-02M (not executed)	Public Works		\$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	Amount is a placeholder until actual maintenance costs can be better defined
	7.22	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

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			
Maintenance Access	7.23	Identify receiving waters and storm sewer infrastructure with no access easements. Review possible access locations on a project-by-project basis. Establish permanent easements/rights of access from private property owners if feasible.	Engineering, Public Works		X	X	X	X	X	X	X	X	X	X			Staff time only
PAH Contamination	7.24	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
	7.25	Secure funding to properly dispose of PAH contaminated sediment.	Engineering			X	X										Funding source dependent on the PAH lawsuit ruling
Winter Street Maintenance Program	7.26	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.	Public Works			X	X	X	X	X	X	X	X	X		MS4 SWPPP (21.5, 21.6)	Staff time only
	7.27	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
	7.28	Annually assess 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 WMA 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
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 MS4 General Permit.	Building, Engineering	RCWD, RWMWD, VLAWMO		X	X								MS4 SWPPP (18.10, 18.15)	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				
IDDE Program	7.33	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 MS4 General Permit.	Engineering, Building, Public Works		X	X											MS4 SWPPP (18.7, 18.15)	Staff time only
	7.34	Work with Police, Fire, Engineering, and Public Works staff to revise the standard operating procedures (SOPs) for: 1) investigating, locating, and eliminating the sources 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
	7.35	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	X		MS4 SWPPP (18.18)	Staff time only
Storm Sewer Map	7.36	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, structural BMPs that are part of th City's MS4, and all receiving waters.	
	7.37	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, asbuilt information, inspection results, and any maintenance performed or recommended.	Engineering				X	X								MS4 SWPPP (14.2, 18.3)	Staff time only	
	7.38	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.	Engineering		X	X											MS4 SWPPP (20.16)	Staff time only
Waste Disposal	7.39	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	
	7.40	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	

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 Training	7.41	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.
	7.42	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.
	7.43	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
	7.44	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.	Engineering		X	X	X	X	X	X	X	X	X	X		MS4 SWPPP (18.8, 18.16) & TMDL Report	Staff time only
	7.45	Provide illicit discharge training to individuals commensurate with their responsibilities, including those responsible for investigating, locating, and eliminating illicit discharges, and enforcement. Previously trained individuals shall attend a refresher course 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
	7.46	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
	7.47	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		
	7.48	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 (lower priority)											\$250,000		10-year total =	

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				
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 the 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	
	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	\$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		\$125,000	\$535,000	\$425,000	\$410,000	\$550,000	\$410,000	\$400,000	\$410,000	\$400,000	\$410,000	10-year total =		\$3,665,000	
			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		\$632,000	\$1,090,200	\$1,113,000	\$1,122,000	\$1,285,200	\$1,175,500	\$1,091,500	\$1,029,700	\$994,500	\$1,035,400	10-year total =		\$9,533,600	
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	\$0	\$0	\$0	\$0	\$0	\$500,000	\$0	10-year total =		\$500,000	
			TOTAL		\$0	\$0	\$5,000	\$500	\$50,500	\$50,500	\$110,500	\$500	\$550,000	\$10,000	10-year total =		\$777,500	

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
2.7	Support VLAWMO projects in the Lambert Creek subwatershed.			\$5,000	\$5,000							
2.8	Partner with VLAWMO to investigate the feasibility of retrofitting the Whitaker Park wetland stormwater treatment facility.				\$10,000							Assumes City's share of match
2.14	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
2.15	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

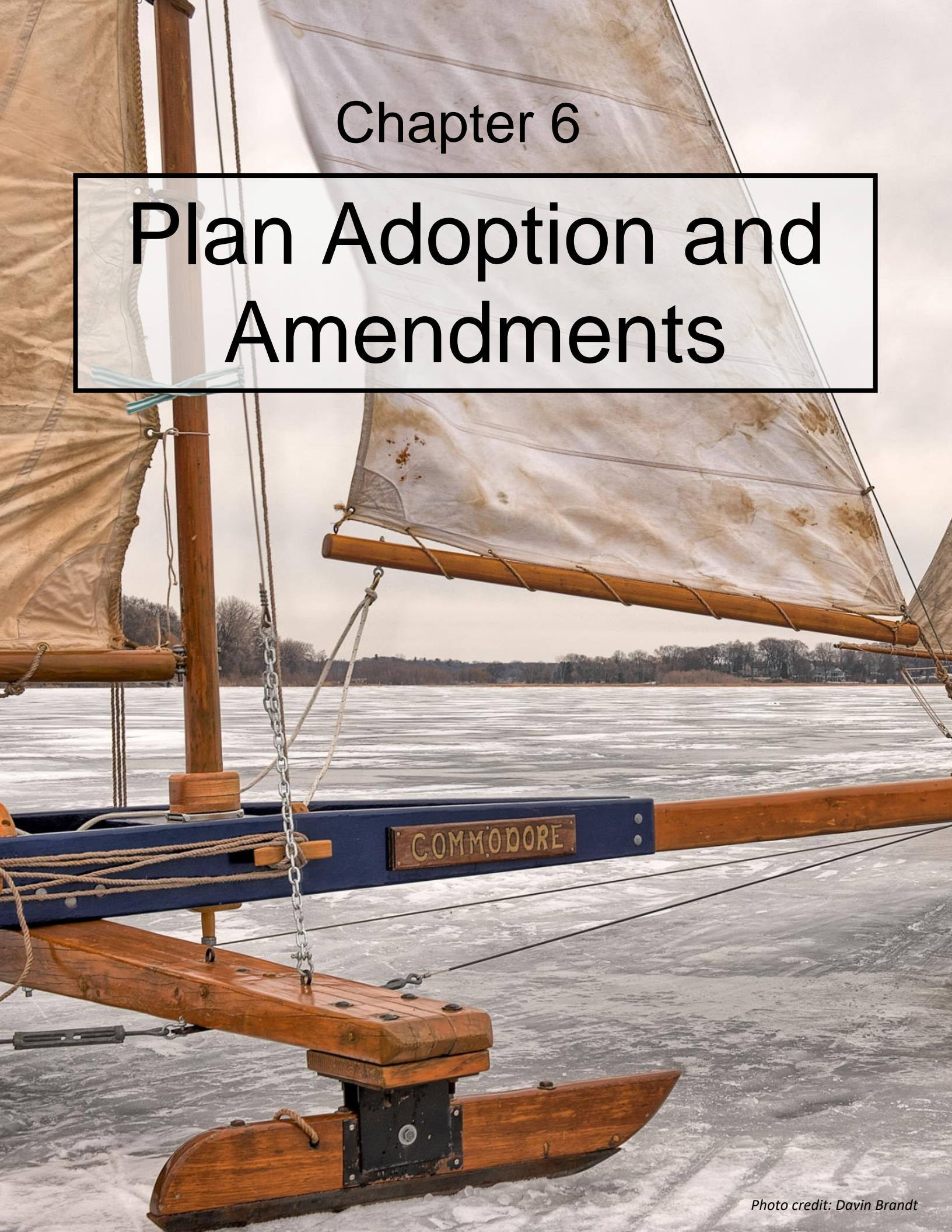
Item No.	Objective/Implementation Item	Estimated Timeline and Cost										Notes
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
3.3	Goose Lake - Collaborate with VLAWMO, Ramsey County, and volunteer groups to enhance the shorelines of east and west Goose Lake where feasible.	\$5,000		\$5,000		\$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							
7.6	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.
7.10	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.
7.19	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.
2.16	Collaborate with VLAWMO on a wetland restoration project at 4th and Otter.			\$5,000								Assumes City's share of grant match.
2.17	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
2.18	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		\$125,000	\$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 (1280 Birch Lake Blvd N, Lakewood Hills Park and others)	\$20,000	\$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.
2.14	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.
Equipment Acquisition Fund - Lower Priority Totals		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$250,000	\$0	
7.31	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.

Chapter 6

Plan Adoption and Amendments



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 WMO 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 WMO 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.