



Shingle Creek  
Watershed Management Commission

2014 Annual Activity Report



## Table of Contents

	page
Annual Activity Report	1
The Commission	1
Consultants	1
Meetings	1
Watershed Management Plan	1
Local Plans	2
Status of 2014 Objectives	2
Water Monitoring	4
Stream Monitoring	5
Lake Monitoring	7
Biological Monitoring	7
2015 Work Plan	8
Fund Balances	9

### Appendices

- 1 Commissioners, TAC and Staff
- 2 Education
- 3 River Watch
- 4 Project Reviews
- 5 Monitoring sites
- 6 Financials

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Shingle Creek Watershed Management Commission  
by JASS

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### **Annual Activity Report.**

This annual report has been prepared by the Shingle Creek Watershed Management Commission in accordance with the annual reporting requirements of Minnesota Rules Chapter 8410.0150, Subps. 2 and 3. It summarizes the activities undertaken during calendar year 2014.

### **The Commission.**

The Shingle Creek Watershed Management Commission is governed by a nine-member board comprised of representatives from each member city who are appointed for terms of three years. The nine member cities are Brooklyn Center, Brooklyn Park, Crystal, Maple Grove, Minneapolis, New Hope, Osseo, Plymouth and Robbinsdale. The nine Commissioners who served in 2014 are shown in [Appendix 1](#).

### **Consultants.**

The Commission has no employees. The names of the consultants currently retained by the Commission are also listed in [Appendix 1](#).

### **Meetings.**

The Commission meets monthly at 12:45 p.m. on the second Thursday at the Clubhouse at Edinburgh, USA, 8700 Edinbrook Crossing, Brooklyn Park. The meetings are open to the public. Meeting notices, agendas and approved minutes are posted on the Commission's website, [www.shinglecreek.org](http://www.shinglecreek.org).

### **Watershed Management Plan.**

In 2013 the Shingle Creek and West Mississippi Watershed Management Commissions adopted their joint 2013-2022 Third Generation Watershed Management Plan (Plan). The Plan was approved by the Board of Water and Soil Resources on March 27, 2013.

The Plan is the culmination of an almost two-year planning effort by the two Commissions, the cities that are members of these Joint Powers Organizations, state agencies, and the public. The Plan sets forth goals and strategies that will guide water resources management activities in the two watersheds over the coming decade.

In 2013 the Commissions adopted a minor amendment to the Plan which revised the Commissions' Rules and Standards to adopt the new National Oceanic and Atmospheric

Administration (NOAA) Atlas 14 precipitation frequency standards, replacing the outdated Weather Bureau Technical Paper 40 (TP-40) standards.

On May 8, 2014 the Commissions adopted a second minor amendment to the Plan. It revises the estimated cost and provides more description and detail about one proposed project, the Plymouth Bass Lake Pond project, on the Commissions' Capital Improvement Program (CIP).

On December 11, 2014 the Commissions adopted a major amendment to the Plan. The amendment added four projects, all in the Shingle Creek watershed, to the Commissions' CIP (the 45th Avenue Pond Retrofit, Kilmer Pond Retrofit, Lions Park Pond Retrofit, and Priority BMP Retrofits). The Commission's proposed cost-share portion of these four projects is \$338,750.

## LOCAL PLANS

With approval of the Commissions' Third Generation Plan, member cities have two years in which to update their Local Stormwater Management Plans (LWMP). These updates will be expected to include:

- Updated land use, hydrologic, and hydraulic data, and existing or potential water resource-related problems that may have changed since the last local plan.
- An explanation of how the member city will help to implement the actions set forth in the Commissions' Plan.
- An explanation of how the member city will implement project review requirements of the revised Rules and Standards.
- An updated Implementation Plan identifying specific structural, nonstructural, and programmatic solutions to problems and issues identified in the LWMP.
- An implementation program including a description of adoption or amendment of official controls and local policies necessary to implement the Rules and Standards; programs; policies; a capital improvement plan; and estimates of cost and funding mechanisms.

## 2014 OBJECTIVES

The Shingle Creek Watershed Management Commission established its 2014 Work Plan at its February 13, 2014 meeting. The following is a status report on those action items.

### 1. Continue to implement TMDLs.

Undertake a 5-year performance review for the chloride TMDL and the Crystal Lake TMDL. *The Twin and Ryan Lake TMDL and the Chloride TMDL Five Year Reviews were completed and adopted by the Commission. The Crystal Lake TMDL Five Year Review is underway, delayed by the extended review process for Twin and Ryan Lake.*

Although no funds are included in the 2014 operating budget, consider proceeding with a subwatershed BMP assessment funded from the construction/grant match account. *The Commission authorized expending \$20,000 from the Construction Match Account to develop projects for the Twin and Ryan Lakes Accelerated Implementation Demonstration Grant application. The 2015 budget includes \$20,000 for a subwatershed assessment project.*

Host a chloride TMDL operator's meeting to review the results of the chloride TMDL performance review. *Not completed. Continued discussion with the Technical Advisory Committee (TAC) on the best way to disseminate this information to operators.*

Continue to pursue grant funding for projects and programs, including the Biochar and Iron-Enhanced Pond Filter Bench research project and the Twin Lake Target Watershed Demonstration Program. *Submitted an application for and received Section 319 funding for the Public Art Reaeration Structures project. Submitted applications for the Biochar project and the Twin and Ryan Lake demonstration project, neither of which was funded.*

Explore options to fund projects that normally do not go through the levy process. *The Commission created a Cost Share Program for small BMPs, and adopted funding guidelines recommended by the TAC. The first \$50,000 levy was certified in 2014 for collection and award of grants in 2015.*

Keep abreast of Upper Mississippi River bacterial TMDL implementation planning. *Staff reviewed the draft Upper Mississippi River TMDL and found that the Commission's previously-submitted comments were adequately addressed. The TMDL was approved in November 2014, and the Implementation Plan is currently being developed.*

Stay abreast of other regional and state TMDLs. *Staff continues to monitor regional and state TMDLs and will report as necessary.*

## **2. Partner with other organizations to increase reach and cost effectiveness.**

Participate in the West Metro Water Alliance (WMWA) joint education and outreach group. *The Commission continues to participate in WMWA, with the primary activity being the 4th Grade education program called Watershed PREP. The Commission also serves as WMWA's fiscal agent. (Appendix 2)*

Continue to partner with the USGS to operate the Queen Avenue monitoring site. *The partnership with the USGS continued in 2014. Results will be reviewed in the 2014 Annual Water Quality Report in April 2015.*

Partner with the Minneapolis Park Board to consider options for Shingle Creek in Webber Park. *Commission and MPRB staff continues to keep in touch. The delay in completion of the Webber Park pool has delayed any consideration of improvements to Shingle Creek.*

Partner with the USGS, DNR, and other interested parties to stay abreast of groundwater issues. *Staff continues to monitor groundwater issues with the USGS, DNR, and others.*

## **3. Continue ongoing administration and programming.**

Commission stream monitoring on Shingle Creek and Bass Creek and lake water quality monitoring and aquatic vegetation surveys on Bass and Schmidt Lakes. *The results of the annual stream and lake monitoring will be included in the 2014 Annual Water Quality Report, which was presented to the Commission in April 2015.*

Volunteer stream monitoring through RiverWatch (Hennepin County). *Seven sites were monitored in the 2014 RiverWatch Program. The results of the volunteer macroinvertebrate stream monitoring program will also be included in the 2014 Annual Water Quality Report, which will be presented to the Commission in April 2015. (Appendix 3)*

Volunteer lake monitoring through Metropolitan Council's CAMP on Upper, Middle, and Lower Twin Lakes, Pomerleau Lake, Crystal Lake, Meadow Lake, and Lake Success. *All seven lakes were monitored by volunteers. Three volunteers shared duties for Upper Twin. (Appendix 5)*

Complete reviews of development and redevelopment projects as necessary. *The Commission reviewed 17 development and redevelopment projects, and one EAW (for reconstruction of Vicksburg Lane in Plymouth). In addition, the Commission's Engineer kept in contact with MnDOT through the year as plans developed for the I-494 third lane project. The Commission currently*

*serves as the Wetland Conservation Act (WCA) Local Government Unit (LGU) for the cities of Brooklyn Center, Brooklyn Park, Osseo and Robbinsdale. Five wetland delineations were submitted. Two delineation reviews are in process; one No-Loss Determinations was issued; and two boundary determination decisions were issued. (Appendix 4)*

Prepare an annual water quality report. *The 2013 Annual Water Quality Report was reviewed and approved at the April 2014 meeting.*

Review feasibility studies for 2014 proposed capital projects, hold public hearings, and order projects. *The Commission approved a Minor Plan Amendment to revise one project on the CIP – Plymouth Bass Lake Pond. A public hearing was held on that project as well as the proposed 2014 Shingle Creek Retrofit Project at the September 2014 meeting, and the projects were ordered and a \$260,000 levy request was certified to Hennepin County for collection in 2015.*

Prepare a 2015 annual budget. *The 2015 budget was approved at the June 2014 meeting. The \$399,820 operating budget included a 2.5% increase in member assessments to \$337,970.*

Continue education and outreach programming, including the Education and Public Outreach Committee (EPOC), West Metro Water Alliance (WMWA), WaterShed Partners, and BlueThumb, with a special focus on distributing educational materials regarding the use of native vegetation in lake and stream buffers. *The Commission is participating in the development of the WMWA special project “5,000 by 2025,” a project to encourage the replacement of 5,000 acres of impervious surface or turf grass with native vegetation by 2025.*

*With Metro Blooms, sponsored raingarden workshops in Brooklyn Center and Champlin. Continually updated the Commission’s website.*

*Prepared news articles and other media releases in accordance with MN Rules 8410.0100 §4. Information releases were provided for education and public outreach activities as well as Management Plan Amendments/CIPs. Information was also posted to Commission and other appropriate websites.*

Invite three guest speakers to make lunchtime water resources presentations. *Two guest speakers appeared before the Commission. Randy Anhorn, Hennepin County Environment and Energy, appeared to introduce himself and to ask the Commissioners to create a list of services that HCEE can provide to watershed organizations. James Stark, USGS presented on “Water Sustainability in Minnesota: Decisions for our Grandchildren,” which focused on lake levels and groundwater sustainability.*

Tour project sites in the watershed. *A bicycle tour was held on May 31, 2014, but only had two participants.*

## **WATER MONITORING**

Minnesota Administrative Rule 8410.0100 Subp.5 requires watershed management organizations to conduct monitoring programs “capable of producing accurate data to the extent necessary to determine whether the water quality and quantity goals of the organization are being achieved.” Together the Shingle Creek and West Mississippi Watershed Management Commissions began monitoring water quality and stream flow in 1990. The Commissions’ technical staff obtains the stream

and some lake water quality data while volunteers collect most lake water quality and stream and wetland macroinvertebrate and vegetation data.

Water quality in a given year is influenced by the amount of precipitation and the type of precipitation events. Overall, 2014 was an above average precipitation year. Rainfall in April and June were well above average, while July, August, September and October were dry and below average. The timing of events and rainfall intensity also play a part in determining water quality. This annual variability is why ongoing, long-term monitoring is necessary to determine actual trends in the data and what may be considered natural variability. The above average precipitation and rainfall in 2014 was driven by a few large storm events in April and June. Rainfall was at or below average for all other months in 2014.

### **Stream Monitoring**

Water quality in Shingle Creek is typical of an urban stream in the Twin Cities metropolitan area and is dominated by watershed runoff. Continued monitoring of stream water quality will allow the Commission to evaluate the effectiveness of BMPs and provide a baseline for reasonable water quality goals.

In Shingle Creek, 12 sites were monitored from 1992-1995. Monitoring was discontinued from 1992 – 1995 and has since resumed on an annual basis at two long-term monitoring sites (SC-0 and SC-3). In 2013, a third stream monitoring site was added near the outlet of Bass Creek (BCP). Station SC-0, also referred to as the outlet site or Webber Park monitoring site, is located upstream of the 45th Avenue crossing in Minneapolis. The SC-3 monitoring station is located on the downstream end of where Shingle Creek crosses Brooklyn Boulevard in Brooklyn Park. The BCP monitoring site is located near the outlet of Bass Creek in Bass Creek Park in Brooklyn Park. SC-0 collects drainage from about 41 square miles, or approximately 93% of the watershed. The drainage area for SC-3 covers about 21 square miles which is approximately 47% of the Shingle Creek watershed. The BCP drainage area covers 8 square miles, or about 18% of the Shingle Creek watershed. (*Appendix 5*)

There is also one long-term USGS monitoring station on Shingle Creek at Queen Avenue near the border of Minneapolis and Brooklyn Center. Located upstream of SC-0, this site drains approximately 31 square miles (70% of the watershed). The Commission and USGS collected continuous flow and storm event samples at this location from 1996 through 1999. The USGS has monitored continuous flow at this site since 2001, continuous conductivity since 2004. Real-time data is available through the USGS website, <http://waterdata.usgs.gov/mn/nwis/uv?05288705>.

For 2014, results at each flow monitoring station indicated runoff depths are quite variable and driven by the annual precipitation for that year, as well as precipitation in the preceding 1-2 years. In general, runoff depth decreases from upstream to downstream (BCP to SC-0) throughout the Shingle Creek watershed. Bass Creek (BCP) has exhibited the highest runoff depth of all the Shingle Creek stations since monitoring began in 2013. Bass Creek and the upper portions of the watershed tend to have more areas with tighter soils than the lower watershed.

Routine water quality sampling in Bass and Shingle Creeks consisted of bi-weekly grab samples at BCP, SC-3, and SC-0 from early April through October. In addition to routine water quality samples, at least four storm composite samples were collected at each monitoring station. Routine and storm samples were analyzed for TSS, TP, ORP, TKN, nitrate, chloride. Field parameters including

DO, temperature, pH, and conductivity were also recorded during each routine sample site visit. The 2014 Annual Water Quality Report provides summaries of the four major water quality parameters of concern for Bass Creek and Shingle Creek: TSS, TP, chloride and DO. The selected parameters either have completed TMDL studies (chloride and DO), or may be subject to future TMDL studies based on newly adopted or proposed state water quality standards (TSS and TP).

Bass Creek and Shingle Creek are considered class 2B waters and are subject to certain pollutant water quality standards that are intended to protect aquatic life and recreation. Protection of aquatic life is defined as the maintenance of healthy, diverse, and successfully reproducing populations of aquatic organisms, including invertebrates as well as fish.

*E. coli*, has not been monitored in the Shingle Creek watershed since 2012. Historic *E. coli* monitoring in Shingle Creek indicate bacteria levels are high and consistently exceed state water quality standards. In November 2014 the MPCA completed the Upper Mississippi River Bacteria TMDL Study and Protection Plan which outlines bacteria allocations and reductions for Shingle Creek and other tributaries to the Upper Mississippi River. The Shingle Creek watershed is assigned a 69 percent reduction in *E. coli* loading to the Mississippi River. The MPCA will allocate wasteload reductions to each of the MS4s in the watershed.

Results of the 2014 flow and water monitoring for Shingle and Bass Creek support the following conclusions and recommendations:

- Flow and precipitation over the last 4-5 years in Shingle Creek appear to be trending toward large, intense early season storm and runoff events (April-June), followed by long periods of dry, low-flow conditions later in the year (July-October). The streambank stabilization actions in the Biotic and DO TMDL and increasing infiltration in proximity to the stream to augment baseflow will help mitigate the impacts of these changes.
- Sediment (TSS) is consistently low in Bass Creek during all flow conditions, likely due to settling in the Cherokee Wetland upstream of the Bass Creek monitoring station. For Shingle Creek, TSS is low and not a concern at SC-3 and SC-0 during base-flow conditions and non-storm events. Elevated levels of TSS at SC-3 and SC-0 are common following rainfall events greater than 0.5 inches during high and very high flow conditions. Increased infiltration and treatment in the watershed will help reduce inflow of sediment during storm events.
- Overall, average annual TSS appears to have decreased in Shingle Creek since 2001, however concentrations still occasionally exceed state standards. It is recommended that TSS sampling in Shingle Creek continue in order to verify these trends.
- Phosphorus (TP) is high in Bass Creek and consistently above the 100 µg/L proposed standard. Phosphorus is relatively low at SC-3 and SC-0 as summer average concentrations are well below the proposed standard. The high phosphorus levels in Bass Creek are likely the result of phosphorus release from sediments in the Cherokee wetland upstream of the Bass Creek monitoring site. Paired sampling (upstream and downstream) of the Cherokee Wetland should be considered in 2016 to determine if it is a source of phosphorus to Bass Creek. If it is, BMPs such as aerators and/or iron enhanced sand filters may need to be considered.
- A recent review of the Shingle Creek chloride TMDL found that most of the road authorities in the watershed are now pre-wetting road salt as it is applied, which can reduce application

rates by 25% or more. However, historic chloride data recorded at all three Shingle Creek monitoring stations do not show any significant trends in stream chloride concentrations. Due to the annual and seasonal nature of chloride, it will likely take several years of monitoring before in-stream trends are observed.

- Three early morning longitudinal DO surveys were performed along Bass Creek and Shingle Creek in 2014. These surveys found DO to be a concern throughout much of the creek, particularly downstream of flow-through wetland systems. DO sags (decreases) were noted in the Cherokee Wetland, Northland Wetland, Palmer Lake, and the large wetland system downstream of Palmer Lake. The Section 319 grant to install artistic reaeration structures will address two of these locations. Additionally, channel alteration through these wetland systems and/or bypass may need to be considered in order to improve DO to meet water quality standards.

### **Lake Monitoring**

The lakes in the Shingle Creek watershed are typical of urban lakes. Thirteen of the 16 lakes are listed as Impaired Waters due to excess nutrients, and TMDLs and Implementation Plans have been approved for all 13 of the lakes. The lake TMDLs and the Shingle and Bass Creeks chloride, biotic, and dissolved oxygen TMDLs set forth action plans for improving water quality and biotic integrity in the impaired lakes and streams in the watershed. Three of the lakes are proposed for delisting on the pending 303(d) list of Impaired Waters.

The Shingle Creek Watershed Management Commission has participated in the Metropolitan Council's Citizen Assisted Lake Monitoring Program (CAMP) since 1996. This program is an NPDES Education and Public Outreach BMP. Volunteers in the program monitor the lakes bi-weekly from mid-April to mid-October, approximately 14 sampling events. They measure surface water temperature, Secchi depth, and collect surface water samples that are analyzed by the Met Council for TP, TKN, and chlorophyll-a. The volunteers also judge the appearance of the lake, its odor, and its suitability for recreation. The *2014 Annual Water Quality Report* includes provisional data from the Metropolitan Council for the seven lakes monitored by volunteers in 2014.

The report also details the results of intensive water quality sampling conducted in 2014 on Schmidt and Bass Lakes in anticipation of the five year review of TMDL progress (including Pomerleau Lake) which will be completed in 2015-2016. A schedule showing the history of lake monitoring is included in *Appendix 5*.

### **Biological Monitoring**

The Commission obtains biological data by sponsoring volunteer monitoring through Hennepin County Dept. of Environment and Energy. In 2014 high school students and their teachers monitored macroinvertebrates in streams at two sites through the River Watch program, and adult volunteers led by trained leaders monitored macroinvertebrates and vegetation in three wetlands through the Wetland Health Evaluation Program (WHEP). The volunteers collect physical, chemical, and biological data to help determine the health of streams and wetlands in the watershed.

The results are qualitative and should be interpreted as one indicator of a stream's health, not

scientifically precise data. Another goal is to promote an understanding of the watershed and how water quality is related to land use. The water quality found in one short stretch of stream does not just reflect what is happening in one area, it reflects the water quality of all upstream areas draining into it.

Detailed results of both RiverWatch and WHEP are included in the *2014 Annual Water Quality Report*.

### **2015 WORK PLAN**

The Shingle Creek Watershed Management Commission established its 2015 Work Plan at its January 8, 2015 meeting. The Commissioners identified the following actions.

- **Continue to implement TMDLs.**
  - > Undertake a 5-year performance review for the Bass, Pomerleau, and Schmidt Lake Nutrient TMDL.
  - > Partner with one or more member cities to complete a subwatershed BMP assessment in the Twin Lake drainage area, possibly in the Crystal Shopping Center area.
  - > Continue to pursue grant funding for projects and programs, including chloride TMDL research projects and implementation projects in the Twin and Ryan Lakes drainage area.
  - > Keep abreast of Upper Mississippi River bacterial TMDL implementation planning.
  - > Stay abreast of other regional and state TMDLs.
- **Partner with other organizations to increase reach and cost effectiveness.**
  - > Participate in the West Metro Water Alliance joint education and outreach group.
  - > Continue to partner with the USGS to operate the Queen Avenue monitoring site.
  - > Partner with the Minneapolis Park Board to consider options for Shingle Creek in Webber Park.
  - > Partner with the USGS, DNR, and other interested parties to stay abreast of groundwater issues.
- **Continue ongoing administration and programming.**
  - > Conduct Commission stream monitoring on Shingle Creek and Bass Creek and lake water quality monitoring and aquatic vegetation surveys on Cedar Island, Pike, and Eagle Lakes.
  - > Sponsor volunteer stream monitoring through RiverWatch and wetland monitoring through WHEP (Hennepin County).
  - > Sponsor volunteer lake monitoring through CAMP (Met Council) on Bass, Schmidt, and Magda Lakes.
  - > Complete reviews of development and redevelopment projects as necessary.

- > Prepare an annual water quality report.
- > Solicit cost-share projects from member cities funded from the Cost Share Fund and the annual \$50,000 levy.
- > Review feasibility studies for 2015 proposed capital projects, hold public hearings, order projects and certify levies.
- > Prepare a 2016 annual budget.
- > Solicit interest proposals for technical, administrative, and legal services.
- > Invite three guest speakers to make lunchtime water resources presentations.
- > Tour project sites in the watershed.

**Fund Balances.**

The Commission’s Joint Powers Agreement provides that each member city contributes toward the annual operating budget based 50% on the area located within the watershed boundary and 50% on the tax capacity of all property within the watershed. The 2014 cost allocations to the members are shown as part of the 2014 Operating Budget found in *Appendix 6*.

Of the \$382,450 operating budget approved by the Commission for 2014, revenue consisting of \$52,750 in application fees and program reimbursement and \$100 in interest income resulted in assessments to members totaling \$329,600. No income was projected from grant funding and partner contributions.

The Shingle Creek Watershed Management Commission maintains a checking account at US Bank for current expenses and rolls uncommitted monies to its account in the 4M Fund, the Minnesota Municipal Money Market Fund. Amounts paid by the Commission per the 2014 Audit (*Appendix 6*) are as follows:

General Engineering	140,826
General Administration	106,430
Education	58,647
Programs	71,263
Management Plans	3,255
Projects	4,147
Capital Projects	<u>27,301</u>
Total	\$411,869

General engineering work includes review of local plans, review of development/redevelopment projects, tracking grant opportunities, attendance at meetings and other technical services. General administration includes support to technical staff, attendance at meetings, insurance premiums, bookkeeping and annual audit, legal counsel, and other non-engineering services.



# Appendices

