

1.0	Executive Summary .....	1-1
1.1	Section 2 – Introduction.....	1-1
1.2	Section 3 – Land and Water Resources Inventory .....	1-3
1.3	Section 4 – Issues, Mission, and Policies .....	1-5
1.3.1	Section 4.1 Water Quality.....	1-5
1.3.2	Section 4.2 Groundwater Management.....	1-7
1.3.3	Section 4.3 Public Education and Public Involvement .....	1-8
1.3.4	Section 4.4 Stream Management and Restoration .....	1-9
1.3.5	Section 4.5 Stormwater Runoff Management.....	1-10
1.3.6	Section 4.6 Wetland, Habitat, and Shoreland Management .....	1-11
1.3.7	Section 4.7 Water Level and Floodplain Management.....	1-13
1.3.8	Section 4.8 Erosion Prevention and Sediment Control.....	1-14
1.3.9	Section 4.9 Administration and Funding .....	1-15
1.4	Section 5.0 Individual Watershed Management Plans.....	1-16
1.5	Section 6.0 Implementation Program .....	1-17

### List of Figures

Figure 1-1	Major VBWD Waterbodies.....	1-19
------------	-----------------------------	------

# 1.0 Executive Summary

---

The Valley Branch Watershed District (VBWD) Board of Managers established the following vision to provide strategic direction to its work:

*Always be careful stewards of the water resources within our watershed boundaries through the coordinated efforts of the district, its communities, and residents.*

The VBWD 2015-2025 Watershed Management Plan (Plan) documents the Managers' guidelines and proposed tasks for managing the water resources within the boundaries of the VBWD to achieve their vision. The Plan provides data and other background information, outlines the applicable regulations, assesses watershed-wide and resource-specific issues, establishes goals and policies for the VBWD and its cities and townships, and identifies implementation tasks to be performed to achieve the VBWD goals. The Plan is organized into six major sections, including:

Section 1 – Executive Summary

Section 2 – Introduction

Section 3 – Land and Water Resources Inventory

Section 4 – Issues, Goals, and Policies

Section 5 – Subwatershed Management Plans

Section 6 – Implementation

The general content and highlights of each section are described in this Executive Summary.

## 1.1 Section 2 – Introduction

Section 2 of the Plan summarizes the VBWD's location, history, and management structure. Section 2 also provides background information about watershed districts and lists the general authorities of watershed management organizations (WMOs) like the VBWD.

The VBWD is a local unit of government that manages water resources within the Valley Branch watershed per authorities given in Minnesota Statutes 103B, 103D, and Minnesota Rules 8410. The VBWD covers approximately 70 square miles including numerous waterbody basins and streams (see Figure 1-1). The VBWD lies primarily within Washington County, but includes approximately one square mile in Ramsey County. The VBWD includes 14 cities and townships:

Ramsey County Communities	Washington County Communities		
City of Maplewood	City of Afton	City of Mahtomedi	City of St. Mary's Point
City of North St. Paul	Baytown Township	City of Oak Park Heights	City of Woodbury
City of White Bear Lake	City of Grant	City of Oakdale	West Lakeland Township
	City of Lake Elmo	City of Pine Springs	

The VBWD was originally created in 1968 with the focus of addressing existing flooding problems within the watershed. Since that time, the VBWD's role has expanded to address all facets of water resources management. The VBWD is governed by a Board of Managers consisting of five individuals; four Managers are appointed by Washington County and one by Ramsey County. The VBWD Managers meet twice a month. Meetings are currently held on the second and fourth Thursday of each month at Lake Elmo City Hall. VBWD has no central office and no full-time staff. All services, including engineering, legal, accounting, inspection and secretarial services are provided by consultants. The VBWD has a website ([www.vbwd.org](http://www.vbwd.org)), which includes VBWD permitting information, manager and consultant contact information, agendas and minutes from managers' meetings, annual reports, lake level and water quality data, and other information.

Watershed districts within the Twin Cities metropolitan area come under the guidance of both the Watershed Act (Minnesota Statutes 103D) and the Metropolitan Surface Water Management Act (Minnesota Statutes 103B). The purposes of watershed districts, as listed in Minnesota Statutes, are included in Section 2. The VBWD Board of Managers has established a mission to guide its actions in achieving its vision and fulfilling the responsibilities of watershed districts as identified in Minnesota Statutes. The VBWD mission includes:

*To manage and protect our water resources within the limits of VBWD jurisdiction: lakes, ponds, creeks, streams, wetlands, drainages, and groundwater by:*

- A. *Promoting communication and collaboration with our residents, communities, and pertinent governmental units.*
- B. *Improving and protecting the quality of surface water and groundwater resources.*
- C. *Managing the quantity of water and minimizing the negative impact on the VBWD from floods, high flows, and droughts.*
- D. *Understanding and responding to the effects of community growth and related activities on groundwater and surface water resources.*
- E. *Preserving and enhancing the quantity and quality of wetlands.*

- F. Educating and inspiring our residents, communities, and governmental units to participate in the protection and improvement of water resources.*

## **1.2 Section 3 – Land and Water Resources Inventory**

Section 3 provides information describing the physical environment of the watershed, including drainage patterns, climate and precipitation, land use and land cover, topography, soils, geology, hydrogeology and groundwater, surface water systems, water quality, water quantity and flooding, natural communities and rare species, fish and wildlife habitat, scenic and recreational areas, and pollutant sources. This section also includes a number of maps and summary tables. This important information describes the condition of the watershed and is used to guide decisions about infrastructure, development, and ecological preservation. By way of summary, some of the most notable information in Section 2 follows:

**Climate and precipitation:** The climate of the Minneapolis-St. Paul area is a humid continental climate characterized by moderate precipitation, wide daily temperature variations, large seasonal variations in temperature, warm humid summers, and cold winters with moderate snowfall. Average weather imposes little strain on the typical drainage system; however, extremes of precipitation and snowmelt are important for the design of flood control systems. The National Oceanic and Atmospheric Administration (NOAA) published data on extreme precipitation events (now called Atlas 14) that can be used to aid in the design of flood control systems. This data indicates increased precipitation depths for more extreme storm events relative to previously published values.

**Land use/land cover:** Prominent land covers present within the VBWD include agricultural land cover (22 percent) and forest (17 percent). Developed areas with imperviousness greater than 10 percent occupy approximately 21 percent of the VBWD, with the majority of the development located in the northwest portion of the watershed. The amount of imperviousness within the VBWD varies greatly by subwatershed; impervious surfaces greatly increase the rate of runoff from precipitation and can impact downstream water resources. Proposed development and redevelopment areas are scattered throughout the watershed. The comprehensive plans for the VBWD cities and townships contain more information about these future development and redevelopment areas.

**Topography and soils:** The topographic relief within the VBWD watershed is generally modest, with the western side of the watershed about 400 feet higher than the east. Areas of steep slopes are concentrated on the east side of the watershed (in West Lakeland Township and Afton). Topography within the VBWD is characterized by numerous local depressions that are land-locked with respect to surface water runoff. Hydrologic soil groups identified in the watershed include primarily hydrologic soil group B (37%), group A (25%), and group C soils (18%). Soils exhibiting high (group A) or moderately high (group B) infiltration are well distributed throughout the watershed. Lower infiltration soils occur mostly in the southern part of the watershed district, in the South Valley Branch and Kelle's Creek subwatersheds.

**Groundwater:** The most widely used bedrock groundwater aquifers within the VBWD include the Prairie du Chien-Jordan, Tunnel City-Wonewoc (formerly known as the Franconia-Ironton-Galesville

aquifer), and Mt. Simon aquifers. In addition, many residential wells are located in the quaternary (i.e., surficial, or water table) aquifer. This layer is not uniform in thickness, is not homogeneous, and discharges into the St. Croix River. Surface water-groundwater connections exist throughout the VBWD; most wetlands in VBWD are surface exposures of the water table aquifer. The VBWD monitors water levels in the water table aquifer through a series of monitoring wells.

**Surface water systems:** Surface waters in the VBWD include numerous streams, creeks, lakes, ponds, and wetlands. Major waterbody basins and streams are shown in Figure 1-1. The watershed is subdivided into 38 subwatersheds based on the drainage areas tributary to its major surface water resources. The majority of these subwatersheds ultimately drain to Valley Creek or Project 1007, both of which are tributary to the St. Croix River. The Minnesota Department of Natural Resources (MDNR) classifies 11 lakes within the VBWD as public waters: Acorn (Mud) Lake, Lake DeMontreville, Eagle Point Lake, Lake Edith, Lake Elmo, Horseshoe Lake, Lake Jane, Long Lake, Lake Olson, Silver Lake, and Sunfish Lake. Major MDNR public waters watercourses include Valley Creek and a number of its tributaries, Kelle's Creek, and Raleigh Creek.

**Water quality:** The VBWD performs many actions to preserve or improve water quality, including classifying specific waterbodies with respect to type and management priority (see Figure 1-1), collecting water quality data (including chemical, macrophyte, and biological data), and establishing water quality goals for its major water resources. In compliance with the Clean Water Act (CWA), the Minnesota Pollution Control Agency (MPCA) maintains a list of impaired waters. VBWD waterbodies included on the impaired waters list include: Downs Lake, Echo Lake, Lake Elmo, Goose Lake, Lake Jane, Sunfish Lake, and Kelle's Creek. The St. Croix River downstream of the VBWD is also impaired.

**Water quantity and flooding:** The VBWD has implemented several capital improvement projects to address flooding issues within the district, including Project 1007, constructed outlets for Echo Lake, Weber Pond, and Olson Lake Estates, and the Downs Lake Flood Duration Reduction project. Project 1007 is a major flood-relief project that links the major lakes in the northwest and central portions of VBWD to an outlet pipe owned by the Minnesota Department of Transportation (MnDOT) along Interstate Highway 94, eventually discharging to the St. Croix River. In addition to capital projects, the VBWD performs lake level monitoring for several waterbodies and cooperates with other agencies to perform flow monitoring on Valley Creek, Kelle's Creek, and the Rest Area Pond outlet.

**Natural areas and rare species:** Prior to settlement, the VBWD land cover included primarily brushland – oak openings and barrens (scattered trees and groves of oaks of scrubby form, with some brush and thickets), with smaller areas of hardwood forests (Big Woods), and grassland (prairie). Presently, the VBWD contains 48 distinct types of natural communities noted in the MDNR's Natural Heritage Information System (NHIS) database, including 17 terrestrial communities, 12 plants, and 19 animals. Many of these communities are associated with protected natural areas such as Lake Elmo Regional Park.

**Pollutant sources:** There are many MPCA-permitted sites, hazardous waste generators, and contaminated sites within the VBWD. In contrast to sites with known hazards, non-point source

pollution cannot be traced to a single source or pipe. Instead, pollutants are carried from land to water in stormwater or snowmelt runoff, in seepage through the soil, and in atmospheric transport. These pollutants include nutrients, bacteria, sediment, chlorides, pesticides, solvents, and chemicals.

### 1.3 Section 4 – Issues, Mission, and Policies

Section 4 presents the issues, goals, and policies that pertain generally to VBWD. Section 4 contains one introductory section (Section 4.0), and nine subsections organized around major topics, as follows:

4.1 Water Quality	4.6 Wetland, Habitat, and Shoreland Management
4.2 Groundwater Management	4.7 Water Level and Floodplain Management
4.3 Public Education and Public Involvement	4.8 Erosion Prevention and Sediment Control
4.4 Stream Management and Restoration	4.9 Administration and Funding
4.5 Stormwater Runoff Management	

Each of these nine subsections is organized in the same manner, starting with a summary table that describes: (1) the importance of the topic area, (2) general issues related to the topic area, (3) relation of the VBWD mission to the topic area, and (4) the policies the VBWD will implement to accomplish its mission.

Following the summary table, the remainder of each subsection covers the following topics (in the following order): (1) history, (2) identified issues, and (3) policies, strategies, and actions to be implemented to address the identified issues. All of the actions identified in each of Sections 4.1 through 4.9, are included in the table of implementation tasks (Table 6-1).

The major issues, policies, and proposed actions in each of the nine subsections (Sections 4.1 – 4.9) are summarized in the following paragraphs.

#### 1.3.1 Section 4.1 Water Quality

Water quality is commonly defined by its physical, chemical, biological and aesthetic (e.g., appearance and smell) characteristics. Water quality may be used to describe a water’s suitability for specific and diverse purposes (i.e., drinking water, recreation, aquatic life). Good water quality results in a waterbody fulfilling its collective intended uses in a sustainable manner.

The lakes, ponds, streams and wetlands in VBWD are an important asset providing many functions for both human and natural communities. These resources supply recreational and aesthetic benefits, enhance property values, serve as sources or sinks for groundwater exchange, provide nutrient removal, provide wildlife habitat and provide fishery resources. The high quality of the watershed’s natural resources, especially its waterbodies, makes the VBWD an attractive place for people to live.

Preserving the high quality of the watershed's waterbodies is critical to the existence of a high quality of life among the citizens residing in the watershed and in the larger metropolitan region.

Major water quality issues discussed in Section 4.1 include:

1. Water quality degradation
2. Aquatic invasive species (AIS) control and management
3. Water quality monitoring and reporting
4. Implementation and maintenance of water quality improvement projects
5. Collaboration with other entities to reduce pollutant loading and improve water quality

Policies, strategies, and actions related to water quality identified in Section 4.1 are described as follows:

- The VBWD will maintain a classification of major waterbodies as high priority, medium priority, low priority, or stormwater ponds based on a series of criteria identified in Section 4.1.7.1. Classified waterbodies are presented in Figure 1-1.
- The VBWD will manage waterbodies according to their classification to maintain or improve their existing water quality (non-degradation) as well as to promote biodiversity and aesthetics. The VBWD will manage impaired waterbodies with the ultimate goal of removing them from the impaired waters list.
- The VBWD will regularly monitor the major waterbodies in the VBWD with the objective of detecting changes or trends in the water quality or habitat over time, thereby determining the impact of changing land use patterns in the watershed (i.e., pollutant loading), internal loading, and the effectiveness of the VBWD's efforts to protect or improve water quality.
- The VBWD will summarize water quality, macrophyte, phytoplankton/zooplankton, and stream monitoring results for all waterbodies monitored. The summary will include data analysis, a narrative data summary, and calculation of water quality trends. The VBWD will compare water quality to action levels determined for VBWD waterbodies.
- The VBWD will identify, evaluate, and implement water quality management actions for waterbodies, as necessary, as described in Section 4.1.7.6 of the Plan. This may include diagnostic-feasibility studies for the watershed, additional monitoring, projects, or other actions. Section 4.1.7.6 generally describes treatment options to improve water quality.
- The VBWD will collaborate with other governmental units to manage and prevent the spread of AIS, and encourage lake associations, homeowner associations, and land owners to lead AIS management efforts. The VBWD will continue to perform macrophyte (aquatic plant)

surveys of high priority waters and provide technical assistance to lake associations and other groups in their efforts to manage aquatic plants.

- The VBWD will identify additional opportunities to cooperate with other entities in water quality protection efforts, as they arise. Cooperative efforts may include water quality monitoring, or the development and implementation of educational programs targeting water quality.

### **1.3.2 Section 4.2 Groundwater Management**

All VBWD residents obtain their drinking water from groundwater. This makes ensuring that these aquifers are uncontaminated, protected from future contamination and provide adequate supplies especially important. Several VBWD water bodies also are groundwater-dependent and need an adequate supply of clean groundwater. Groundwater quality and quantity are closely linked to the aboveground environment, since they are dependent on the infiltration of surface water/rainfall through the soil. Maintaining clean, safe groundwater supplies is critical to human and environmental health and to the economic and social vitality of VBWD communities.

Section 4.2 of the Plan describes the roles of the VBWD and other agencies with respect to groundwater management. The Plan also discusses three locations in the VBWD where groundwater contaminants have been found: (1) Lakeland/Lakeland Shores Special Well and Boring Construction Area (SWBCA), (2) Baytown/West Lakeland Township Groundwater Contamination Site/SWBCA, and (3) Lake Elmo/Oakdale (Washington County Landfill) SWBCA

Major groundwater management issues discussed in Section 4.2 include:

1. Surface water-groundwater interaction
2. Groundwater quality
3. Groundwater quantity
4. Participation in local/regional groundwater management planning

Policies, strategies, and actions related to groundwater management identified in Section 4.2 are described as follows:

- The VBWD will continue to collect and report groundwater level data to assist in managing the water levels and floodplains of the VBWD's water resources and report the data. The VBWD will periodically review its groundwater monitoring program and consider opportunities to improve it.
- The VBWD will cooperate with Washington County, the MDH, and others to address groundwater quality issues (e.g., subsurface sewage treatment systems). The VBWD will cooperate with the MPCA and MDH to address impaired waters demonstrating surface water-

groundwater interaction. The VBWD continues to support Washington County's SSTS regulations.

- The VBWD will seek opportunities to participate in regional groundwater planning efforts, including the North and East Metro Groundwater Management Area (GWMA) and the development of the GWMA Plan.
- VBWD will prevent negative quality and quantity impacts (e.g., reduced flow to surface waterbodies, lowering lake or wetland levels, well interference) to groundwater and groundwater-dependent resources through permit review, community plan review, and education efforts.

### **1.3.3 Section 4.3 Public Education and Public Involvement**

Public education and public involvement are critical to the VBWD accomplishing its mission to protect and manage its water resources. The collective behavior of an informed, engaged, and environmentally conscientious public will contribute to the protection of the watershed and its natural resources.

The VBWD has used various methods to involve and inform the public, such as its website ([www.vbwd.org](http://www.vbwd.org)), citizen monitoring efforts, use of a Citizen Advisory Committee and Technical Advisory Committee, and targeted outreach programs.

Public education and public involvement issues discussed in Section 4.3 include:

1. Awareness of the VBWD, its role, and its accomplishments (e.g., flood control projects stream improvements, etc.)
2. Education and awareness of property owners regarding their impact on water resources
3. Expanded educational programs targeting specific topics or groups, including:
  - a. best management practices for builders/developers
  - b. public works stormwater facility maintenance training
  - c. helping cities achieve MS4 (Municipal Separate Storm Sewer System) compliance
4. Continued involvement of the Citizen Advisory Committee

Policies, strategies, and actions related to public education and public involvement identified in Section 4.3 are described as follows:

- The VBWD will continue communication and advertising efforts that seek to increase awareness of the VBWD's presence, its role in managing water resources, and its accomplishments. The VBWD will do this through expanded communications efforts,

utilizing new forms of media where appropriate. This will include continued participation in the East Metro Watershed Resource Education Program (EMWREP).

- The VBWD seeks to increase public interest in, and support of, the VBWD and its projects through participation in EMWREP, participation in open houses and other forums, and collaboration with cities, townships, and other organizations.
- The VBWD will seek opportunities to incorporate public education and public involvement into all of its projects through notices to residents, press releases to city newsletters, updates about projects or events via social media, and other means.
- The VBWD will continue to recruit volunteers and provide financial support for monitoring efforts (e.g., stream sampling, lake level monitoring) and involvement in other VBWD programs and projects.
- The VBWD will maintain its Citizen Advisory Committee and seek to develop meaningful responsibilities for the committee and opportunities for engagement. Committee members will be appointed by the Managers.
- The VBWD seeks to raise awareness of the positive and negative impacts that behaviors of individuals and businesses can have on the watershed's water resources, through dissemination of educational materials to targeted groups and through other public information efforts.

### **1.3.4 Section 4.4 Stream Management and Restoration**

The streams in the VBWD are important community assets that provide many benefits. These resources supply aesthetic (and sometimes recreational) benefits, enhance property values, provide wildlife habitat and may provide fishery resources. Preserving the high quality of the watershed's streams is critical to maintaining a high quality of life among the citizens residing in the watershed and in the larger metropolitan region. .

VBWD's responsibilities with respect to streams include those related to water level and floodplain management, water quality, erosion and sediment control, and habitat and shoreland management. The VBWD's past stream management actions have included floodplain management, stream monitoring (physical condition, water quality, quantity of flow, and biological), water quality data analysis, streambank and gully erosion assessments, and stream channel restoration capital projects.

Stream management and restoration issues discussed in Section 4.4 include:

1. Management of high and low water levels
2. Stream monitoring and reporting
3. Stream degradation and restoration

Policies, strategies, and actions related to stream management and restoration identified in Section 4.4 are described as follows:

- The VBWD will regularly monitor biological indicators, chemical water quality, and streamflow of its perennial streams (Valley Creek and Kelle's Creek). The VBWD may monitor the chemical water quality of intermittent streams on an as-needed basis.
- The VBWD will attempt to monitor the physical condition of MDNR public water streams as access allows, including the identification of streambank and gully erosion sites.
- The VBWD seeks to prevent stream degradation problems through its permit review program, review of community plans, and education efforts. The VBWD rules and regulations (2013, as amended) address the protection of VBWD streams, including specific requirements for Valley Creek and watersheds draining to trout streams.
- The VBWD will implement stream management and stream restoration/stabilization projects and actions to address identified streambank erosion, gully erosion, and other stream degradation problems. VBWD will prioritize projects according to the size of the affected area, the threat to public health, safety, or welfare, the damage/potential damage to the stream, and the downstream impacts of the problem.
- Through the implementation of the VBWD permit program, the VBWD will not permit new buildings to be constructed within the 100-year floodplain of a stream and will continue to require a VBWD permit for all work within the waters and floodplain of the VBWD, including streams. The VBWD will consider solutions to existing stream flooding problems.

### **1.3.5 Section 4.5 Stormwater Runoff Management**

Stormwater runoff greatly influences the quality and quantity of surface water. To accomplish the VBWD's goals for maintaining and improving water quality and managing water quantity, stormwater runoff must be carefully and closely managed. The VBWD manages stormwater runoff by carrying out its permit program, which includes preventive measures so that the negative effects of stormwater runoff are addressed at the time of development or redevelopment, and not after problems develop. VBWD also actively encourages developers to use new, innovative stormwater management technologies.

Stormwater runoff management issues discussed in Section 4.5 include:

1. Planning for sustainable infrastructure
2. Quality of stormwater runoff
3. Quantity of stormwater runoff
4. Maintenance of stormwater best management practices (BMPs)

## 5. VBWD stormwater runoff management standards

Policies, strategies, and actions related to stormwater runoff management identified in Section 4.5 are described as follows:

- The VBWD will continue to manage stormwater and snowmelt runoff rates as specified in the VBWD rules and regulations, including requiring no increase in peak discharge relative to the existing condition and requiring volume control. The VBWD requires that all stormwater discharges and related improvements do not degrade the water quality in VBWD waters. The VBWD enacted revised rules in 2013 with a stronger water quality treatment requirement; the VBWD requires infiltration practices where such activities do not threaten the water quality of groundwater resources. The VBWD Rules and Regulations document is included as Appendix A-4.5 of this Plan.
- Through its permit program, the VBWD will continue to review proposed projects, developments and redevelopments to evaluate compliance with VBWD stormwater quality management standards.
- The VBWD will be responsible for maintenance of stormwater runoff management facilities constructed by the VBWD. For all new projects requiring a permit from VBWD, the VBWD will require a maintenance agreement.
- The VBWD will continue to conform to the National Pollutant Discharge Elimination System (NPDES) MS4 requirements (see Appendix B-4.5 for current VBWD Storm Water Pollution Prevention Program, or SWPPP) that apply to VBWD's stormwater system. The VBWD will update its MS4 SWPPP as necessary to incorporate requirements of future total maximum daily load (TMDL) studies or other permit requirements implemented by the MPCA.
- The VBWD will continue to operate a permit program that regulates the use and development of land in the watershed. Activities that require a VBWD permit under the current VBWD rules and regulations are summarized in Section 4.5.

### **1.3.6 Section 4.6 Wetland, Habitat, and Shoreland Management**

Wetlands are an abundant resource within the VBWD that provide value to the community and perform a variety of physical, chemical, and ecological functions. A healthy watershed is one in which wetlands are an integral part of the ecosystem. These resources serve as habitat and support an immense variety of species of microbes, plants, insects, amphibians, reptiles, birds, fish, and mammals. Shoreland areas provide many of the same environmental functions as wetlands, including nutrient removal, flood reduction, and wildlife habitat. Well-planned wetland, habitat, and shoreland protection and management efforts can improve water quality and wildlife habitat, improve property values, and provide recreational and educational opportunities for the public. Preservation of wetlands is controlled by various local, state, and federal laws. Effective wetland management depends on an accurate inventory and classification of wetland resources, especially in areas

expected to develop soon, and administration of a wetland management program. Similar practices are necessary to effectively manage shoreland areas, although most shoreland areas in the VBWD are already developed, which can limit management options.

Past VBWD wetland management activities include adoption of revised rules and regulations regarding wetland protection (prior to the Wetland Conservation Act, or WCA), and administration of the WCA as the local government unit (LGU).

Wetland, habitat, and shoreland management issues discussed in Section 4.6 include:

1. Maintaining ecological functions of wetland and shoreland areas (e.g., hydrology, water quality, connectivity, and habitat)
2. Wetland and shoreland buffers
3. Native and invasive vegetation
4. Education

Policies, strategies, and actions related to wetland, habitat, and shoreland management identified in Section 4.6 are described as follows:

- The VBWD will continue to implement its wetland management standards as documented in its rules and regulations. The VBWD requires evaluation of all wetlands within a property and subsequent classification according to the VBWD's wetland classification method.
- The VBWD will continue to serve as the local government unit (LGU) responsible for administering the WCA throughout the VBWD, as long as the cities and townships in VBWD continue to designate the VBWD as the LGU.
- The VBWD will consider developing an inventory of shoreland areas, focusing on VBWD high priority waterbodies and utilizing data from past and present VBWD monitoring programs. The VBWD will consider the value of developing a shoreland management classification system based on applicable elements of MNRAM 3.4.
- The VBWD will establish an invasive species education program to better inform its residents of the extent and impact of invasive species.
- The VBWD will consider the positive and negative impacts to wildlife habitat when designing projects and in its review of projects proposed by others. The VBWD will also seek opportunities to incorporate wildlife and habitat benefits into VBWD projects not expressly designed for these purposes.

### **1.3.7 Section 4.7 Water Level and Floodplain Management**

Flood protection was the first responsibility of the VBWD. Addressing flooding issues continues to be a high priority because of the potential for causing damages to property and infrastructure and the risk to human health. This means the VBWD Managers need to address existing flooding problems, prevent future flooding problems that can be avoided, and minimize the impact of future flooding problems that cannot be prevented.

Maintaining adequate flows/water levels in the watershed's water resources is important for human enjoyment of the water resources, and maintaining ecological benefits (e.g., wildlife habitat and fishery resources). The VBWD will seek to manage the stormwater and water resources in the watershed to maintain adequate quantities of water in the water resources, allowing for natural fluctuations in the hydrologic cycle (e.g., drought).

Section 4.7 provides a detailed history of the VBWD's past water level and floodplain management activities. Highlights include construction of the Project 1007 outlet system, construction of the Olson Lake Estates Pond outlet, modifications to the Lake Elmo outlet, construction of the Downs Lake flood duration reduction projects, completion of a number of studies exploring flood relief options for the Sunnybrook Lake area, determination of flood levels in various locations, studies of Fahlstrom Pond flooding, and water level monitoring.

Water level and floodplain management issues discussed in Section 4.7 include:

1. Management of high and low water levels
2. Development and management of landlocked basins
3. Floodplain management
4. Design events and precipitation data (i.e., Atlas 14)

Policies, strategies, and actions related to water level and floodplain management identified in Section 4.7 are described as follows:

- The VBWD will continue to collect data (e.g., lake levels, precipitation records, snowpack monitoring, groundwater levels) that is useful in assisting VBWD with managing the water levels and floodplains of the VBWD's water resources.
- The VBWD will determine its level of involvement in addressing the remaining flooding problems on a case-by-case basis, and in response to requests from cities, townships, and VBWD residents. If determined necessary by the Managers, the VBWD will take the appropriate water level and floodplain management actions to address flooding problems in the VBWD.

- The VBWD will work towards developing a watershed-wide hydrologic/hydraulic model (e.g., an XP-SWMM model) incrementally by subwatershed to determine the 100-year flood elevations (as well as other purposes).
- The VBWD will assist property owners in FEMA unnumbered A zones in obtaining Letters of Map Amendment (LOMAs) or Letters of Map Revision (LOMRs), on a case-by-case basis.
- The VBWD will operate, maintain, repair, and, if necessary, replace all current and future VBWD flood control systems to ensure they provide the designed benefits. This means VBWD will inspect its systems and perform (or contract for the performance of) any needed maintenance and/or repairs.
- The VBWD will prevent flooding problems through its permit review program, review of community plans, and education efforts.

### **1.3.8 Section 4.8 Erosion Prevention and Sediment Control**

Erosion prevention and sediment control is a major responsibility of the VBWD. Erosion and sedimentation have a high potential to cause damages, property loss, and adverse ecological impacts. Erosion prevention and sediment control will remain a high priority as the watershed continues to urbanize, which increases the potential for erosion and sedimentation problems. Although erosion and sedimentation are natural processes, they are often accelerated because of human activities.

The VBWD's past involvement in erosion prevention and sediment control has primarily been through implementation of its rules and regulations/permit program. The VBWD has also identified, inventoried, and monitored erosion and sedimentation problems in the watershed, including Valley Creek, Raleigh Creek, Long Lake, and other areas.

Erosion prevention and sediment control issues discussed in Section 4.8 include:

1. Managing the impact of erosion and sedimentation due to increased urbanization, and
2. Identifying and addressing erosion and sedimentation problem areas

Policies, strategies, and actions related to erosion prevention and sediment control identified in Section 4.8 are described as follows:

- The VBWD will implement soil protection and sedimentation controls on all VBWD projects to prevent impacts to stormwater infrastructure and water resources, consistent with the VBWD rules and regulations.
- The VBWD will identify, inventory, prioritize, and monitor erosion and sedimentation problems within the watershed, including those not associated with VBWD-permitted projects.

- The VBWD will administer and enforce its permit program regulating land use and development to prevent erosion and sedimentation impacts to stormwater infrastructure and VBWD waterbodies.
- The VBWD will continue to inspect its projects and VBWD-permitted projects to monitor compliance with and enforce VBWD rules and regulations and VBWD permit conditions.
- The VBWD will assist cities, townships, and counties within VBWD in developing, adopting, implementing, and enforcing erosion prevention and sediment control ordinances, as requested.
- The VBWD will encourage the use of agricultural best management practices and will collaborate with other agencies to implement such measures.

### **1.3.9 Section 4.9 Administration and Funding**

Clear administrative processes and available funding are essential for the VBWD to implement its mission and policies. Minnesota Statutes 103B and 103D list authorities given to watershed districts, which include, among others, the authority to: construct improvements, levy taxes, adopt rules to regulate water resources, acquire property, and incur debts, liabilities, and obligations. Minnesota Statutes give all watershed districts, including the VBWD, various methods of obtaining funds to implement their watershed management plans and to finance their basic operations. For particular projects, it can be a challenge to develop funding methods that the public views as fair.

In the past, the VBWD has funded projects using special assessments and ad valorem tax levies over the entire VBWD and/or subwatersheds of the VBWD.

Administration and funding issues discussed in Section 4.9 include:

1. Eliminating redundancy with city, county, and other agency roles
2. Equitably funding projects and programs using appropriate methods
3. Demonstrating accountability as spenders of public resources

Policies, strategies, and actions related to administration and funding identified in Section 4.9 are described as follows:

- The VBWD will continue to update its watershed management plan at 10-year intervals, performing minor and major plan updates in the interim, as required. VBWD will update its legal boundary on an as-needed basis.
- The VBWD requires cities and townships to complete and submit local water management plans for review and approval. Local watershed management plans must be consistent with the policies and standards presented in the VBWD watershed management plan.

- Each year, the VBWD will review all of their allowable options for funding administration, programs, studies, projects, and maintenance. Planned funding sources are described in this section and summarized in Table 4.9-2. The VBWD may reconsider the funding sources for various VBWD activities, if such changes are warranted.
- The VBWD will evaluate the relative cost of hiring staff versus the cost of hiring consultants to perform engineering, administrative, secretarial, and other tasks.
- The VBWD will continue to implement its permit review program. The VBWD will continue to charge an application fee to defray the costs of its permit program, including review, inspection, enforcement and administration costs.

## 1.4 Section 5.0 Individual Watershed Management Plans

The VBWD is divided into 38 watersheds covering the entirety of the VBWD. Section 5 presents information on the following 38 specific water bodies and watersheds within the VBWD in Sections 5.1 through 5.38:

5.1	Silver Lake	5.14	Downs Lake	5.27	Legion Pond
5.2	Acorn (Mud) Lake	5.15	Horseshoe Lake	5.28	Bay Lake
5.3	Echo Lake	5.16	West Lakeland Storage Site	5.29	Goose Lake
5.4	Weber Pond	5.17	Rest Area Pond	5.30	Clear Lake
5.5	Long Lake	5.18	Fahlstrom Pond	5.31	Goetschel Pond
5.6	Capaul's Pond	5.19	Lake Edith	5.32	Mergens Pond
5.7	Lake DeMontreville	5.20	Valley Creek	5.33	Rose Lake
5.8	Lake Olson	5.21	Sunnybrook Lake	5.34	Kramer Pond
5.9	Lake Jane	5.22	Klawitter Pond	5.35	Barton Pit
5.10	Beutel Pond	5.23	Cloverdale Lake	5.36	St. Croix River
5.11	Raleigh Creek	5.24	McDonald Lake	5.37	Kelle's Coulee
5.12	Eagle Point Lake	5.25	Sunfish Lake	5.38	Swede Hill Creek
5.13	Lake Elmo	5.26	Friedrich's Pond		

The selection of these watersheds during development of the 2005-2015 VBWD Plan (as amended) was based on VBWD's knowledge of the following:

- Water quality issues and data
- Past or possible future flooding problems
- Intercommunity drainage problems
- Revisions to previously-published flood elevations
- Existing or possible future impacts to VBWD's Project 1007 drainage system
- Outstanding water resources

Each of the 38 individual watershed management plans includes the following:

- General information
- Water quality management plan, with supporting information summarizing:
  - Water chemistry data, and
  - Biological data, including information on fisheries, macrophytes (large aquatic plants), phytoplankton (non-rooted, floating plants – algae), and zooplankton (microscopic aquatic animals)
- Water quantity management plan, which typically includes supporting information on drainage patterns, flood levels, and flooding issues
- Other noteworthy information (e.g., groundwater pollution sites, groundwater-surface water interactions, etc.)

Section 5 is only available in digital format (on CD or via the VBWD website) due to its very large size. A CD containing Section 5 is included in a pocket in printed copies of the 2015-2025 VBWD Plan. Although the Executive Summary does not summarize each of the 38 individual watershed plans, all of the implementation tasks are included in Table 6-1.

## **1.5 Section 6.0 Implementation Program**

Section 6 provides information regarding the major VBWD responsibilities, the VBWD Plan review and approval process, updating the VBWD Plan, and the revision/amendment process for the VBWD Plan. The section includes guidance for when plan amendments are required, based on the type of VBWD Plan revision.

Section 6 also presents the implementation program. Table 6-1 incorporates all of the implementation activities (studies, monitoring, rules, projects, etc.) called for in other sections of the VBWD Plan (especially Sections 4 and 5) into one table. The activities in Table 6-1 are organized according to the following activity types as follows:

EA – Engineering administration activities

ED – Public education activities

MM – Maintenance and management activities

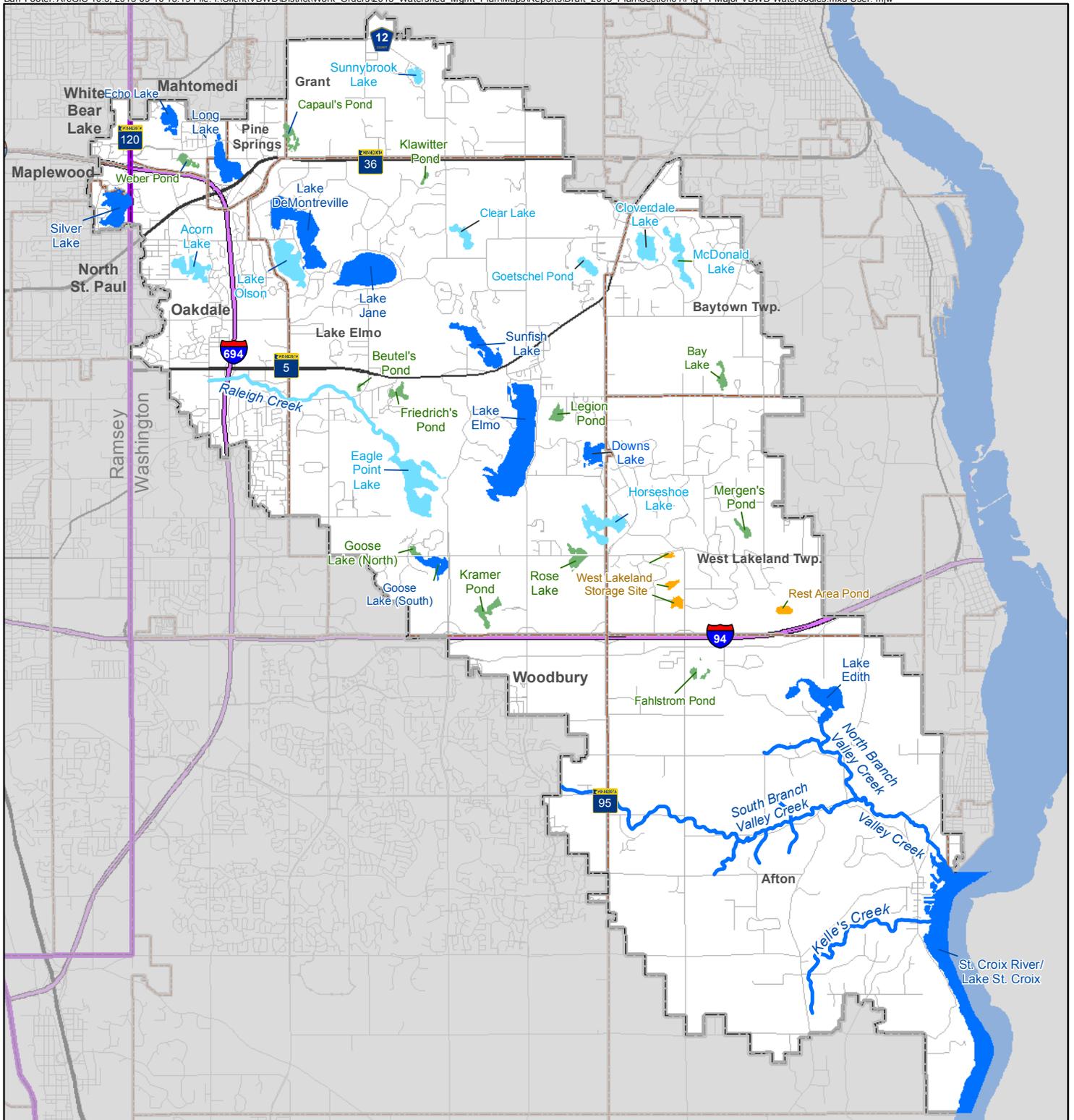
MON – Lake, stream, wetland and groundwater monitoring activities

WQL – Water quality programs, studies, and projects

WQT – Water quantity programs, studies, and projects

Table 6-1 includes a description of the activity, a VBWD Plan reference, the VBWD's involvement in the activity, the estimated costs of the implementation activities, the potential funding source(s), and the proposed year of implementation. Table 6-2 reorganizes all of the projects in Table 6-1 to show the year-by-year estimated costs of the implementation program and the total annual costs from 2015-2025.

Section 6 also discusses the VBWD and Minnesota requirements for local watershed management plans and the VBWD review process for local watershed management plans. This section also discusses the steps necessary for a community to assume the permitting authority for all land alteration activities.



**Major VBWD Waterbodies**  
(by VBWD classification, see Section 4.1.7)

-  High Priority
-  Medium Priority
-  Low Priority
-  Stormwater pond
-  VBWD Legal Boundary

-  Municipal Boundary
-  County Boundary

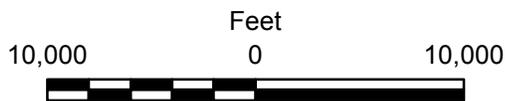


Figure 1-1

**MAJOR VBWD WATERBODIES**  
2015-2025 Watershed Management Plan  
Valley Branch Watershed District