



# 2018 ANNUAL REPORT



**Vadnais Lake Area Water Management Organization (VLAWMO)**

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## Letter from the Administrator

Greetings!

VLAWMO turns 36 years old this year and we are busier than ever. In 2018 we have gained new understanding of our watershed with the completion of several large studies. We've had to say goodbye to members of our team who we will miss. Mark Graham, long time member and Chair of the Technical Commission retired as Vadnais Heights city engineer. Kris Jensen, Program manager with VLAWMO for 11 years, moved on to new and different career direction. Kris helped VLAWMO grow, spearheaded projects and touched many here in the watershed. We said goodbye to Terry Nyblom of the VLAWMO Board. We miss those no longer here but wish them well in their new endeavors.

Among many highlights this year was welcoming Dawn Tanner to our staff as Program Development Coordinator. She brings a wealth of experience and continues her connection to the University of Minnesota which is already proving valuable. Watch for our series of trail camera photos of wildlife who share our habitat.

The Whitaker Treatment Wetlands were installed in the spring and the first sampling results are in. Preliminary results are promising! The treatment cells are working. A full season of monitoring with the addition of the pathogen study with the U of M will be on tap this year. More to come. VLAWMO worked with Houston Eng. as they completed the survey and modeling of Lambert Creek. Maintenance activities were evaluated as part of that study. Our understanding of the watershed job as ditch authority and the work needed increased. The 4-year bacteria source monitoring study was completed with the final report coming out shortly. Preliminary results point to a mostly avian source of the bacteria in Lambert creek which suffers its highest counts during wet weather.

An Institutional Community Work Crew cleaned out several stretches of Lambert Creek, making a big difference. The Birch Lake hot-spot stormwater filter project kicked off in 2018 with partnership development and survey work needed to design the filter. Our goal is to be able to go out for bid this spring to hire a contractor to install the filter. The Sucker channel restoration was installed in the Vadnais/Sucker park. Native plantings and multilingual signs are on display and worth checking out.

***“The secret of change is to focus all of your energy, not on fighting the old, but on building the new.”***

***-Socrates***

The monitoring report and audit are part of this report. Data geeks – enjoy. Thanks to tremendous partnerships and grants we've been able to get a great deal done this last year. Two new grants for 2019 will let us work on the Goose Lake drainage area and partner on a research project using spent lime for in-lake treatment. The groundwork for those grants was laid in 2018.

This next year, we will continue to focus on our priorities. We welcome your feedback to this report and hope to see you out and about in the watershed in 2019.

Nick Voss continues to expand and tune the education and outreach program. VLAWMO is sponsoring two new Master Water Stewards who started their training this fall. We look forward to working with them! Water stewardship was also fostered through the Growing Green Hearts Connect the Drops program through several of our area churches. Thank you Heidi for your vision and energy! Workshops, community events, social media and the work of the Watershed Action Volunteers (WAV) expand our watershed community. Watch for VLAWMO again this year. Better yet, join us!

- Stephanie McNamara, VLAWMO Administrator



Brian Corcoran, VLAWMO (Left)  
Stephane McNamara, VLAWMO (Center)  
Kari Andrist, EIT, Burns & McDonnell (Right)



## Background

The Vadnais Lake Area Water Management Organization (VLAWMO) was formed in 1983 to protect the Vadnais Lake watershed area in northern Ramsey County and a small portion of Anoka County. Our organization was formed through a Joint Powers Agreement (JPA) that was ratified by the 6 cities within VLAWMO boundaries to comply with the State of Minnesota Metropolitan Surface Water Management Act (Minnesota statute Chapters 103A – 103H). We are governed by a 6 member Board of Directors that is represented by an elected official from each of the communities. VLAWMO covers approximately 25 square miles and includes portions of Vadnais Heights, White Bear Township, White Bear Lake, Gem Lake, Lino Lakes, and all of North Oaks.

## OUR APPROACH

Managing a watershed area to protect our vital water resources has become the primary approach across the country. Since water flows across political boundaries, partnerships among local governments, regional, state and federal agencies are vital. Because Vadnais Lake is used as the drinking water reservoir for approximately 400,000 customers in the St. Paul area, VLAWMO frequently partners with the St. Paul Regional Water Service (SPRWS) on a variety of water quality monitoring and improvement projects.

## OUR CORE PRINCIPLES

To guide our efforts towards achieving our mission, VLAWMO shares responsibility with its member communities to:

- » Protect surface water quality
- » Protect groundwater quality and recharge areas
- » Provide public education to promote good stewardship of water resources
- » Protect and manage wetlands through the Wetland Conservation Act
- » Collaborate with other public and private organizations
- » Manage stormwater and control flooding through the use of best management practices
- » Require good erosion control practices, both during development and as a part of good stewardship



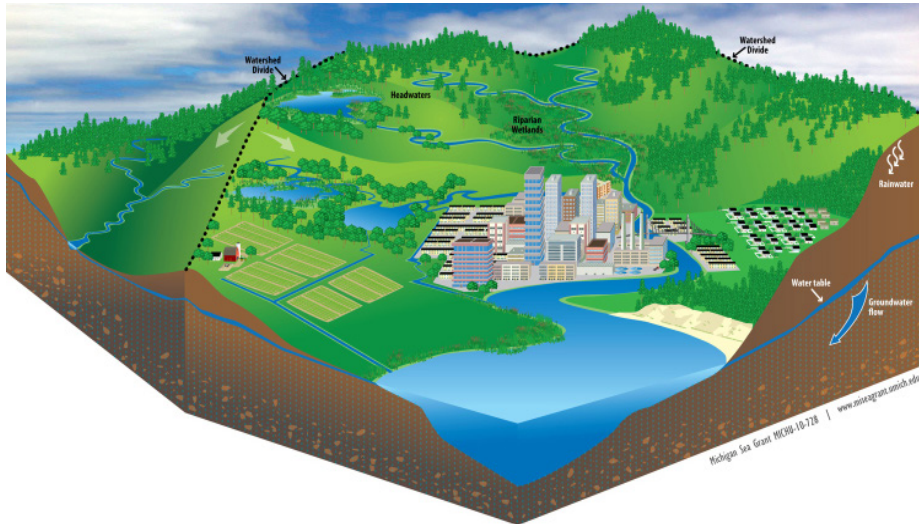
Homer Morancey and Leon Garceau, ca. 1904  
Image courtesy of Vadnais Heights Historical Society

## Mission Statement

*Our mission at the Vadnais Lake Area Water Management Organization is to protect and enhance the water resources within the watershed.*

*Activities we work on include: water quality monitoring, education and outreach projects, wetland protection, and water quality enhancement projects.*





"How Watersheds Work" courtesy of Michigan Sea Grant (MICHU-10-728)



## What is a Watershed?

A watershed is all the land area that drains to a specific water resource, such as a lake or stream. Watersheds range in size from a few square miles to an entire continent. As rain and melting snow run downhill, they carry sediment and other materials into streams, lakes, and groundwater.

The land use activities within a watershed have a direct impact on the quality of the water. 96% of the land use within VLAWMO is urban with a small area of agricultural land in the northern end.

Watersheds provide water for drinking, irrigation, streams, and activities such as fishing, swimming, and boating. In addition, watersheds also provide food and shelter for wildlife.

## OUR GOALS

Accomplishing our mission requires a focus on common goals. The VLAWMO will pursue the following goals as a way of proceeding towards the mission.

- » Protect and improve surface water quality
- » Protect and enhance wetland resources
- » Protect and improve waters for wildlife habitat and recreation
- » Enhance public participation and stewardship
- » Make and enable informed decisions
- » Optimize public resources
- » Protect and improve groundwater quality and quantity
- » Analyze and use alternative funding sources
- » Improve communications
- » Prevent flooding

## WHAT IS A WMO?

A watershed management organization (WMO) is a local government agency charged with protecting water resources within its boundaries. All land within the metropolitan area must be within an organized watershed (State Statutes Chapters 103B & 103D). Watershed Districts are governed by County Commissioners while Water Management Organizations are governed on the municipal level.

## WHO PAYS FOR IT?

The Vadnais Lake Area Water Management Organization is funded by a stormwater utility fee. Property owners within the watershed are charged a fee to manage the stormwater that runs off their property. This public utility fee is determined by land use (eg residential, commercial etc), and is included on Ramsey County property tax statements. The authority to charge and collect a stormwater utility fee is governed by Minnesota State Law.



## Water Resources in the Watershed

### LAKES

There are 16 lakes within VLAWMO. East Goose Lake, West Goose Lake and Birch Lake are located in White Bear Lake. Tamarack Lake, Fish Lake and Ox Lake are Located in White Bear Township. Gem Lake is located in Gem Lake. Amelia Lake is Located in Lino Lakes. Pleasant Lake, Charley Lake, Deep Lake, Black Lake, Wilkinson Lake and Gilfillan Lake are located in North Oaks. Sucker Lake, East and West Vadnais Lake are located in Vadnais Heights.

East Vadnais Lake is the drinking water reservoir for the City of Saint Paul. East Vadnais Lake is supplied with water pumped from the Mississippi River in Fridley that flows via underground aqueduct into Lake Charley in North Oaks. The water then flows east to Pleasant Lake, then south into Sucker Lake, and then into East Vadnais.

### LAMBERT CREEK

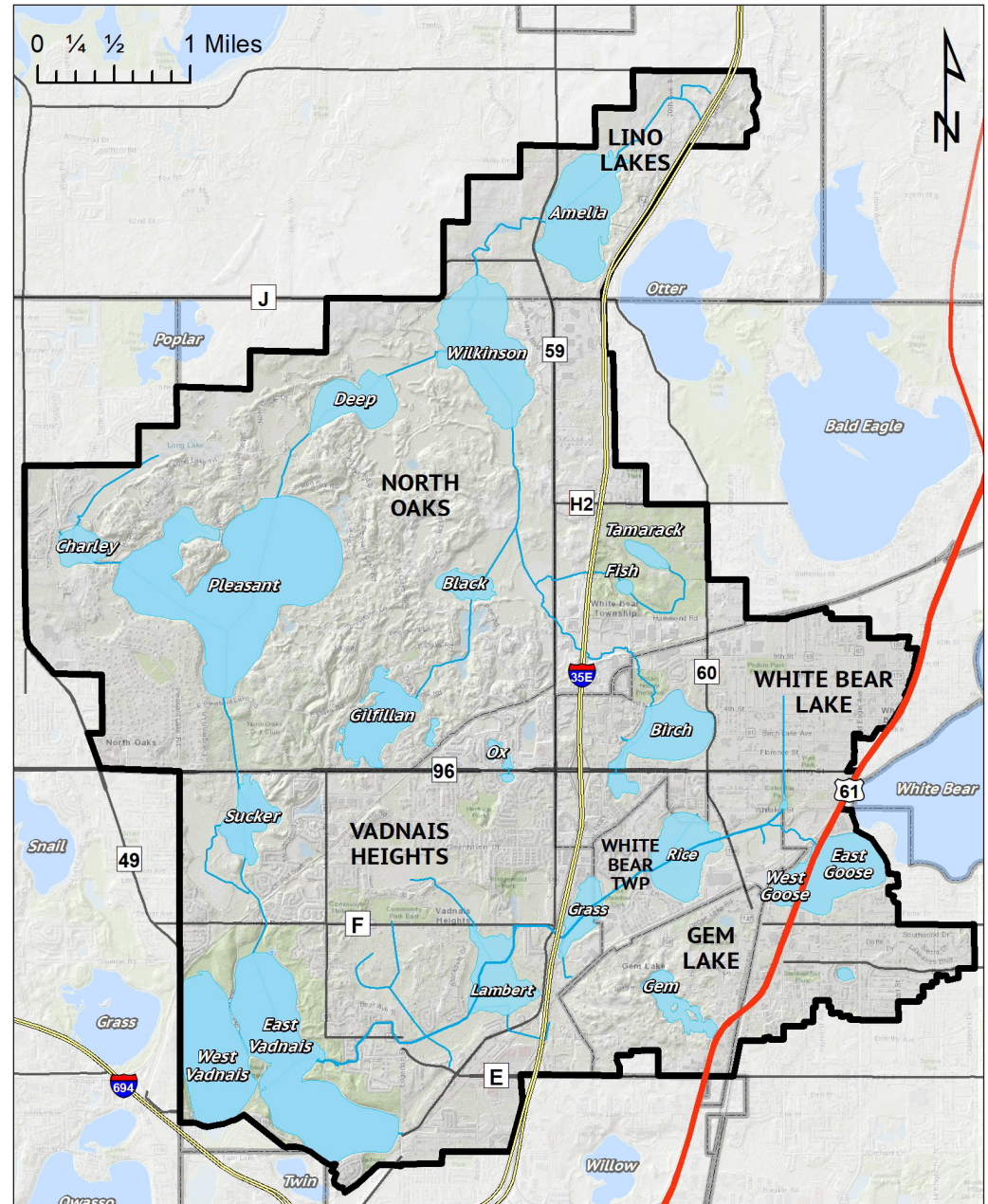
VLAWMO has jurisdiction over Lambert Creek, 4.5 miles of creek and wetland that runs from West Goose Lake and eventually empties into East Vadnais Lake.

### WETLANDS

There are over 500 wetlands within VLAWMO. Tamarack, Grass, Wilkinson, Rice, Lambert, and Sobota Slough are a few of the largest tracts of wetlands in the watershed.

### GROUNDWATER

Groundwater beneath the land surface of the Watershed flows to local lakes, the Mississippi River, and aquifers including the Prairie du Chien aquifer.





## THE YEAR IN REVIEW:

2016 activities, projects, and improvements

### IN THIS SECTION

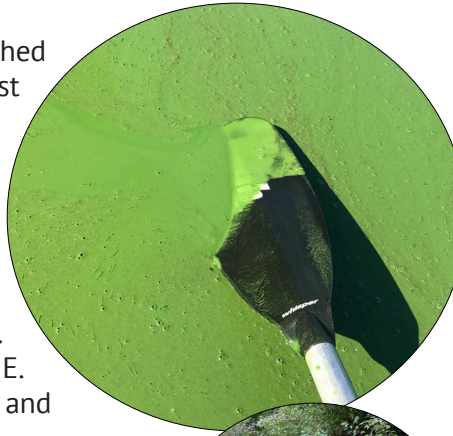
- » What problems does the watershed face?
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- » Education Programs
- » Cost Share Programs
- » Community Blue
- » City Engagement
- » Outreach
- » Volunteer Activities
- » Be part of the solution!
- » Water Monitoring
- » Lambert Creek Maintenance

## What problems does the watershed face?

### IMPAIRED LAKES:

Several lakes in the watershed are on the State Impaired List for high nutrients. These include Wilkinson, Goose, West Vadnais, and Gilfillan Lakes, as well as Lambert Creek. Lambert Creek has the additional impairment of high E. coli bacteria levels. Our studies show that the E. coli is coming from canine and avian sources.

Improving these waterbodies requires cooperation between cities, land owners, businesses, and the watershed organization. Each home, park, and property connects to a waterbody through stormwater runoff and is part of the puzzle.



### RISING CHLORIDE LEVELS:

Road salt has a permanent impact on fresh water, with no economical way to remove it once it's in the water. When it washed into lakes and wetlands, the chlorides in salt interrupt the natural nutrient cycling that fish depend on.

While some water bodies flush salt downstream to another watershed, some lakes in VLAWMO are accumulating salt. All of VLAWMO's lakes are currently below state standards, but VLAWMO is monitoring this closely to track changes and guide management.



### SEDIMENTATION:

Erosion and sedimentation is a natural process that can be accelerated with human activity. Bare soil, degraded slopes, and poorly protected drainage routes are common sources of excess sediment.

Small amounts of sediment accumulate in stormwater runoff to create a big issue for lakes and streams. Sediment clogs wetlands, culverts, and drainage ditches, suffocates aquatic plants that stabilize lake beds, and carries excess nutrients with it.



### DEGRADED WETLANDS

Many shorelines on lakes and ponds contain turf grass up to the water's edge. This causes problems for water quality and degrades nature's ability to protect water resources.

Sometimes wetlands are altered or filled in illegally. Even small infringements on wetland boundaries contribute to a state-wide struggle in preventing the gradual loss and degradation of wetlands and groundwater recharge.



*See page 17  
for how to be part of the solution.*



## Project Updates

### WHITAKER TREATMENT WETLANDS

**Grant Funds:** MN Legislative-Citizen Commission on Minnesota Resources (LCCMR)

**Location:** White Bear Township

**Completion:** Spring, 2018

**Cost:** \$500,000

The Whitaker Treatment Wetlands are an innovative research project in treating stormwater runoff. VLAWMO is excited to partner with the University of Minnesota, White Bear Township, and Barr Engineering for this project. VLAWMO is thankful to receive a grant from LCCMR for this project.

The structure of three treatment 'wetlands' are fed water from stormwater runoff. This runoff is the start of Lambert Creek, which flows in to Vadnais Lake, and is impaired for E. coli bacteria and high nutrients. The polluted stormwater is pumped through the three wetland cells that consist of different engineered soils called *sorptive material*. The water is tested and directed into groundwater and Lambert Creek.

Water monitoring will help us understand which soil mixture is most effective at treating stormwater runoff and removing bacteria. Findings for this project could advance stormwater treatment across the country. The design was done by Burns and McDonnell Engineering. See page 20 for more on the project's findings so far.



Three wetland cells are filled with sorptive material .

### SUCKER CHANNEL RESTORATION

**Capital Improvement Project**

**Location:** Vadnais Heights

**Completion:** May, 2018

**Amount Awarded:** \$20,000

The Sucker Channel restoration is a collaboration between Ramsey County Parks, Ramsey Conservation District (RCD), VLAWMO, and the Saint Paul Regional

Water Services (SPRWS).

This popular park and fishing destination was experiencing heavy erosion between Pleasant Lake and Sucker Lake, harming water quality in Sucker Lake and creating inefficiencies in the water filtration process. To improve aquatic habitat and protect this source of drinking water, the shoreline was stabilized with rip-rap, coir logs, and new vegetative cover.



VLAWMO created educational signage along the channel. Description of the project and how it helps fishing is provided in English, Spanish, and Hmong.

Planting was completed in partnership with Prairie Restorations, Inc. in Summer, 2018.





## In the Community

### COMMUNITY EVENTS

Staffing a booth at local events is a fun and valuable way to connect with community members. At events VLAWMO has the opportunity to share its work, provide brochures, give away prizes such as rainbarrels or tote bags, and answer questions for event goers. This year, community events served a dual purpose by also providing a place to conduct community surveys for the Education and Outreach Plan (p. 11).

VLAWMO booths were presented at the following 2018 events:

- » VHDEC Business Appreciation Event - March
- » Vadnais Heights Community Business Expo - April
- » Saint Paul Regional Water Service Open House - May
- » 2018 AquaFair, White Bear Lake Schools - June
- » North Oaks Plant Sale - May
- » WBL Marketfest: Conservation and Environment Day - July
- » Vadnais Heights Ice Cream Social - June
- » White Bear Township Celebration September
- » White Bear Lake Volunteer Fair - October



Vadnais Heights Ice Cream Social





# Education Programs

## SCHOOL PROGRAMS

VLAWMO staff provides water-focused activities for elementary, middle, and high schools in the watershed. If a school has a stormwater best management practice such as a raingarden on the grounds, this often becomes a living, outdoor classroom. Students learn how to maintain the raingarden, observe nature, work with topographic maps, and much more.



Activity examples and education tools for free rental can be found on the VLAWMO website at [vlawmo.org/students](http://vlawmo.org/students).

Left: Students at Lakeaires Elementary gather with Drippy the VLAWMO mascot after hearing a story about local wildlife and wetlands.

Right: Students at Vadnais Heights Elementary explore the schoolyard with bottles of water to track the direction of stormwater runoff and assess ground absorption.



## PUBLIC WORKSHOPS

VLAWMO offers a raingarden workshop each Spring. Participants in the raingarden workshop learned about the watershed, stormwater runoff, how to build and maintain a raingarden, and got a head start with tools to select plants and get funding assistance.

The native plant workshop is the most popular workshop for the second year in a row. This workshop dug deep into plant identification, planting plans and strategies, and how perennial vegetation is a valuable asset for the watershed.



Right: Raingarden workshop participants learn about the watershed, how raingardens work, and calculated runoff on their own properties.





## Cost Share Programs

VLAWMO's Cost Share Program provides assistance to public and private landowners for implementing stormwater improvement projects. Qualifying projects support one or more of the following:

- » Prevention of flooding or mitigation of drought
- » Water quality improvement or increase in watershed storage capacity
- » Preservation, protection, and restoration of native plant and wildlife communities, especially along lakes, streams, and wetlands
- » Protection and preservation of groundwater quality and quantity

Funds vary by year and are granted on a first come first serve basis. Once the annual amount is depleted, applicants are advised to re-apply the following year.

There are 3 cost share programs:

- » Rainbarrel
- » Landscape Level 1
- » Landscape Level 2

### LANDSCAPE COST SHARE PROGRAMS

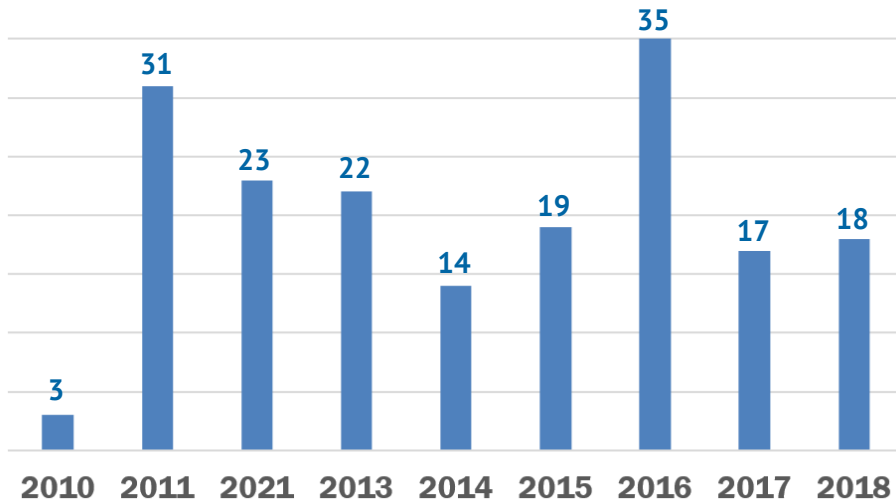
Landscape Level 1: Reimburses property owners 75% of the costs associated with implementing approved water quality improvement projects. The maximum reimbursement is \$2,000 for this program. Typical projects include raingardens, shoreline restoration, native habitat restoration, or pervious paver installation.

Landscape Level 2: Projects with a larger total cost (minimum total cost of \$5,000) and will reimburse 75% of the costs, up to \$20,000. The program was updated in 2015 to allow funding to be more available for applicants.

VLAWMO uses Minimal Impact Design Standards (MIDS) to measure the impact of landscape improvement projects. The impact of 2018's projects are estimated to improve water quality by:

- Reducing phosphorus by **.307 lbs** per year.
- Reducing suspended solids by **56 lbs** per year.
- Infiltrating **123,172 gallons** of water into groundwater annually.

### Cost Share Grants by Year: Landscape & Rainbarrel



A 2018 raingarden install in Vadnais Heights



### LANDSCAPE LEVEL 1 SUMMARY

For Landscape level one, **17** grants were awarded funding for a total of \$15,481. Funding for the year was not completely utilized.

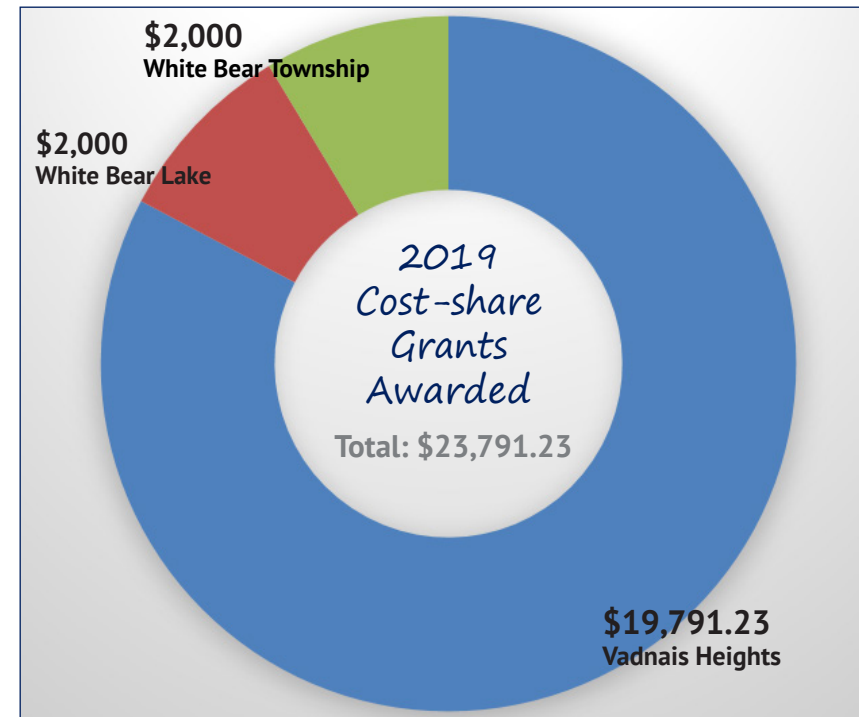


Of the 17 level one grants, 3 were native plant restorations totaling 10,775 ft<sup>2</sup>. 2 were raingardens totaling 5,282 ft<sup>2</sup>. 1 was a shoreline restoration totaling 4,500 ft<sup>2</sup>. 2 were pervious pavement or infiltration driveways totaling 15,950 ft<sup>2</sup>.

2017 project square footage:	2018 project square footage:
45,596 ft <sup>2</sup>	56,507 ft <sup>2</sup>

### LANDSCAPE LEVEL 2 SUMMARY

**1** landscape level two grant was awarded for a total of \$7,700. The project was a native plant restoration in Vadnais Heights, covering 20,000 sq ft.



### RAINBARREL COST SHARE PROGRAM

The Rainbarrel Program reimburses residents 50% of the cost towards the purchase of up to 2 rainbarrels. Applicants are limited to \$125 maximum reimbursement per rainbarrel.

### RAINBARREL SUMMARY

In 2018 VLAWMO awarded grants for **9** rainbarrels, for a total of \$610.23. A total of 92 rainbarrel grants have been awarded since the program began in 2007. Each time the barrels are filled, up to 4,850 gallons of rain water is available for reuse. If each rainbarrel gets filled 10 times throughout the year from various storm events, up to 46,000 gallons of water is available for reuse. 5 additional rainbarrels were awarded in 2018 as prizes for public events.

## Community Blue

### DESCRIPTION

Community Blue is an education focused grant program for community groups within VLAWMO. It funds educational events and resources as they relate to water resources, and provides support in making existing stormwater, wetland, or watershed improvements into educational tools with public exposure.

### PROJECTS IN THE WORKS



#### Connect the Drops

Growing Green Hearts, an organization specializing in watershed education in public school and religious settings, has networked between several local congregations for this project. Following a multi-congregation kick-off event, Growing Green Hearts will lead youth and community members in watershed education sessions and service projects. Service project examples include outreach and education for smart salting, building raingardens and native plantings, cleaning and adopting stormdrains, and more. Partners include Frassatti academy, Christ the Servant Lutheran Church, and Peace United Methodist.

#### Clean Stormdrains

Residents in the John Mitchell Neighborhood of Vadnais Heights are taking action to clean out their stormdrains and promote watershed best practices such as water-friendly yard care. Project is led by Ceci and Ed Shaplan, who serve as Master Water Stewards for VLAWMO.

#### Picture Posts at Birch Lake

Working with the Birch Lake Improvement District (BLID), two picture posts are to be placed near Birch Lake. One will be on the shoreline, the other in the Rotary Park Wetland just to the north of Birch Lake. Both posts will be a way to monitor changes in the water quality, shoreline condition, vegetation, and other unforeseen surprises that may be missed without attention.

## City Engagement

### SMART SALTING LEVEL 2

A Smart Salting level workshop was hosted in April, 2018 in partnership with Ramsey Washington Metro Watershed District and Fortin Consulting. The level 2 workshop focused on the Winter Maintenance Assessment Tool (WMA<sub>t</sub>). This tool allows public works and maintenance staff to track progress in salt use and improvements, learn strategies from the tool interface itself, create charts for presentations, assess costs, outline future goals, and engage in conversation with staff across MN for discussion and shared learning.



### TURF MAINTENANCE WORKSHOP

VLAWMO hosted Fortin Consulting to hold a turf maintenance workshop in September, 2018. The workshop covered best practices for fertilizer application, mowing, watering, and more. 19 participants attended, representing county, city, and school district staff.





## Outreach

### ADOPT-A-DRAIN

The adopt-a-drain program is a convenient and practical way to make a positive impact on a nearby water body. Residents, community groups, or businesses commit to checking their stormdrain 3 times/month, with a rate of cleaning that is up



### RAINBARREL WINNERS

The tradition continues at VLAWMO's Spring and Summer events. Fair goes at MarketFest, Taste of Vadnais, the North Oaks Community Fair, and Vadnais Heights Farmer's Market had the opportunity to enter to win a free rainbarrel upon signing up to our seasonal email list. 6 rainbarrels were given away, allowing VLAWMO's audience to grow while capturing and re-using stormwater runoff at the same time. We guarantee our email lists are spam free.

### PICTURE POSTS

In October, 2018 VLAWMO launched a picture post project in North Oaks. One post is located at the inlet of Deep and Pleasant Lake, the other at Charley and Pleasant Lake.

These posts allows volunteers to easily and consistently and regularly photograph the Pleasant Lake shoreline and the nearby wetland surrounding the Deep Lake channel. Photos are uploaded to the Picture Post website and will be a valuable tool for home owners, North Oaks, the Saint Paul Regional Water Service, and VLAWMO to better understand the subtle trends and changes that occur on the shoreline and in the water. Examples include tracking ice-out, algae blooms, erosion, shoreline trampling, vegetation changes, and more.



### MEDIA

Our collection of videos and media is a tool for residents and cities to glimpse the work of the watershed. Our YouTube channel contains education videos, recorded presentations, event summaries, and more!

#### Videos produced in 2018 include:

- Raingarden Refresher Course
- Whitaker Treatment Wetlands: How does it work?
- Who Lives in the Watershed: Remote Cameras at Tamarack Nature Center



Visit our blog found at [VLAWMO.org](http://VLAWMO.org)

Follow our social media with the handle: "@VLAWMO"





## Volunteer Activities

Volunteers bring VLAWMO's work into the community. Volunteers help with water sampling, booth staffing, community outreach, advising VLAWMO on public interests and priorities, and leading by example.

### CITIZEN LAKE MONITORING PROGRAM (CLMP)

VLAWMO would like to thank the following volunteers for their role in the Citizen Lake Monitoring Program, collecting water samples bi-weekly from May through September. The volunteers for 2017 were: Jim Grisim (Birch Lake), Justine Rowe (East Vadnais Lake) and Shannon Stewart (Tamarack Lake).

### WATERSHED ACTION VOLUNTEERS (WAV)

VLAWMO is grateful for the volunteers who have supported the Watershed Action Volunteers in 2018: AFSA High School, St. Mary's of the Lake youth group, Rika and Rita Pennington, Bob Larsen, Suzanne Ryan, Diane Gorder, Connie Winterhalter, and Gina Schmidt.

2018 volunteer activities included:

- » Staffing booths at community events
- » Stormdrain stenciling and cleaning while promoting adopt-a-drain
- » Raingarden maintenance
- » Assisting with education efforts



### AQUATIC INVASIVE SPECIES (AIS)

Partnering with Ramsey Soil and Water Conservation Division (RSWCD), VLAWMO is gathering volunteers to serve as citizen AIS detectors. While the RSWCD provides training and records of aquatic invasives across the county, VLAWMO helps plug volunteers into the effort. Together we're able

### MASTER WATER STEWARDS

VLAWMO joined the Master Water Stewards program in 2018. This program is coordinated through the nonprofit Freshwater, who trains and prepares volunteers to be citizen champions in projects and outreach. After promoting the program and searching for two champion volunteers, VLAWMO is excited to host two Master Water Stewards in 2019, with close collaboration with stewards from neighboring watersheds.





# Be a part of the solution!

## How to help improve the watershed from home: Continued from page 8

### WINTER:

#### Practice Smart Salting:

Shovel and scrape early on.

Spread salt with 2-3" between crystals.

Don't over salt: 1/2 - 2/3 of a coffee mug holds enough salt for one parking space.

Practice spot-treatment, apply salt, sand, or grit in cold temps and as a salt alternative.

Sweep up extra salt, sand, and grit when pavement is dry.



### SPRING & SUMMER:

Adopt a stormdrain to promote local water quality.

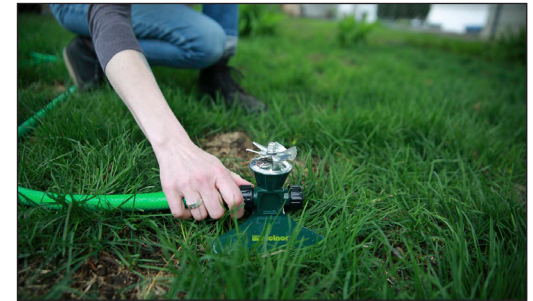
#### Water with care:

Water lawn in the morning and evening to reduce evaporation. Use sprinklers that keep water low to the ground. Direct sprinklers away from pavement.

#### Mow with care:

Mow grass at 3" to hold moisture and reduce runoff. Keep grass clippings out of the street.

Leave grass clippings on lawn for free fertilizer, or fertilize springly.



### FALL:

Core aerate the lawn to increase root depth, durability, and water absorption.

Continue adopt-a-drian efforts, cleaning out leaves and debris from stormdrains and the curb.

Mulch leaves with a mower for free fertilizer.

If you must use weed killer, do so now to make a bigger impact and use less compared to Spring/Summer.



### ALL YEAR LONG:

Prevent illegal dumping in stormdrains: "only rain down the drain".

Plan a native planting or raingarden on your property. Plan with VLAWMO to make planting and installation easy and effective.

Restore shorelines with deep-rooted native vegetation.

Hire contractors certified in winter maintenance or turf maintenance best practices.

Respect wetland boundaries. Each wetland plays a role in the watershed no matter how small.





# Water Monitoring

## INTRODUCTION

VLAWMO's regular water quality monitoring program includes nutrient sampling on 6 Lambert Creek sites, and nutrient sampling on 12 of the Vadnais Lake Area Watershed lakes. Nutrients and pollutants sampled for data include: total phosphorus, chlorophyll-A, soluble-reactive phosphorus, iron, total nitrogen, nitrate, total suspended solids, and chloride. VLAWMO's specialty monitoring programs, such as E coli and winter chloride sampling, will continue. See the 2016 Annual Report Summary for a map of monitoring locations.

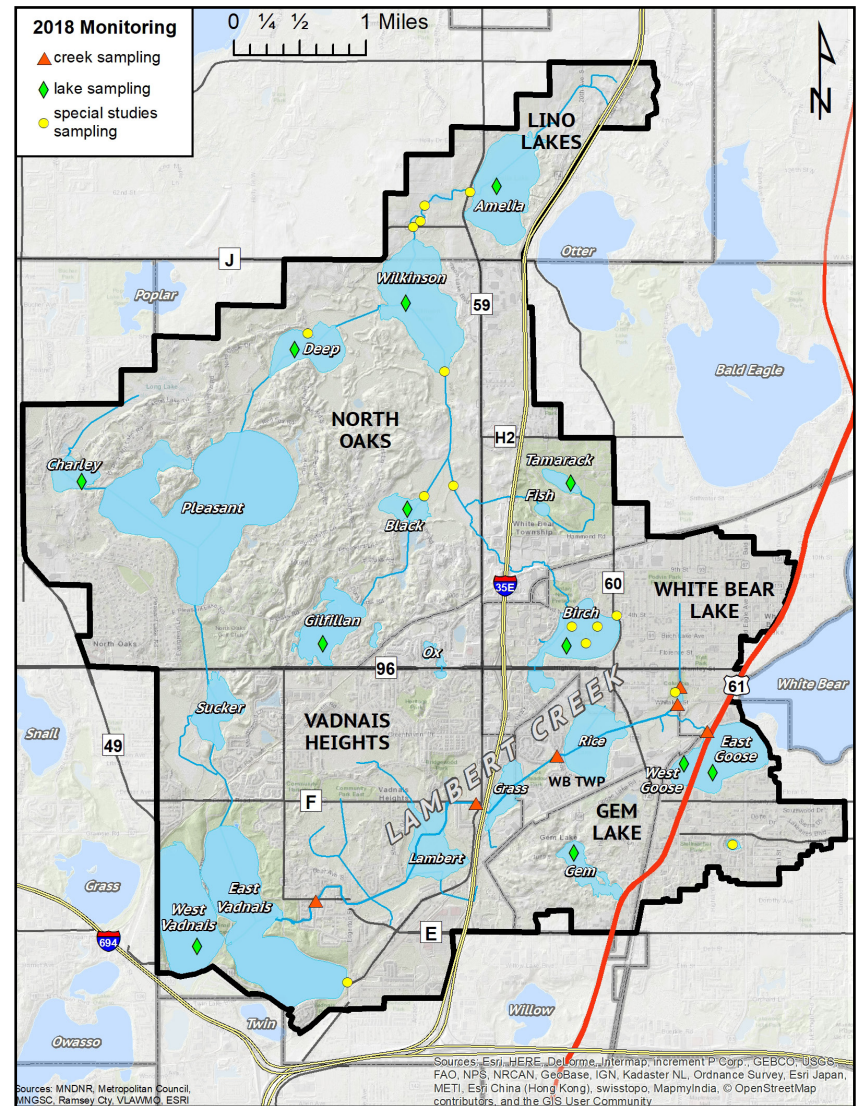
Part of VLAWMO's water monitoring includes rainfall measurements because rainfall and the timing of rainfall are factors that influence water quality. Typically, more precipitation implies more water runoff, which carries more contaminants from the land surface into water bodies.

Lakes are summarized with a grading system called the Trophic State Index (TSI). This system was developed in the 1970's to calculate average phosphorus, chlorophyll-A, and Secchi disk readings, and generate a summarizing number. Letter grades are developed from the Metropolitan Council matrix for annual averages.



VLAWMO staff monitoring Lambert Creek

## VLAWMO Monitoring Locations



Monitoring results are used to guide local water policies and management, and to help prioritize and locate future water quality projects such as raingardens, underground retention basins, and shoreline restorations. The full 2018 monitoring report is available at: [vlawmo.org/resources](http://vlawmo.org/resources)



## WATER MONITORING HIGHLIGHTS

**Gem Lake:** Gem Lake's chemistry has improved, coinciding with a 2014 Highway 61 swale reconstruction. The improved swale may be capturing nutrients and sediment that drained into the lake from a large parking lot. After 10 years on the State Impaired List and continued monitoring, the Minnesota Pollution Control Agency (MPCA) officially de-listed Gem Lake in 2018. This success story demonstrates that lake improvements are possible!

**Gilfillan Lake:** One of VLAWMO's lakes on the State Impaired List, Gilfillan data show a nutrient increase over 5 years. An augmentation system was installed in 2012 to raise the water level, and also provided dilution that improved the water quality. Gilfillan and its subwatershed is now maintaining its water level on its own, as no augmentation has occurred since the installation.

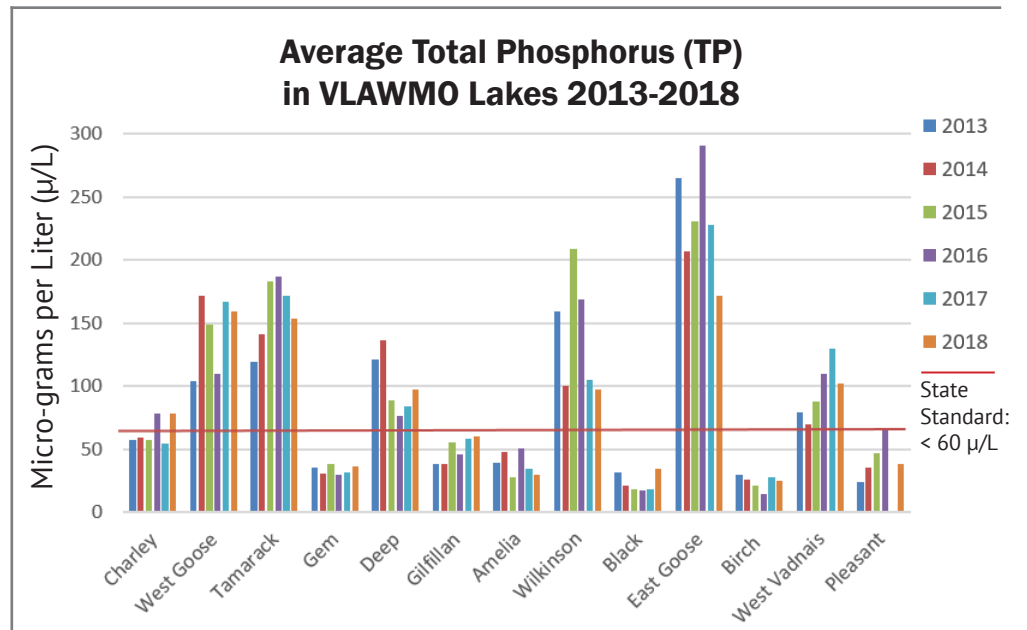
**Goose Lake (East & West):** Goose Lake has had high nutrient levels since VLAWMO began monitoring in 1997 (East) and 2006 (West). A 2015 bullhead removal (pictured right) made minor impacts to lake health, serving to reduce internal loading, which is one of several factors contributing to the lake's impairment. A 2017 fish survey indicated that the bullhead population is under control. Wood Lake/Oak Knoll Pond is a neighborhood pond that feeds into Goose Lake, is the focus of a spent lime treatment study in 2019. Follow the study and connect to public engagement meetings at [vlawmo.org](http://vlawmo.org).

**Wilkinson Lake:** Wilkinson's phosphorus levels are above State standards but its Chlorophyll A level is below. Studies have detected high nutrient levels draining into Wilkinson from both North and South inlets. Because Wilkinson functions more like a wetland than a lake, it continually cycles nutrients through the water column. Its water quality may be especially sensitive to inputs from the surrounding watershed (sediment, agricultural runoff, grass clippings, etc). After 3 seasons of additional source monitoring, VLAWMO will use this data in a project identification and feasibility study. Visit [vlawmo.org/waterbodies/lake-wilkinson](http://vlawmo.org/waterbodies/lake-wilkinson) for the full report. Reducing upland nutrient and sediment loads in the future are likely to promote the health of Wilkinson and downstream Deep Lake.

**Tamarack Lake:** A floating island wetland was installed at Tamarack in 2015 to reduce lake nutrient levels. Lake data indicates that the island was undersized, which helps inform future experimental treatments. Tamarack is currently on the State Impaired List.

» **Chloride Levels:** VLAWMO has been sampling chloride for 9 years with no significant changes detected. Birch Lake and East Goose have the highest chloride content and appear to be showing upward trends over the last few years. This is likely due to their close proximity to major roads. All of the lakes are below the current State standard of 230 mg/L, with Black Lake having the lowest chloride level.

**Find the complete 2018 Monitoring Report  
and a summary at [VLawmo.org/resources/reports](http://VLawmo.org/resources/reports)**





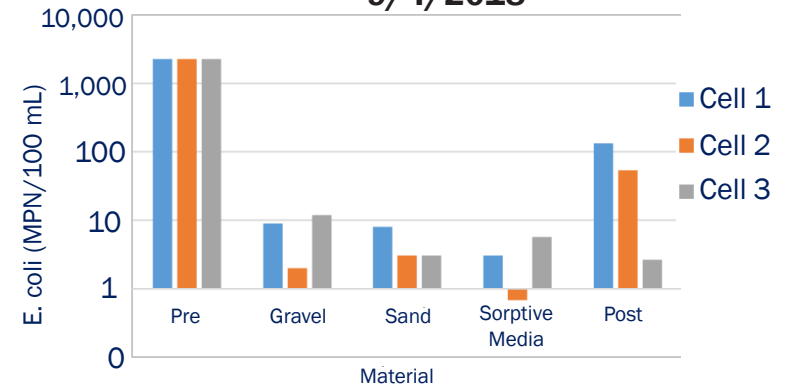
## MONITORING SUMMARY: CONTINUED

### WHITAKER TREATMENT WETLANDS

The Whitaker Treatment Wetlands is a research project investigating new ways to treat stormwater runoff. Completed in 2018, data will be collected until 2020 to analyze how various materials treat contaminants such as phosphorus, nitrogen, and E. coli bacteria.

Samples are gathered before (pre) and after (post) storm events and at various points within the 3 treatment cells. Each cell consists of layers of gravel, sand, and a unique mix of specialized sorptive media (concrete, peat, clay, tire crumb). Sampling is staggered over a period of days as water moves through the system. At right, E. coli levels are lower after water travels through the cells. The lowest level is seen in cell 3. These results may indicate that the composition in cell 3 is the most beneficial for removing E. coli bacteria. Research will continue until 2020 to replicate and investigate these results, making recommendations for future water treatment projects.

**Whitaker Treatment Wetlands E. coli Samples Surrounding a Storm Event: 9/4/2018**



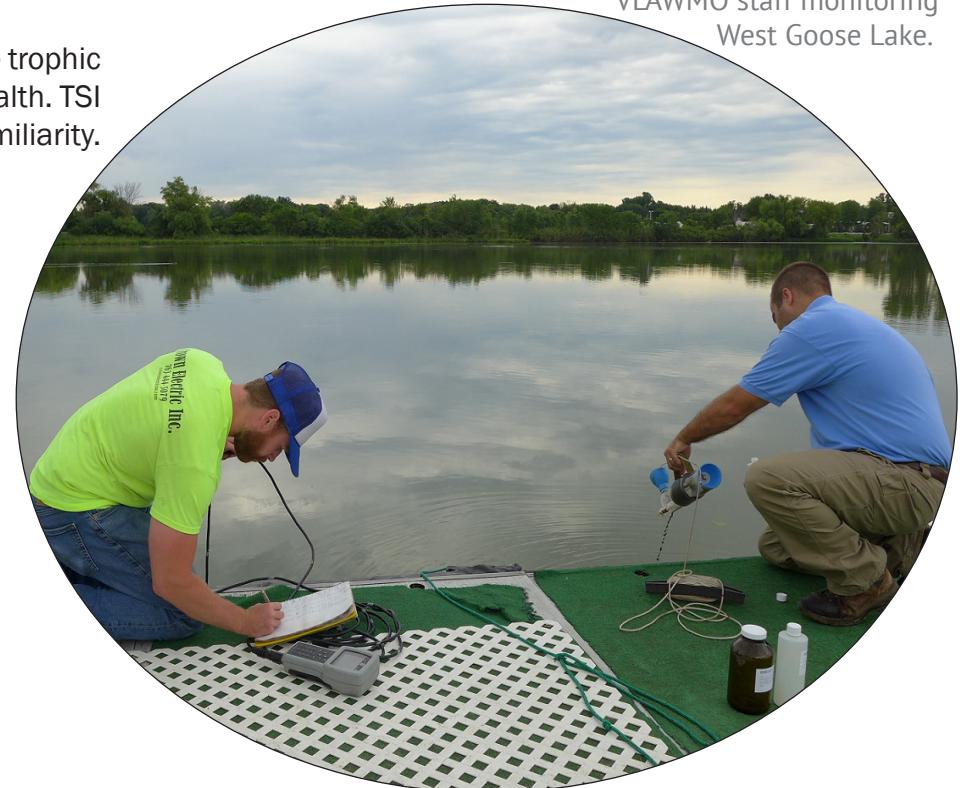
### LAKE GRADES

VLAWMO uses the Trophic Status Indicator to summarize lake health. The trophic status of a lake pertains to its nutrient levels, which helps assess lake health. TSI is calculated from monitoring data and converted into a lake grade for familiarity.

### VLAWMO Lake Grades:

Lake	2017	2018	TSI Status
Amelia	B+	B+	Eutrophic
Birch	B+	A-	Mesotrophic
Black	A-	B+	Mesotrophic
Charlie	C+	C	Eutrophic
Deep	C	C-	Eutrophic
Gem	B	B	Mesotrophic
Gilfillan	C	C	Eutrophic
E. Goose	D	D-	Eutrophic - Hypereutrophic
W. Goose	D	D-	Eutrophic - Hypereutrophic
Tamarack	D-	D-	Eutrophic - Hypereutrophic
West Vadnais	D-	D-	Eutrophic - Hypereutrophic
Wilkinson	C	C	Eutrophic

VLAWMO staff monitoring West Goose Lake.





## 2018 ANNUAL REPORT

## LAMBERT CREEK STUDIES



VLAWMO worked with Houston Engineering in 2018 to create a comprehensive survey of Lambert Creek.

The survey used historical documentation with hydrology & hydraulic modeling (H & H) to assess the main creek in addition to its branch ditches. Additionally, it sought to identify areas that may require repair or maintenance to return the system to its as originally constructed condition. If the original condition isn't possible, the model will aid in assessing which improved conditions are feasible. This concept of the current alignment of Ditch 14 and its branch ditches, based on past improvements, projects, and development is termed as As Constructed and Subsequently Improved Condition (ACSIC). The survey and model now serve as valuable tools for planning and decision making for Lambert Creek. Assets include:

- A survey and documentation of elevations for baseline reference.
- A guide for effectively re-establishing the ditch system.
- Documentation of 2, 10, and 100 year flood elevations.
- An XP SWMM model that enables analysis of improvements, providing guidance for cost-effective actions.
- Repair options that benefit future planning and decision making for reasonable function of the Ditch.

## LAMBERT CREEK MAINTENANCE

In Spring of 2019 VLAWMO worked with the Institutional community Work Crew (ICWC) to remove tree and woody debris from a two mile stretch of Lambert Creek. Maintenance was needed to improve flow and efficiency of the creek.



ICWC clearing debris in Lambert Creek

VLAWMO staff documented creek levels at the Kohler road flume after a 3.75" rain event. Creek levels at the flume demonstrated a functioning drainage system, returning to average 3 days after the high water levels. The gauge at the flume indicates a 1' drop within the specified time frame.





## CHARTING IT OUT:

Review of 2018 Goals, 2019 Projections

### IN THIS SECTION

- » 2018 Work Plan Review
- » 2019 Work Plan

## VLAWMO CORE ACTIVITIES



## WATER PLAN STRUCTURE



## 2019 WORK PLAN PROJECTION

VLAWMO will put the 2017-2026 comprehensive water plan into action. The water plan structure (above) informs issues that will be addressed, goals that VLAWMO will set, and the strategies employed to reach those goals. See the 2017-2026 comprehensive water plan on our website under About > Why Water Matters for a more in-depth look at these plan components.

The tables for the 2018 review and 2019 work plan are color coded according to the VLAWMO core activities diagram (above). Each core activity also has a number, conveyed in the 2017-2026 comprehensive water plan.

## ACRONYMS:

- WLA: Waste Load Allocation
- DNR: Department of Natural Resources
- MS4: Municipal Separate Storm Sewer System
- NEMO: Northland
- SWPPP: Storm Water Pollution Prevention Program
- STEM: Science, Technology, Engineering, Mathematics
- BMP's: Best Management Practices
- CIP's: Capital Improvement Project
- LGU: Local Governing Unit
- LCCMR: Legislative Citizen Commission on Minnesota Resources
- AIS: Aquatic Invasive Species
- TMDL: Total Maximum Daily Load
- TEP: Technical Evaluation Panel
- BOD: Board of Directors
- BMP: Best Management Practice (pertaining to stormwater treatment)
- RFP: Request for Proposal
- TEC: Technical Commission



## Review of 2018 Work Plan



### CAPITAL IMPROVEMENT PROJECTS

Project Name	Description	Goal: Going into 2018	Goal: 2018 Result
<b>Sucker Lake Channel Restoration</b>	This project is a joint effort in partnership with Ramsey County Parks, Ramsey Conservation District, and the St. Paul Regional Water Service. When completed it will restore approximately 700 linear feet of shoreline that has eroded. Includes fishing access locations to support the current use of the site.	Complete final planting and install educational signs.	Planting complete, educational signs installed.
<b>Whitaker Treatment Wetlands</b>	A stormwater treatment project partnering with the U of MN with funding through LCCMR grant funding. Stormwater from Whitaker Pond is routed to wetland treatment cells then infiltrated into shallow groundwater. The study will determine which of three sorption materials is most effective at filtering pollutants, contaminants, and bacteria.	Finalize installation and monitoring plan. Begin monitoring year one of two.	Project installed and year one of monitoring complete.
<b>Goose &amp; Wilkinson Lakes Project Development</b>	VLAWMO worked with consultants in 2018 to assess all data and information collected on these water bodies, engage with stakeholders (see page 14), and determine the next best steps for nutrient reduction. Out of the potential projects that were discovered, work is now directed to selecting a project and its methods. Options include spent lime or alum treatment.	Continue assessment for BMP's, research grant opportunities and apply.  Define BMP options.	Goose subwatershed assessment supported by Watershed Based Funding grant. Further monitoring completed in Wilkinson subwatershed.
<b>Birch Lake: 4th and Otter Road Project Development</b>	VLAWMO will work with a consultant to assess the options for BMPs at the 4th and Otter Lake Rd site. Conceptual designs of best possible projects will be completed and VLAWMO will work with its partners for a 2018 installation.	Capture stormwater from residential area and reduce incoming nutrients. Install successful project.	Project design complete. Operations and maintenance agreement in progress with partners.



## Review of 2018 Work Plan

### GRANT PROGRAMS

CORE ACTIVITY #

	Project Name	Description	Goal: Going into 2018	Goal: 2018 Result
3.4	Landscape Level 1	Establish relationships and provide grants to property owners within the watershed to install water quality enhancement projects.	Install at least 10 projects Achieve .25 lbs of phosphorus/year removed from local waters.	8 projects installed. .307 lbs of annual phosphorus removed from local waters.
3.4	Landscape Level 2	Landscape Level 2 Cost Share Program is aimed at assisting landowners with implementing larger BMP projects within the watershed. Preference for projects that have high visibility, educational value and/or local citizen support.	Install at least 1 project. Achieve .25 lbs of phosphorus/year removed from local waters.	1 20k ft <sup>2</sup> native planting extending into 2019. Phosphorus reduction N/A.



### PUBLIC EDUCATION AND OUTREACH

CORE ACTIVITY #

	Project Name	Description	Goals: Going into 2018	Goals: 2018 Result
3.3	Watershed Action Volunteers (WAV)	WAV is a group of volunteer residents that assist with idea development and implementation of outreach opportunities and projects. A new stormdrain stenciling program will allow volunteer groups such as scouts and youth groups to protect our water through stenciling service projects. A new "Adopt-a-Drain" program educates residents and businesses the importance of adopting a stormdrain. WAV also strives to encourage awareness and interaction with local water resources using phenology and basic environmental monitoring.	Volunteer participation to grow 10% WAV email list to reach 100 readers Host at least 3 stenciling service projects, adopt 12 stormdrains, install 1 picture post. Establish a volunteer program with 2 dedicated volunteers with specific role descriptions.	100 readers achieved 2 stenciling service projects complete. 26 drains adopted, 3 pictures posts installed. 1 dedicated volunteer 2 Master Water Stewards
3.3	Workshops	Hold raingarden workshops for residents covering watershed processes, raingarden function, and installation how-to. Introduce VLAWMO's cost-share program to participants. In addition to a raingarden workshop, add a native plant workshop based on a survey of past workshop attendees.	Achieve at least 25 raingarden/native plant workshop participants. At least 3 residents who attend a raingarden or native plant workshop will pursue a cost-share grant.	45 workshop participants. 1 resident from workshop pursued a grant.



## PUBLIC EDUCATION AND OUTREACH

## Review of 2018 Work Plan

### CORE ACTIVITY #

3.3

Project Name	Description	Goals: Going into 2018	Goals: 2018 Result
<b>Community Events</b>	Staff a VLAWMO booth at various community events. Develop information and engagement components for community events. A rainbarrel giveaway contest is used to attract event goers, and number of entries signify how many people stopped by the VLAWMO booth. Prizes such as tote bags, boating kits, and craft soda will be provided for free to guests who engage the booth.	Attend at least 5 community events annually. Receive 50 entries total in rainbarrel giveaways. Hold a press conference/public opening for Whitaker Treatment Wetlands	9 events attended. 70 rainbarrel entries received. Press conference for Whitaker complete.
<b>Communications</b>	Create and update material and publications for social media, website, seasonal Enews, and local publications. Make all sections of the website active. Create and maintain communications to promote public awareness for responsible use of our water resources.	Appear in at least 6 news articles in local papers. Appear in at least 3 City/Township newsletters with opportunities and education. Reach 200 visits on website.	13 City/township newsletters. 2 City Newsletters. 7,566 website visits.
<b>K-12</b>	Develop youth involvement opportunities and programs that improve/benefit VLAWMO's goals and activities: Macroinvertebrates field days, STEM lessons. Reach multiple age demographics through school involvement.  Assist schools in establishing and maintaining stormwater best management practices (BMP's).	Reach 10% of the school age population in 2018 through education and BMP maintenance.  At least 5 adults will contact VLAWMO about cost-share grants as a result of hearing about their student's school activities.	3% of school age population reached.  0 adults contacted VLAWMO.
<b>Citizen Science</b>	Picture posts will be a new initiative for VLAWMO to explore phenology (ice-out, algae blooms) and AIS monitoring, with support from volunteers. Citizens assist lake monitoring each year through the Citizen Lake Monitoring Program (CLMP).	Picture posts will be a new initiative for VLAWMO to explore phenology (ice-out, algae blooms) and AIS monitoring, with support from volunteers. Citizens assist lake monitoring each year through the Citizen Lake Monitoring Program (CLMP).	3 Picture Posts installed.  3 lakes collected by volunteers for monitoring season.





**MONITORING PROGRAM**

*Review of 2018 Work Plan*

**SUB-WATERSHED**

	Project Name	Description	Goals: Going into 2018	Goals: 2018 Result
Lambert Creek	<b>E. coli Sourcing</b>	Dry and wet weather monitoring of the Goose, Oakmede, County Road F, and Whitaker sites (wet weather= during rainfall event). Four-year summary is currently in the works, presentation to be completed in 2018.	Complete final report of four-year project, present report to stakeholders.	Final report under review, present to stakeholders in 2019.
Lambert Creek	<b>Lambert Creek monitoring program</b>	Monitor basic phosphorus, nitrogen, Chlorophyll A, chloride, and sediment levels at 6 sites along with pH, conductivity and DO at the 3 flumes. Maintain automated flow meter and precipitation gauge at Whitaker.	Document and evaluate the general health of the creek.	Monitoring complete, no change in creek health.
Multiple	<b>Lake Level Program</b>	Gilfillan, Birch, Gem & Goose Lake gauges are calibrated in the spring and read up to 11 times during the summer.	Monitor lake levels on 4 targeted lakes in the watershed to track short & long term trends.	Complete.
Multiple	<b>Lake Surveys</b>	VLAWMO will work with Ramsey Conservation District to perform bathymetry and vegetation surveys on Wilkinson and Charley Lakes and with Blue Water Science to perform fish surveys on East & West Goose Lakes and Wilkinson Lake. These surveys assist in determining future management of the lakes.	Complete all identified surveys.	All identified lake surveys complete.
Multiple	<b>Stormwater Monitoring</b>	Automated and manual sampling, including flow measurements on targeted streams into Birch Lake.	Document watershed nutrient loading into Birch Lake to assist selection of implementation strategies.	2nd season of stormwater monitoring completed at Birch Lake.
Multiple	<b>Chloride Measurements</b>	Sample lakes and Lambert Creek for chloride levels. Partner with Birch Lake Improvement District (BLID) for summer monitoring of Birch Lake	Check monthly measurement	Complete.
Multiple	<b>Lake Monitoring Program</b>	Monitor chemistry of 12 of VLAWMO's lakes through nutrient and sediment sampling, along with pH, conductivity, and dissolved oxygen (DO) measurements. Continue integration of automated sampling.	Keep water quality record of watershed's lakes. Utilize water quality data for future projects and CIPs.	Complete.

## Review of 2018 Work Plan



### ADMINISTRATION & REGULATION

Project Name	Description	Goals: Going into 2018	Goals: 2018 Results
<b>Budget &amp; Stormwater Utility</b>	Storm sewer rates are based on the adopted budget and certified to the counties for collection.	Provide necessary financing for watershed.	Storm sewer rates certified by counties, providing for watershed funding.
<b>Wetland Conservation Act (WCA)</b>	Complete boundary and type & other determinations in consultation with the TEP. Respond to WCA questions.	Administer WCA Rules with VLAWMO as LGU.	Complete.



### SUSTAINABLE LAKE MANAGEMENT PLAN (SLMP)

Project Name	Description	Goals: Going into 2018	Goals: 2018 Results
<b>Deel Lake SLMP</b>	A report covering the sub-watershed of Charley Lake on its health and trends, with lake management plans to sustain its health.	Collect background data, share with lake stakeholders to develop a prioritized list of management strategies.	Complete
<b>Charley Lake SLMP</b>	A report covering the sub-watershed of Charley Lake on its health and trends, with lake management plans to sustain its health.	Collect background data, share with lake stakeholders to develop a prioritized list of management strategies.	Complete



2019 Work Plan

 CAPITAL IMPROVEMENT PROJECTS

SUB - WATERSHED

	Project Name	Description	Goals	Timeline
Goose Lake	<b>Goose Lake Improvement</b>	Work with contracted engineer using Watershed-based Funding to identify 3 BMP's with 60% design completion, choosing one project for 100% design and installation in 2019. Vegetation and ecosystems management. Reapply for 2020 CWF grant for alum treatment.	Alum Grant Channel restoration Stakeholder presentation ID and install BMP project	Grants and restoration ongoing. Stakeholder presentation Jan, 2019.
Lambert Creek	<b>Whitaker Treatment Wetlands</b>	A stormwater treatment project partnering with the U of MN with funding through LCCMR grant funding. Stormwater from Whitaker Pond will be routed to underground wetland treatment cells and then infiltrated into shallow groundwater. Treatment cells contain different sorption material - the study will determine which material is most effective at filtering pollutants. VLAWMO will monitor for nutrients and bacteria, while the U of MN will monitor for pathogens.	Complete 2nd season of monitoring. Partner with the U of M to monitor pathogens.	June 2020.
Goose Lake	<b>Oak Knoll Pond Spent Lime Study</b>	Partner with Barr Engineering for spent lime treatment and monitoring on Oak Knoll Pond (tributary to Goose Lake). VLAWMO staff will assist in monitoring efforts, supported by homeowner and City coordination.	Complete spent lime treatment and seasonal storm monitoring.	Spent lime May-June Monitoring June-Oct
Lambert Creek	<b>Birch Lake: 4th &amp; Otter Lake Road Project Development</b>	VLAWMO will work with a consultant to assess the options for BMPs at the 4th and Otter Lake Rd site. Conceptual designs of best possible projects will be completed and VLAWMO will work with its partners to finalize design and secure funding for 2019 installation.	Installation of project. Complete partner agreements.	Installation Nov 2019, Grant completion 2020.

## 2019 Work Plan


**GRANT PROGRAMS**

CORE ACTIVITY #

3.4

3.4

3.3

Project Name	Description	Goals	Time line
<b>Landscape Level 1</b>	Establish relationships and provide grants to property owners within the watershed to install water quality enhancement projects.	Install at least 10 projects Achieve .25 lbs of phosphorus/year removed from local waters.	November, 2019
<b>Landscape Level 2</b>	Landscape Level 2 Cost Share Program is aimed at assisting landowners with implementing larger BMP projects within the watershed. Preference for projects that have high visibility, educational value and/or local citizen support.	Install at least 1 project. Achieve .25 lbs of phosphorus/year removed from local waters.	November, 2019
<b>Community Blue</b>	A communication and outreach grant program to provide money for projects big and small that otherwise might not qualify for other grant awards. Projects must provide education and outreach benefits that directly relate to water quality.	Complete 3 active grants initiated in 2018. Secure all results and grant measurables through collection of final reports.	Ongoing, based on grant timelines



Wildlife gathering on East Vadnais Lake





**PUBLIC EDUCATION AND OUTREACH**

*2019 Work Plan*

**CORE ACTIVITY #**

	Project Name	Description	Goals	Time line
3.3	<b>Watershed Action Volunteers (WAV)</b>	The WAV consists of Master Water Stewards (Freshwater partnership), Citizen Advisory Commission (CAC), and VLAWMO-specific volunteers who have their own volunteer job description.	Plan, mentor, and complete job descriptions with two VLAWMO-specific volunteers. Guide and complete two Master Water Steward capstone projects. Hold three CAC meetings throughout the year, each achieving tangible insight for VLAWMO.	Feb - Aug Ongoing Feb-Nov
	<b>Workshops</b>	Workshops educate residents on watershed processes, raingarden and native plant function, and installation. They also introduce VLAWMO's cost-share program to participants and encourage them to apply.	Hold a raingarden workshop, native plant workshop, and general sustainable landscaping workshop. At least 3 residents who attend a raingarden or native plant workshop will pursue a cost-share grant.	Workshops: April-May Cost-share: ongoing
	<b>Community Events</b>	Staff a VLAWMO booth at various community events. Develop information and engagement components for community events. A rainbarrel giveaway contest is used to attract event goers, and number of entries signify how many people stopped by the VLAWMO booth. Prizes such as tote bags, boating kits, and craft soda will be provided for free to guests who engage the booth.	Attend at least 6 community events annually. Accrue at least 1 new volunteer. Grow general email list by 150 people, volunteer email list by 15 people.	Feb-September
	<b>Communications</b>	Create and update material and publications for social media, website, seasonal Enews, and local publications. Make all sections of the website active. Create and maintain communications to promote public awareness for responsible use of our water resources.	Appear in at least 6 news articles in local papers. Appear in at least 3 City/Township newsletters with events and education opportunities. Maintain weekly social media postings all year. Maintain monthly blog and news postings on the VLAWMO website. Create at least 4 neighborhood spotlight articles.	Ongoing

## 2019 Work Plan



## MONITORING PROGRAM

## SUB-WATERSHED

	Project Name	Description	Goals	Time line
Lambert Creek	<b>E. coli Sourcing</b>	Dry and wet weather monitoring of the Goose, Oakmede, County Road F, and Whitaker sites (wet weather= during rainfall event).  Four-year summary is currently in the works, presentation to be completed in 2018.	Complete final report of four-year project, present report to stakeholders.	Dec, 2019.
Lambert Creek	<b>Lambert Creek monitoring program</b>	Monitor basic phosphorus, nitrogen, Chlorophyll A, chloride, and sediment levels at 6 sites along with pH, conductivity and DO at the 3 flumes. Maintain automated flow meter and precipitation gauge at Whitaker.	Document and evaluate the general health of the creek.	Ongoing.
Multiple	<b>Lake Level Program</b>	Gilfillan, Birch, Gem & Goose Lake gauges are calibrated in the spring and read up to 11 times during the summer.	Monitor lake levels on 4 targeted lakes in the watershed to track short & long term trends.	Ongoing,
	<b>Stormwater Monitoring</b>	Automated and manual sampling, including flow measurements on targeted streams into Birch Lake and Wilkinson Lake.	Document watershed nutrient loading into Birch and Wilkinson to assist selection of implementation strategies.	Ongoing.



## 2019 Work Plan

### MONITORING PROGRAM

SUB-WATERSHED

	Project Name	Description	Goals	Time line
Multiple	<b>Lake Monitoring Program</b>	Monitor chemistry of 12 of VLAWMO's lakes through nutrient and sediment sampling, along with pH, conductivity, and dissolved oxygen (DO) measurements. Continue integration of automated sampling.	Keep water quality record of watershed's lakes. Utilize water quality data for future projects and CIPs.	March - September
Birch	<b>Chloride Measurements</b>	Sample lakes and Lambert Creek. Partner with Birch Lake Improvement District (BLID) for summer monitoring of Birch Lake.	Check monthly measurement.	Jan - September

### ADMINISTRATION & REGULATION

CORE ACTIVITY #

	Project Name	Description	Goals	Time line
3.1	<b>Budget &amp; Stormwater Utility</b>	Storm sewer rates are based on the adopted budget and certified to the counties for collection.	Provide necessary financing for watershed.	April - October
	<b>Plan Amendment</b>		Complete plan amendment and approval by VLAWMO Board.	April-June
3.5	<b>Wetland Conservation Act (WCA)</b>	Complete boundary and type & other determinations in consultation with the TEP. Respond to WCA questions.	Administer WCA Rules with VLAWMO as LGU.	Ongoing

## 2019 Work Plan



### SUSTAINABLE LAKE MANAGEMENT PLAN (SLMP) - 2019 WORK PLAN

Project Name	Description	Goals	Time line
Pleasant Lake SLMP	A report covering the sub-watershed of Deep Lake on its health and trends, with lake management plans to sustain its health.	» Collect background data, share with lake stakeholders to develop a prioritized list of management strategies.	Jan, 2019



Pickerel Weed in Gem Lake



**LOGISTICS:**

Financial statement and budget

**IN THIS SECTION**

- » Finance and Budget
- » WCA Summary
- » Water Standards
- » Local Plan Adoption
- » Biennial Solicitations

**Wetland Conservation Act (WCA)**

VLAWMO administers the Wetland Conservation Act with review. There were 33 landowner contacts in which wetland related technical assistance was provided during 2018. There were 5 potential WCA violation sites investigated, all 5 were resolved.

**WCA SUMMARY**

Type of Application	Approved	Denied	Withdrawn
<b>Boundary and Type</b>	9	0	0
<b>No-Loss</b>	2	0	0
<b>Exemption</b>	3	0	0
<b>Sequencing</b>	0	0	0
<b>Replacement Plan</b>	0	0	0

**Local Plan Adoption**

Adoption of Local Plans: Gem Lake, Lino Lakes, North Oaks, White Bear Lake, White Bear Township, Vadnais Heights are all complete and have been adopted.

Member Community	Last Local Water Plan Update Year
Gem Lake	2018
Lino Lakes	2018
North Oaks	2009
Vadnais Heights	2018
White Bear Lake	2007
White Bear Township	2010

**Partnerships**

One of VLAWMO's greatest successes is working together with partners to use resources wisely and maximize effectiveness. Workshops, meetings, and webinars allow VLAWMO to be on the cutting edge of the water resources in the Northeast Metro.

- » Metro Watershed Partners provides monthly meetings to keep updated with other watersheds, receive feedback and strategy assistance, as well as hear from guest speakers to enhance education and outreach efforts.
- » Ramsey County GIS User Group focuses on sharing, developing, and promoting GIS data and technology. As a member agency, VLAWMO contributes and receives data, and has a voting hand in the content the Group funds and develops. Regular RCGISUG membership fees go to producing aerial images of Ramsey County and other GIS data.
- » Ramsey Conservation District holds informative forums on topics of general concern (AIS, State of the Waters, groundwater). They also provide technical assistance for lake studies and BMP design. Lastly, they provide financial partnership in grant funding of projects.
- » Many other organizations and groups (p. 35) help carry out VLAWMO's mission through events, outreach strategies, and project planning.

**Biennial Solicitation for Proposals**

Proposals for professional auditing services and legal services will be solicited for in 2020.

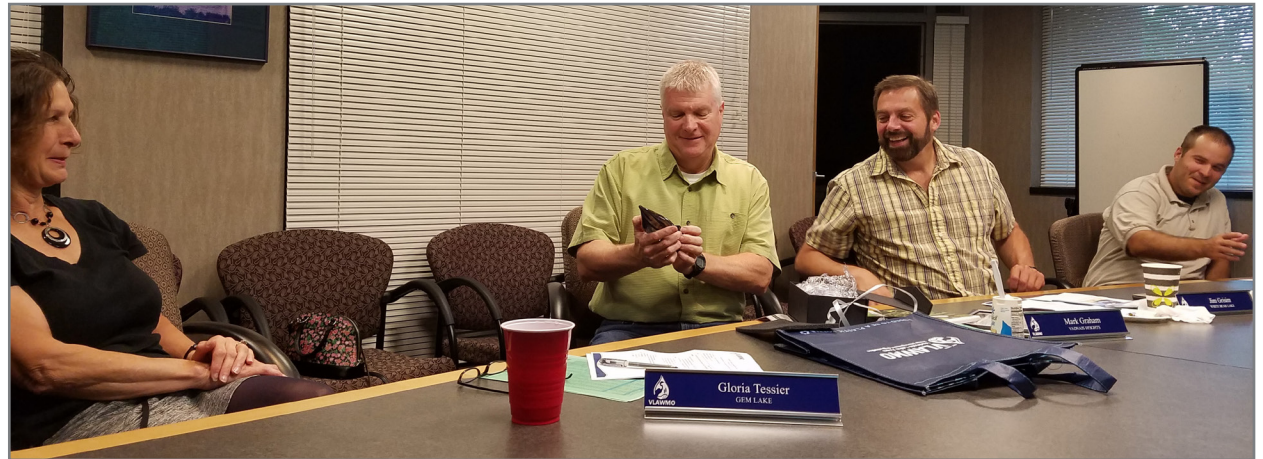
## 2018 Partners

- » Metro Watershed Partners
- » Ramsey County GIS User Group
- » Ramsey Conservation District
- » Vadnais Heights Economic Development Corp.
- » Birch Lake Improvement District
- » North Oaks Home Owners Association
- » Tamarack Nature Center
- » Minnesota Pollution Control Agency
- » MN Erosion Control Association
- » Conservation Minnesota
- » H<sub>2</sub>O for Life
- » SCC Local Cable TV
- » White Bear Lake School District
- » White Bear Preserve Town homes
- » Cities in VLAWMO



Volunteer storm drain clean-up events.

## Special Thanks



Each year our fabulous partners provide leadership, guidance, resources, and support for our goals. 2018 saw the completion of some efforts, as well as the closing of some eras. VLAWMO would like to thank:

- » Mark Graham: Mark provided over 11 years of service to VLAWMO on the Technical Commission (pictured above).
- » Della Young: Della provided guidance and support in the conception of the Whitaker Treatment Wetlands, which is now completely constructed and operating.
- » Ramsey Soil and Water Conservation Division: RSWCD provided expertise in plant identification, project planning, and bathymetry data.
- » Jeff Melcoch: Jeff recorded multiple presentations for VLAWMO, complete with editing.
- » Rika Pennington and Connie Winterhalter: As residents and members of the Watershed Action Volunteers (WAV), Rika and Connie have been leaders in storm drain clean-up and adopt-a-drain efforts in 2018.
- » Gina Schmidt and Suzanne Ryan: Gina and Suzanne assisted with our raingarden maintenance presentation.



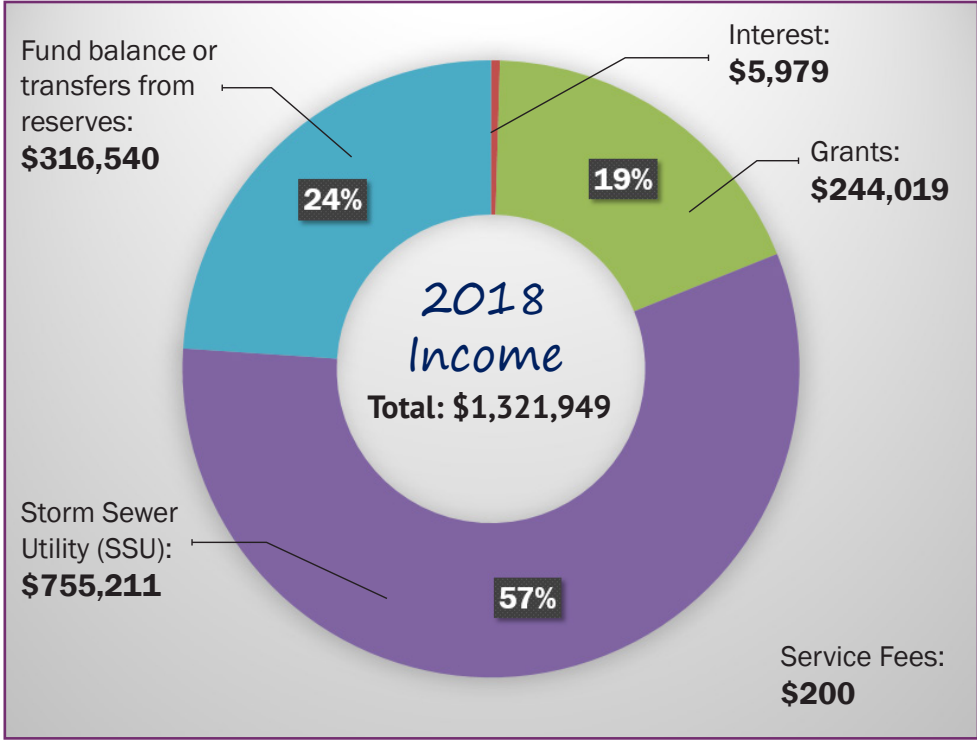
Andrea at RSWCD recording shoreline vegetation at Deep Lake.



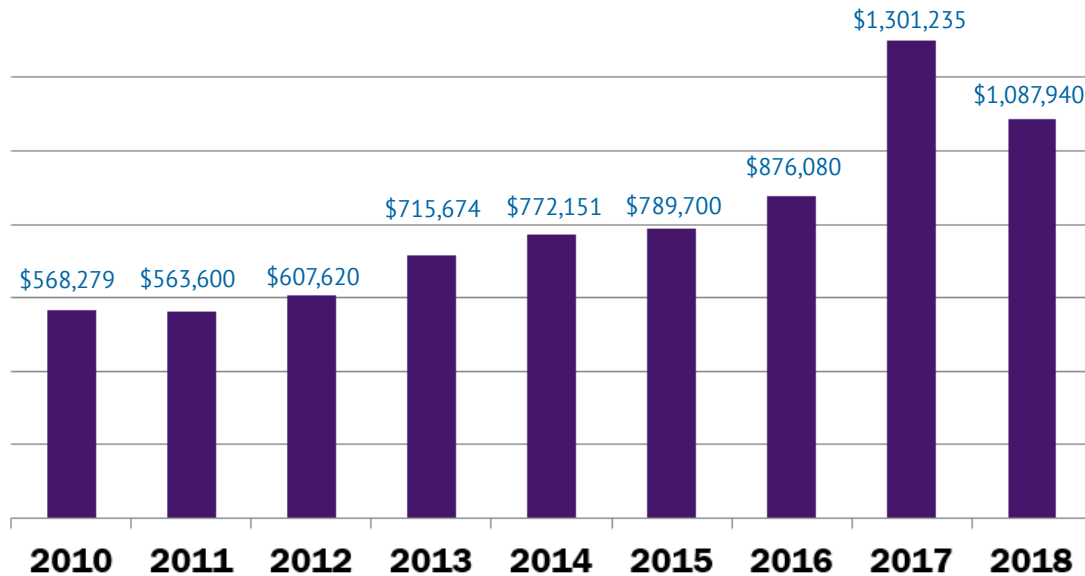
## Finance and Budget

The 2018 budget was established by the Board of Directors in June with designated project and program funds carried over in December 2017. The Finance and Policy Committee with members from the Technical Commission and the Board reviewed and made recommendations on the 2018 budget to the Board in June 2017. The Board added additional funds to address two priorities: 1) The understanding and maintenance of Lambert Creek required historical reviews, surveying and modeling of the system as well as consultation with the VLAWMO attorney. 2) A focus on Goose Lake and its subwatershed. Funds to complete feasibility studies, targeted sampling, and grant applications were needed.

<b>Approved budget for 2018:</b> <b>\$1,087,940</b>
<b>Actual income from 2018:</b> <b>\$1,321,949</b>
<b>Money spent in 2018:</b> <b>\$780,275</b>

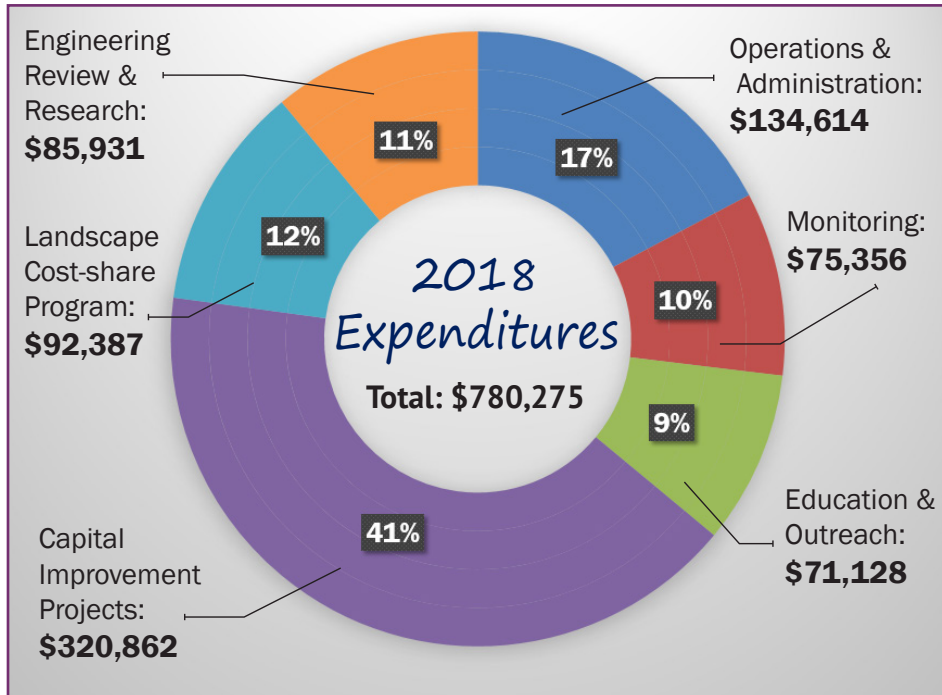


## Annual Budget with Fund Balance



### INCOME

The mainstay of support for VLAWMO work comes from its Storm Sewer Utility (SSU) fees. These fees are based on an estimate of impervious surface for each parcel of land that is in line with its land use classification. \$ 752,436.12 in SSU was certified to Ramsey and Anoka Counties for 11,502 parcels. The average single family homeowner paid \$ \$42.36 per year to support all of the projects and programs conducted by the watershed. That's about \$3.53 per month. The 15.5% increase in storm sewer utility fees allowed VLAWMO's budget to sustainably support the programs and projects of the Water Plan. Ongoing projects resulted in a significant amount of funding being carried over from 2017 to 2018 and again into 2019.



## CAPITAL IMPROVEMENT PROJECTS

Installation of the Whitaker Treatment Wetlands was completed in 2018 and monitoring began (see page 20). The focus of the project is to research new ways to filter bacteria, excess nutrients, and pathogens out of stormwater runoff. A linked study on pathogens will be done by the University of Minnesota.

Design of the 4th and Otter hot spot remediation project for Birch Lake was nearing completion with the close of 2018. The partners include White Bear Lake, Ramsey County, the Birch Lake Improvement District and VLAWMO along with Barr Engineering. Together all are working hard to complete the preparations for a 2019 installation. The sand-iron filter should be influential in addressing neighborhood runoff that has been loading nutrients into Birch Lake.

Goose Lake work received a substantial boost from the Watershed Based Funding (WBF). These funds from the State's pilot grant will be harnessed to complete modeling and a feasibility study of the Goose Lake subwatershed, along with installation of a best management practice in 2019. VLAWMO will continue to pursue grant funding for an in-lake treatment of Goose Lake.

## EXPENSES

Total cash expenses for 2018 were less than budgeted at \$780,277. Funding for Sucker channel restoration and work on Lambert Creek and Goose Lake will be carried over into 2019. The Whitaker treatment cells project was installed in 2018 with the help of grant funding from the Legislative Citizens Commission for Minnesota Resources. Studies on Goose, Wilkinson and Deep Lakes were also completed setting the stage for the next phase of projects. Further financial detail is available in the annual audit attached as an Appendix to this Report.

## GRANTS AND PARTNERSHIPS

Grant funds received in 2018 totaled \$244,536. The LCCMR supported the Whitaker Treatment wetlands installation (\$166,516). Clean Water Legacy funding supported the Birch Lake hot-spot remediation project targeting nutrient loading to one of the cleanest lakes in the watershed (\$48,500) and completing a robust feasibility study on the Goose Lake subwatershed (\$29,520). Much of the Legacy funds have been carried over as the projects continue into 2019. Wetland Conservation Act reimbursement funds totaled \$1380.

A full survey of Lambert Creek formed the basis of hydraulic and hydrologic modeling of the creek system and its branch ditches. VLAWMO partnered with Vadnais Heights to complete the study and prioritize maintenance needs.



VLAWMO staff at the Whitaker Treatment Wetlands



## WHO WE ARE:

The people who make VLAWMO

### IN THIS SECTION

- » Staff
- » Consultants
- » Partnerships
- » Board of Directors
- » Technical Commission (TEC)

**The VLAWMO office is located at:**

800 E County Road E  
Vadnais Heights, MN 55127

## Who we are:

VLAWMO Employs five full-time staff for everyday operations. Consultants are required for a variety of purposes including auditing, bookkeeping, engineering, and technical assistance. The VLAWMO Board of Directors consists of one elected official from each of the six cities within the watershed. Each board member is appointed for a three year term. The VLAWMO Technical Commission consists of one citizen representative from each of the six cities. The Technical Commission meets to review and consider watershed business as well as make recommendations to the Board for wider scope decisions.

### BOARD OF DIRECTORS (BOD)

**Primary Directors**

**Dan Jones, Chair**

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White Bear Lake

Rick Bosak  
Gem Lake

Gregg Nelson  
North Oaks

Bob Kermes  
White Bear Township

Craig Johnson  
Vadnais Heights

Dave Roeser  
Lino Lakes

### TECHNICAL COMMISSION (TEC)

**Commissioners can be reached by contacting VLAWMO**

**Primary**  
**Mark Graham, Chair**  
Vadnais Heights

**Gloria Tessier**  
Gem Lake

**Jim Grisim**  
White Bear Lake

**Bob Larson, Treasurer**  
North Oaks

**Paul Duxbury**  
White Bear Township

**Marty Asleson**  
Lino Lakes

**Alternate**  
Kevin Watson  
Vadnais Heights

Gretchen Artig-Swomley  
Gem Lake

Connie Taillon  
White Bear Lake

Diane Gorder  
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Tom Riedesel  
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Lino Lakes

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