



# THE LITTLE

MOWA  
onsite wastewater association

# DIGGER

April/May 2018 - Vol. 33, Issue 2

A bi-monthly publication

## Small Town, Big Sewage Issue

### Afton installs precast concrete large subsurface sewage treatment system



Photo courtesy of Wieser Concrete Products

By Claude Goguen, P.E., LEED AP

Afton, Minn., is a picturesque little town located on the banks of the St. Croix River. Its Old Village area is a popular destination for tourists who enjoy the scenic beauty of the river valley bluffs, but the migration of visitors during tourism season increases demand on its infrastructure systems, including water and wastewater.

Afton did not have a centralized sewer system, so the town relied on individual septic systems to treat wastewater. Many septic systems were failing, releasing a sewage odor into the air. In addition, the flood levee in Afton contained many of the septic systems, so when the river would rise and flow over this levee, it would carry septic system waste into the streets. This spurred city officials to implement improvements that included an improved flood levee, a reconstruction of the St. Croix Trail and a new decentralized community sewer system.

### Project overview

The new decentralized community sewer system for Afton, a large subsurface sewage treatment system (LSTS), was designed by WENCK, a consulting engineering firm, to treat 50,550 gallons per day of wastewater. This made it the largest septic system in Minnesota. The Minnesota Pollution Control Agency (MPCA) imposed strict requirements on discharge limits prior to soil dispersal, which included a limit of 10 milligrams per liter total nitrogen. To achieve this level of treatment, the LSTS was designed to incorporate complex treatment components and processes. Wieser Concrete Products in Maiden Rock, Wis., supplied the precast concrete tanks used on this very effective LSTS.

The use of a decentralized, soil-based dispersal system is often

overlooked when identifying solutions for wastewater treatment. Engineers will often default to a larger treatment facility, or in more rural areas, build a stabilization pond system. While outdated septic systems can cause problems, current systems are one of the best, sustainable and most cost-effective solutions for wastewater treatment when designed and sited correctly.

**Small Town, Big Issue,**  
Continued on Page 7

### In this Little Digger

Small Town, Big Sewage Issue.....	Pg. 1
Executive Director's Column .....	Pg. 3
Calendar of Events .....	Pg. 3
Summer Seminar Flyer .....	Pg. 4
Summer Seminar Registration .....	Pg. 5
Decentralized Wastewater Info .....	Pg. 8
Decentralized Wastewater Cost.....	Pg. 9
2018 Impaired Water Update.....	Pg. 10
Chloride Research Information.....	Pg. 13
MPCA: Salt & Groundwater .....	Pg. 14
MPCA: Need-to-Know Volunteers ..	Pg. 15
MOWA New Members .....	Pg. 15
2017 TR Scholarship Essay .....	Pg. 16
2018 TR Scholarship Auction .....	Pg. 17
2018 OSTP Course Listing.....	Pg.18
2018 MOWA Membership Form .....	Pg.19

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## From MOWA's Executive Director

By Pat Martyn, MOWA Executive Director

No sooner have we wrapped up another successful Winter Convention, than our Board and Committees are hard at work planning more exciting MOWA events! We are pleased to announce that our annual Summer Seminar will be held on Friday, June 22nd at the Besser Property in Ogilvie, MN. We will bring back the same successful format of two daytime tracks followed by an evening cookout. Exhibitor opportunities are also available. Please check this issue for more details and registration. If you would like to be involved in this or make a contribution, be sure you let the office know.

Our 2018 Convention Committee continues its work, in partnership with NOWRA, on the Fall 2018 Mega-Conference being held October 21 – 24, 2018 at the DoubleTree by Hilton in Bloomington. In the works are exhibits, classes, social events and a full day with three field trips to choose from. Details and registration are forthcoming, so for now please Save the Date(s) for this exciting event!

We are also pleased to announce the 2018 Tony Ruppert Scholarship. We will be awarding a total of \$5,000 in scholarships this year to deserving college students who are relatives of MOWA members. See pages 16-17 for details.

The new MOWA Board also held its annual Strategic Planning Meeting in April to set its work plan for the year. Each year we have a deliberative process where we sit and think and discuss what will best serve our membership. The process is an exercise in thought and preparation that helps our organization to establish goals and determine how to apply human and financial resources to accomplish those goals. We want to get everyone on the same page so we can get tangible results in 2018 and ahead. A priority for us is to address any problems that have been reported to the Board, visit about any complaints we have had during the year, incorporate suggestions and also determine what is our best approach for improving the organization and the benefits for the membership. And then we keep track about what we have done by regularly measuring ourselves against what it is we set out to do.

At this year's meeting, the group reflected on the value that MOWA's committees bring to the organization. We strive to maximize the impact of the committees without taking too much time away from the members. To this end, we keep the meetings focused and on point. If you are interested in serving, please let the office know. We heartily welcome new perspectives and talents!

### Calendar of Events

#### MOWA Events

June 22, 2018 – **Summer Seminar** – Besser Property – Ogilvie, MN visit [www.mowa-mn.com](http://www.mowa-mn.com) or [www.nowra.org](http://www.nowra.org) for details).

October 21 – 24, 2018 – **NOWRA/MOWA Mega-Conference** – DoubleTree by Hilton, Bloomington, MN (visit [www.mowa-mn.com](http://www.mowa-mn.com) or [www.nowra.org](http://www.nowra.org) for details).

#### Industry Events

February 20th – 23rd, 2019 - **Water & Wastewater Equipment, Treatment & Transport (WWETT) Show** – Indiana Convention Center (visit <https://www.wettshow.com/> for details).

## MOWA

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## ***SAVE THE DATE!***

Minnesota Onsite Wastewater Association (MOWA),  
in association with the Minnesota Pollution Control Agency (MPCA),  
is pleased to announce the 2018 Summer Seminar:

◆ **Friday, June 22, 2018** ◆

Registration from 8:00 to 8:30 am

◆ **Besser Property** ◆

1514 160<sup>th</sup> Avenue ◆ Ogilvie, MN 56358

MOWA's 2018 Summer Seminar offers the opportunity for SSTS professionals to gain "hands-on" experience, earn continuing education credits and network with other professionals. The day will end with a cookout featuring fun, food, and prizes!

### **Track 1 Soils 6.0 Soils CEUs\***

8:30–12:30 Classroom Session

12:30– 1:30 Lunch (provided by MOWA)

1:30– 4:00 Field Session: Critique and group discussion of soil pits.

Bring your:

- Munsell Color book
- Spray water bottle
- Small shovel or knife to removal sample from pit face
- Tape measure
- Sunscreen/bug spray
- Rain gear

### **Track 2 Sept-a-Thon, SSTS Open Forum & Product Demo 7.0 Non-Soils CEUs\***

8:30–12:30 Sept-a-Thon (SSTS Competition)

12:30– 1:30 Lunch (provided by MOWA)

1:30– 4:30 SSTS Open Forum and Product Demonstration, protecting septic systems from freezing, jetting demonstration and techniques & septic riser alternatives

*Thank You to Melissa Besser of Septic Check  
for hosting the 2018 Summer Seminar!*

Please visit our Web site for updated information:  
[www.mowa-mn.com](http://www.mowa-mn.com) or call 1-612-801-5897

# Minnesota Onsite Wastewater Association 2018 Summer Seminar – Ogilvie, MN

(visit our Web site updates @ [www.mowa-mn.com](http://www.mowa-mn.com))

**Mail:** MOWA  
5021 Vernon Ave., So.  
Suite 241  
Edina, MN 55436  
Fax:952.487.4447  
**E-mail:** [mowacarla@aol.com](mailto:mowacarla@aol.com)

## REGISTRATION FORM

One form per person. Please copy for additional registrants

Name: \_\_\_\_\_ Organization: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_ Fax: \_\_\_\_\_

### Friday, June 22, 2018 : 8:00 Registration/8:30 Start Time

#### Hosted By: Melissa Besser of Septic Check

1514 160<sup>th</sup> Avenue ♦ Ogilvie, MN 56358

#### Track 1: Soils Training – AM: Classroom Session/ PM: Field Session

Designed to meet the additional 6.0 hours of Direct Soils Training required for Certified Inspectors & Designers\*

#### Track 2: Sept-a-Thon (SSTS Competition) – AM

#### Open Forum & Product Demonstration – PM

Designed to provide 7.0 hours of Indirect (Non-Soils) Training\*

#### 4:30– ? – “Third Annual Bellyachers Pig -Out” Cookout and Games, Prizes, Fun!

\*Schedule subject to change; CEUs are anticipated, based on MPCA approval

Check One:	MOWA MEMBER	NON-MEMBER**
_____ Track # 1 -OR- _____ Track #2	\$135	\$205
_____ # 1 <sup>st</sup> Daytime/Evening Event Guest (no CEUs) - FREE		\$ 0
_____ # Add'l. Guest(s) @ \$25 each for Daytime and/or Evening Event		\$ _____
Registration Deadline: June 8, 2018 - Late Fee (\$25 after 06/08/2018)		\$ _____

**FREE Seminar registration for any new MOWA members between now and the Seminar! Contact MOWA for details**

**PAYMENT: TOTAL COST \$ \_\_\_\_\_**

Includes course materials, breakfast, lunch, afternoon snack, and evening event

\*\*For information on becoming a MOWA member, please visit: [www.mowa-mn.com](http://www.mowa-mn.com)

A. \_\_\_\_\_ Please charge my credit card in the amount of \$ \_\_\_\_\_  
B. \_\_\_\_\_ A check in the amount of \$ \_\_\_\_\_ is enclosed (payable to MOWA)

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Name on card \_\_\_\_\_ Signature \_\_\_\_\_

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I agree to indemnify and hold harmless Minnesota Onsite Wastewater Association (MOWA) and Melissa Besser from any and all liability, loss, damage or expense from any incident that may arise while attending any portion of the 2018 Summer Soils Seminar. I authorize any photos taken of me at this event to be published in MOWA's Little Digger and/or other MOWA-related promotional materials.

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### **Small Town, Big Issue, Continued from Page 1**

The LSTS includes primary, secondary, and tertiary wastewater treatment processes.

- **Primary treatment:** Primary wastewater treatment is accomplished by a series of large precast concrete septic tanks with a combined capacity exceeding 100,000 gallons. These tanks provide some treatment of raw sewage through floatation, settling, and biological and chemical reactions. Solids, organics, heavy metals, nutrients and pathogens are reduced within the tanks. Pretreated effluent from the septic tanks flows via gravity to an equalization chamber sized for peak wastewater flow. This equalization tank provides attenuation where surge flows are stored and metered out throughout a 24-hour period. Equalization is very important as downstream treatment components are nourished on a regular, timed basis instead of in large surges, which could overwhelm the bacteria.
- **Secondary treatment:** Secondary wastewater treatment encompasses suspended and attached-growth biological aerobic processes. One 40,000-gallon precast concrete tank contains microbubble diffusion aerators and serves as a continuous-flow, suspended-growth aerobic basin. The second stage of biological treatment occurs within a recirculating gravel filter. The RGF is an attached-growth, fixed-film aerobic treatment process. Gravel media supports the growth of biomass for purposes of both carbon oxidation and nitrification. As wastewater passes over the media, these bacteria further reduce biological oxygen demand and nitrify ammonia.
- **Tertiary treatment:** Denitrification is a key treatment process in the Afton wastewater treatment facility. Specifically, denitrification is the removal of nitrogen from the wastewater stream involving the conversion of nitrate to nitrogen gas under anoxic conditions. A carbon source is used to fulfill the denitrification process as wastewater will have gone through a secondary treatment, removing most organics. Also included within the facility is a suspended-growth denitrification

process. To optimize nitrogen removal, nitrified effluent is recirculated back to the head of the system. This system works well to achieve the 10 milligrams per liter nitrogen limit.

- **Soil dispersal:** Pretreated effluent is dispersed below grade by a system of pressurized soil absorption beds. At this point, total nitrogen is treated to drinking water standards. Pretreated effluent is further refined within the soil where it infiltrates downward and assimilates within the local aquifer.

### **Group effort**

The MPCA identified over 100 small communities in Minnesota that are still unsewered. These communities discharge partially settled and untreated sewage effluent into surface waters, on the ground surface or directly to groundwater. The Old Village in Afton was one of those communities and did not receive the necessary funding from grant programs for centralized sewer infrastructure. Building this needed infrastructure was long overdue and several agencies (U.S. Army Corps of Engineers, Minnesota Department of Natural Resources, MPCA and the Minnesota Public Facilities Authority) all recognized the need and played a vital role.

*This article first appeared online at [precast.org](https://precast.org) - National Precast Concrete Association, Precast Inc. Magazine 2018 – March-April on March 5, 2018. It is reprinted by permission. <https://precast.org/2018/03/septic-system-case-study/>*



*Photo courtesy of Wieser Concrete Products*



## DECENTRALIZED WASTEWATER TREATMENT CAN BE COST EFFECTIVE AND ECONOMICAL



*Decentralized wastewater treatment can provide a long-term and cost-effective solution for communities by:*

- *avoiding large capital costs,*
- *reducing operation and maintenance costs, and*
- *promoting business and job opportunities.*

### HOW CAN DECENTRALIZED WASTEWATER TREATMENT BE COST-EFFECTIVE AND ECONOMICAL?

**Avoiding large capital costs** – For new and upgraded service, decentralized systems typically involve a small initial investment for a community relative to larger systems. Generally, total per connection cost of a decentralized system will be lower than the equivalent conventional gravity system serving the same area. However, the site-specific size of the differential will depend on land costs, topography, presence of shallow rock, lot density, etc. Decentralized systems can be built “just-in-time” to meet local demands and take advantage of the latest cost-saving technology. Decentralized systems typically require less expensive and easy to install small piping. These systems can help communities delay or avoid costly infrastructure capacity upgrades to larger facilities. The costs of transporting waste over longer distances to reach existing facilities can also be avoided. As a bonus, decentralized systems can be recognized as “green” and thus may be eligible for special funding opportunities such as the green project reserve under the Clean Water State Revolving Fund (CWSRF).

EPA promotes use of CWSRF as a means for states to implement comprehensive wastewater system management programs, and EPA has been encouraging states to re-evaluate their CWSRF programs to ensure decentralized needs are adequately determined and sufficiently funded.

**Reducing operation and maintenance costs** – Decentralized systems typically use small and relatively simple equipment that can be easy and affordable to operate, maintain, and replace. Additionally, because these types of systems treat wastewater close to the source of generation and often use some passive treatment, such as soil dispersal, these systems may offer substantial savings in energy costs. A 2002 Electric Power Research Institute report concluded that at least 4% of energy use in the U.S. is associated directly with water transport and treatment. On a community level, this can translate to about 25% of a community’s energy use. Finally, because systems frequently serve a fairly small number of users, disruptions and costs associated with malfunctions are also relatively small.

**Promoting business and job opportunities** – Use of decentralized systems can generate local economic opportunity for service providers such as inspectors, installers, and designers. Engineers with local experience can be incredibly valuable in designing decentralized systems to ensure safe and efficient treatment of wastewater. In addition, jobs can be generated for service providers such as installers and pumpers as well as manufacturers—through increased demand. These systems can be financed on a small scale that provides opportunities for use of local financial institutions.

*The EPA Decentralized Wastewater Memorandum of Understanding (MOU) Partnership, created in 2005, has served as an ongoing cooperative relationship between the EPA and Signatory Organizations to effectively and collaboratively address management and performance issues pertaining to decentralized systems.*





## DECENTRALIZED WASTEWATER TREATMENT CAN BE GREEN AND SUSTAINABLE

*Decentralized wastewater treatment can meet the triple bottom line of protecting the environment, being efficient, and contributing to community well-being by:*

- *increasing water quality and availability,*
- *using energy and land wisely,*
- *responding to growth while preserving green space, and*
- *using the natural treatment properties of the soil.*



### HOW CAN DECENTRALIZED WASTEWATER TREATMENT BE GREEN?

**Increasing water quality and availability** – Decentralized wastewater treatment effectively and efficiently treats domestic sewage to protect water quality and support local water supplies. The wastewater from decentralized systems stays in the local watershed as it returns to the drain field, dispersing into the underlying soil and eventually recharging groundwater and/or reentering the local watershed. Advanced decentralized treatment systems can achieve treatment levels comparable to centralized wastewater treatment systems while minimizing the level of phosphates and nitrogen entering the ground water. Discharging to the soil can further remove contaminants so as to maintain water quality. Decentralized systems can

be designed to meet specific treatment goals, to handle unusual site conditions, and to address local environmental protection requirements. Using decentralized systems may also make it easier for a community to employ water reuse techniques and, as a result, reduce the demand for treated drinking water.

**Using energy and land wisely** – Most decentralized systems take advantage of gravity flow rather than using energy to pump the wastewater. Additionally, decentralized wastewater treatment systems often incorporate septic tanks at the wastewater source resulting in reduced costs and energy for treatment of septage prior to land dispersal.

**Responding to growth while preserving green space** – Decentralized systems can be flexible and scaled to a desired size or footprint. For example, decentralized systems can easily be scaled to a needed size for communities with rapid growth and/or where installing pipelines a long distance to a central waste facility can be too expensive. Decentralized systems can be designed to meet specific growth goals through planning where and how the community will grow. Decentralized systems tend to have small, minimally intrusive environmental footprints and often have the benefit of creating green spaces in communities.

**Using the natural treatment properties of the soil** – Decentralized systems provide good opportunities to use the natural environment. They can help reduce the level of difficulty and cost to treat pollutants, such as nutrients, and keeping them from entering lakes, rivers, and streams. The soil acts as a natural filter and provides final treatment by removing harmful bacteria, viruses, and nutrients.

*The EPA Decentralized Wastewater Memorandum of Understanding (MOU) Partnership, created in 2005, has served as an ongoing cooperative relationship between the EPA and Signatory Organizations to effectively and collaboratively address management and performance issues pertaining to decentralized systems.*



## **MPCA: 2018 Impaired Water List Successes**

### **Success stories surfacing for Minnesota lakes, streams**

As Minnesota continues its statewide checkup of waters and lists those failing to meet standards, some good examples of protective and restorative work are starting to surface.

Water bodies that fail to meet standards are considered impaired. The impaired waters list represents an assessment of how well lakes and streams support fishing, swimming, and other beneficial uses. This assessment is mandated by federal law and requires a cleanup study for each impaired water body.

#### **Success stories**

For the first time, the Minnesota Pollution Control Agency (MPCA) is proposing to remove an impairment listing for PCBs. Fish sampled in the Red River of the North now have PCB levels low enough to meet the standard for consumption, though some impairments like mercury remain.

PCBs -- polychlorinated biphenyls -- were chemicals once used as insulators in electrical equipment and for other purposes. They were banned in 1979 because of their potential risks to human and environmental health. Though scientists cannot

pinpoint the reasons for lower levels of PCBs in the Red River in northwest Minnesota, it's likely because PCBs have declined in the environment over the past 38 years.

Additionally, the MPCA is proposing to remove 9 water bodies from the list because of restorative actions to improve water quality:

- First Fulda Lake (Murray County) now has nutrient levels low enough to meet recreation standards.
- The Poplar River (Superior Hiking Trail Bridge to Lake Superior, in Cook County) is now clear enough to meet the standard for aquatic life such as fish.
- Bryant Lake (Hennepin County), Crystal Lake (Dakota County), Gem Lake (Ramsey County), McMahon Lake (Scott County), and Mitchell Lake (Hennepin County) now have nutrient levels low enough to meet recreation standards.

*2018 Impaired Waters Improve, Continued on Page 11*

# **IN 2018, ALL ROADS LEAD TO MINNEAPOLIS!**

## **MARK YOUR CALENDARS!**

**ANNOUNCING THE**  
**2018 ONSITE WASTEWATER MEGA-CONFERENCE**  
**OCTOBER 21-24, 2018**  
**Doubletree by Hilton Bloomington – Minneapolis South**  
**Bloomington, MN**

**A partnership between NOWRA and MOWA (Minnesota Onsite Wastewater Association)**

**2018 Impaired Waters Improve, Continued from Page 10**

- Seven Mile Creek (Nicollet County) now has pesticide levels low enough to meet the standard for aquatic life such as fish.
- The Clearwater River from Judicial Ditch 1 to the Lost River (Red Lake County), and from Ruffy Brook to Judicial Ditch 1 (Clearwater County), now has oxygen levels high enough to meet the standard for aquatic life such as fish.

Some common restoration actions include stabilizing streambanks, holding back water long enough to let sediment settle out, and better management of fertilizer.

***New lakes, streams added to impaired waters list***

There are of course new impairments proposed for the 2018 list. Highlights include:

- 201 streams and 23 lakes that cannot fully support aquatic life. These bodies of water fail to support the number and quality of aquatic life — fish and bugs — that they should support according to research. Restoring these fish and bug communities often means improving habitat conditions along



*Boy Fishing by Scott Feldenstein*  
<https://www.flickr.com/photos/scottfeldstein/998291875/>

with decreasing pollutants such as nutrients that cause algae and sediment that clouds the water. Extensive tile drainage for cropland also changes the movement of water and can hurt aquatic life.

- 100 streams with elevated bacteria levels, most of them in the Red River basin in northwest Minnesota. These waters have bacteria levels too high to meet the recreation standard because of the increased risk of illness from contact.

The proposed impairments follow MPCA studies of watersheds, meaning impairments can be clustered by study locations. The agency recently finished monitoring and assessment of several water bodies in the Red River basin. Sources of bacteria can include manure runoff, livestock in streams, failing sewer systems, and in remote areas, wildlife.

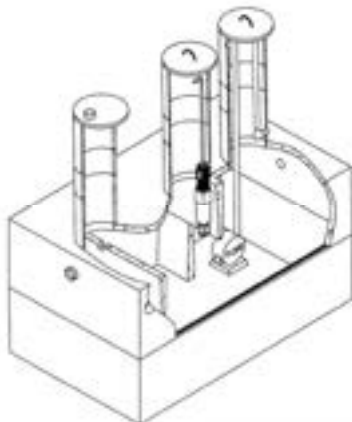
- 55 lakes and streams with high levels of nutrients. These waters fail to meet the nutrient standards designed to prevent

**2018 Impaired Waters Improve, Continued on Page 12**

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### 2018 Impaired Waters Improve, Continued from Page 11

algae detrimental to aquatic life and recreation like fishing and swimming. Sources of nutrients include wastewater, manure runoff, and fertilizer runoff and leaching.

- 32 water bodies with mercury levels in fish tissue that are too high to meet standards. Mercury can be toxic to humans and that's why the state of Minnesota issues consumption advisories for fish. The largest sources of mercury in Minnesota's environment come from air emissions like coal burning and taconite. About 90% of the mercury deposited on Minnesota comes from other states and countries.
- 3 streams that fail to meet the chloride standard designed to protect aquatic life. These proposed listings highlight Minnesota's emerging problem of salty water posing a risk to its fresh water species. For more information, visit this webpage: [www.pca.state.mn.us/salty-water-growing-problem-minnesota](http://www.pca.state.mn.us/salty-water-growing-problem-minnesota).

### Summary of numbers

In all, the number of impaired Minnesota waters on the draft 2018 impaired waters list totals 5,101 impairments, with 618 new listings, covering a total of 2,669 water bodies across the state (many water bodies are impaired by several pollutants). Minnesota is detecting more waters in trouble because of its 10-year plan to study all 80 major watersheds in the state, funded

by the Clean Water, Land and Legacy Amendment. The MPCA has started this study in all but a few watersheds.

While scientists find more impairments, the overall percentage of impaired waters in Minnesota remains at 40%. The other 60% are in good condition and need protective strategies to stay healthy.

### Improving water quality 25% by 2025

Gov. Mark Dayton has announced a new "25 by '25" water quality goal, which would spur innovation and collaboration around strategies to improve Minnesota's water quality 25 percent by 2025. Without additional action, the quality of Minnesota's waters is expected to improve only 6 to 8 percent by 2034.

Dayton's "25 by '25" water quality goal would not add additional regulations. It is instead a call to action to drive public engagement and partnerships to address the state's growing water quality issues. The goal also would be flexible, allowing Minnesota's local watersheds to decide which pollutants to address and strategies to employ. Improving water quality by 25 percent by 2025 would not entirely eliminate the threats and challenges to Minnesota's waters. But setting and achieving this goal would make a significant impact on the quality of the state's waters and ensure they are more swimmable, fishable, and drinkable for future generations.

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## Estimating annual chloride use in Minnesota

By Alycia Overbo and Sara Heger, University of Minnesota

Salt is used every day in many applications. People add salt to food, apply salt to pavement and roads after snowfall, and use salt in their water softeners. While salt is inexpensive to purchase, it can have a high environmental cost. The most commonly used salts contain chloride and research has shown that chloride levels are increasing in rivers, lakes, streams, and groundwater across North America. In Minnesota, there are 50 water bodies that exceed water quality standards for chloride and elevated chloride levels can be toxic to aquatic life.

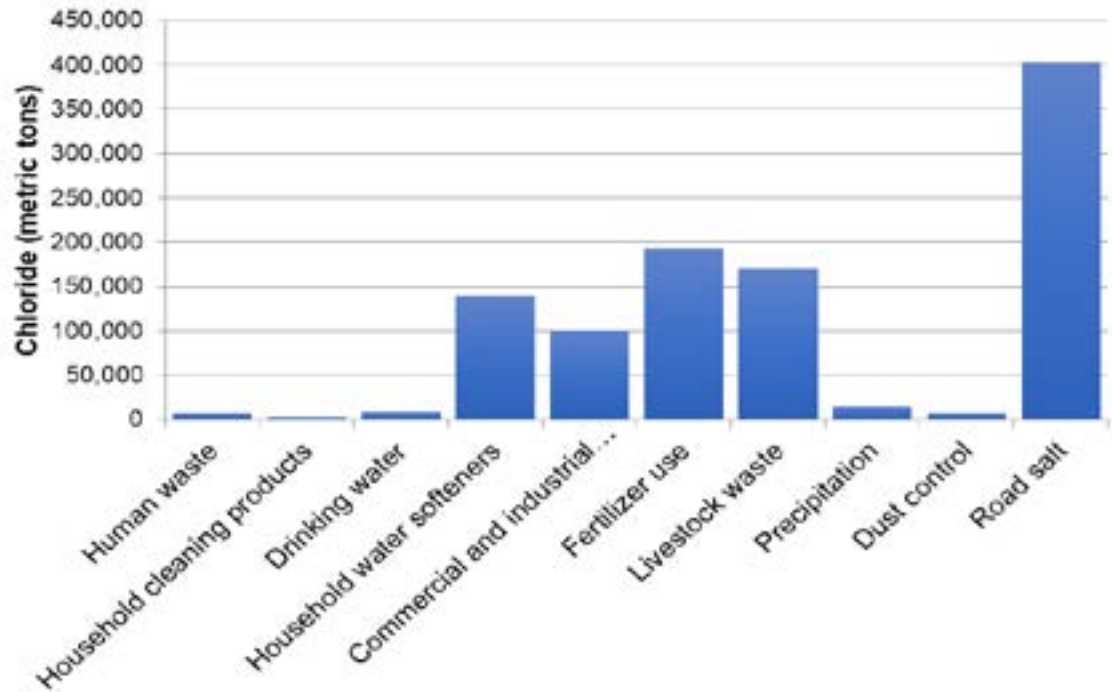


Figure 1. Major chloride sources and their annual chloride contributions to the environment.

Researchers at University of Minnesota created a chloride budget for the state of Minnesota to estimate how much chloride enters the environment annually from major sources. Multiple data sources were used in the analysis, including sales records, water quality monitoring data, and wastewater effluent monitoring data. Additionally, a survey of water conditioning professionals and plumbers was conducted to characterize water softening practices across the state.

Road salt was found to be the largest chloride source statewide, contributing over 400,000 tons of chloride annually to the environment (Figure 1). Household water softener use was found to be the largest chloride point

source; other household sources contributed relatively small amounts of chloride.

The results suggest that water softening by commercial organizations is also a substantial chloride source. High amounts of chloride enter the environment from fertilizer use and livestock excretions, but since they are applied over a large area statewide, they likely have a lower impact on water quality than other sources.

Results from the chloride budget indicate that water softening is an important chloride source and that optimizing salt use for water softening is a potential solution for achieving chloride reductions.

### Water softening recommendations for homeowners

- *Have your water hardness tested and your softener settings reviewed to make sure your softener is using salt efficiently.*
- *If you have high iron in your water, consider using an iron filter to extend the lifespan of your water softener and reduce salt use.*
- *If you have an older water softener that regenerates based on a timer, consider upgrading to a demand-based water softener, which uses water and salt more efficiently.*
- *Homeowners with septic systems can route water softener discharge to the distribution box or discharge basin instead of a septic system to limit chloride in their septic systems.*



# MPCA: Salt Use and Groundwater Contamination

## Minnesota waters need a low-salt diet



Doctors tell us to stick to a low-salt diet. Our lakes and streams should follow the same advice. While salt helps to keep our roads safe in the winter and to soften the water in our homes, it contains chloride, a water pollutant.

Salt pollutes. It takes only one teaspoon of road salt to permanently pollute five gallons of water. Once in the water, there is no easy way to remove the chloride, and at high

concentrations, chloride can harm fish and plant life. Less is more when it comes to applying road salt and water softening.

### What problems does salt cause?

#### Drinking water

- 75% of Minnesotans rely on groundwater for drinking water. High amounts of salt in groundwater cause drinking water to taste salty, which could restrict its use for drinking. The cost to remove salt from drinking water using reverse osmosis would be expensive.
- Salt in drinking water is a health concern for people with high blood pressure, or hypertension.
- Chloride can be naturally present in Minnesota's groundwater in varying amounts due to the weathering of rocks and varies greatly across the state. However, additional (non-natural) chloride also enters groundwater from deicing salt, fertilizer, water-softening salt, and septic systems.

*Minnesota & Salt, Continued on Page 15*



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## MPCA: Volunteers Needed for Need-to-Know

### SSTS Need-to-Know Efforts Continue – Volunteers Needed!

By Nick Haig, Program Administrator, Certification and Training Unit: Certification, Environmental Review, & Rules Section, MPCA

#### SSTS sites and soils task analysis

A specialty area task analysis document is an outline of job tasks that certified professionals must be able to competently complete. It is a working document that was developed and is periodically maintained by a steering committee of experts, which is validated and prioritized by a broader group of practicing professionals. It is the foundation of Minnesota's SSTS professional certification program and provides the basis for curriculum objectives and exam competencies. It includes tasks authorized by rule and those determined to be necessary to conduct authorized work in a safe and lawful manner. It is not meant to represent a required order of operations and should not be used as a procedural checklist.

The Need-to-Know steering committee recently voted to approve the Sites and Soils Task Analysis document it produced this past winter. The validation survey of this work has just wrapped up, and participation was outstanding, with over 250 responses. Thank you to everyone who participated! The document is now posted on the Certification and Training website.

This was the first Task Analysis completed that wasn't specific to one specialty area because the Soils course is required for all SSTS Designers and Inspectors. With the Sites and Soils piece wrapped up, it was suggested we revisit the Basic Designer, Basic Inspector, Intermediate Design and Inspection, and Advanced Design and Inspection documents to exclude tasks that are now clearly in the domain of sites and soils.

#### Minnesota & Salt, Continued from Page 14

- Groundwater flows into streams, lakes and wetlands. If the groundwater contains high amounts of chloride, the organisms that live in surface waters can be negatively affected.

#### The MPCA groundwater report found that:

- 27% of monitoring wells in the Twin Cities metro area in the sand and gravel aquifers had chloride concentrations that were greater than drinking water guidelines set by the EPA (250 mg/L), likely from winter de-icing chemicals.
- 30% of wells in the Twin Cities metro area had chloride concentrations greater than the chronic water quality standard (230 mg/L).

To that end, those four Task Analysis documents are currently being reviewed. The purpose of the suggested changes is to clarify for curriculum and exam development purposes where and when specific topics are to be emphasized. If the changes are approved, the MPCA will make the adjustments to the published Task Analyses and the respective exams and the University will incorporate those changes to its certification programming.



The MPCA will be conducting Installer exam piloting sessions this summer and fall. We are actively seeking volunteers to pilot new Installer exam questions. Volunteers must have taken the Installer exam in the past. We are very interested in balancing the group with practicing Installers, SSTS Designers, and new construction Inspectors.

Please contact Nick Haig if you would like to see the proposed Task Analysis changes or learn more about the Need-to-Know efforts and volunteer opportunities: [nick.haig@state.mn.us](mailto:nick.haig@state.mn.us); 651-757-2536

### WELCOME NEW MOWA MEMBERS

**Tom Ellingboe**  
*Ellingboe Trucking & Excavating*  
Kandiyohi, MN

**Jedidiah Smith**  
*Jed Smith Excavating & Septic, LLC*  
Grand Marais

**Kyle Krier**  
*Pipestone County*  
Pipestone, MN

**Dave Roeder**  
*Superior Septic Service*

- The source of high chloride concentrations in the Twin Cities metro area and other urbanized areas is likely from salt applied for winter maintenance.

- For more information check out the full report: *The Condition of Minnesota's Groundwater, 2007-2011*

*This article appeared online at [www.pca.state.mn.us](http://www.pca.state.mn.us). Minnesota Pollution Control Agency. It is reprinted by permission. <https://www.pca.state.mn.us/water/salt-and-water-quality>*

## ***Tony Ruppert Scholarship Deadline is August 15th***

### **2018 Tony Ruppert Scholarship Application Period Opens**

The Minnesota Onsite Wastewater Association (MOWA) is pleased to announce that applications are now being accepted for the Tony Ruppert Scholarship Fund. Up to \$5,000 in scholarships are available to high school graduates (as of June 2018) who will be enrolled as a full-time student in post-secondary undergraduate education during the 2018- 2019 school year.

Applicants must be no more than 26 years old as of June 1, 2018 and be a MOWA member, or a child, sibling, grandchild, or niece/nephew of a MOWA member. Students may only win this scholarship once. Students must complete an application, write an essay, and provide certification of the relationship to a MOWA member or member's employee.

#### **A complete application must include: (3 items)**

**Item 1: Application Form** *(To be completed by the student; you may use this form or print all required items on a separate sheet.)*  
Please type or print clearly:

Name: \_\_\_\_\_ Social Security #: \_\_\_\_\_

Address: \_\_\_\_\_ City/State/Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ E mail address \_\_\_\_\_

Year graduated from high school \_\_\_\_\_ MOWA Member Name \_\_\_\_\_

Name of school you are/will be attending: \_\_\_\_\_ *(Must be a full time student)*

Curriculum you are/will be enrolled in: \_\_\_\_\_

All of the above information is true and correct and I hereby grant permission to MOWA to reprint my essay or abstract in whole, or in part, or use the created digital media for informational or advertising purposes, such as on the MOWA website or as a MOWA newsletter article or press release.

\_\_\_\_\_ *(Applicant's signature)*

#### **Item 2: Essay. See Essay Content Form**

#### **Item 3: Certification Form: (To be completed by the MOWA member)**

Name of Applicant for Tony Ruppert Scholarship: \_\_\_\_\_

The Tony Ruppert Scholarship Fund Applicant is my: \_\_\_\_\_ *(insert relation).*

I agree that the information contained in this form is true and correct to the best of my knowledge:

MOWA Member Name (printed): \_\_\_\_\_

MOWA Member Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Business Name and Address: \_\_\_\_\_

All applications must be submitted to MOWA no later than August 15, 2018. Applications will be rated by a panel of MOWA members. Winners will be notified in September 2018.

**Send the complete application (with essay in Word format) to:** [mowacarla@aol.com](mailto:mowacarla@aol.com)

#### **The is a bi-monthly publication of the Minnesota Onsite Wastewater Association**

Editor: Carla Tourin E-mail: [MOWAcarla@aol.com](mailto:MOWAcarla@aol.com)

The articles printed in the publication do not necessarily reflect the opinion of this organization. Readers are encouraged to respond to the articles with their own points-of-view. We welcome industry-related comments or articles. Information or inquiries should be sent to any of the following: MN Onsite Wastewater Association, MOWA, 5021 Vernon Ave, So., Suite 241, Edina, MN 55436 Phone: 612.801.5897 Fax: 952.487.4447 Website: [www.mowa-mn.com](http://www.mowa-mn.com)



## Tony Ruppert Scholarship Instructions & Tips

### Essays to reflect understanding of industry issues!

This essay is to be completed by the applicant. The applicant can choose a topic to write about that is related to the environment, water quality and quantity, and wastewater treatment. The sponsor of this scholarship is the Minnesota Onsite Wastewater Association (MOWA). MOWA is associated with the onsite/decentralized wastewater industry (a.k.a. septic systems). The sections of Introduction, Literature Review, Conclusions and References shall be included in the essay.

TITLE

AUTHOR

DATE

#### I. INTRODUCTION

What is the problem/issue? Keep the introduction brief, but do indicate the purpose of the paper as well as present appropriate background. Make sure that the reader knows enough to appreciate the relevance of the issue and why it is appropriate to ask the question that you will address with your paper. State what angle is going to be explored and arrange key issues that will be addressed in this review by answering questions that you have personally developed and are tailored to fit your topic.

Typical length 2-4 paragraphs.

#### II. LITERATURE REVIEWED

This section is a summary of information, references and research that has been published about your particular subject. It provides the reader with an idea about the current situation in terms of what has been done, and what we know. Sometimes it includes suggestions about what needs to be done to increase the knowledge and understanding of a particular problem.

*This is the longest section of your essay and will range from one to several pages.*

#### III. CONCLUSION

Effectively wraps up the review. Summarize the points of comparison or contrast among the works based on information and literature reviewed. It should also provide insight of relationship between the topic of the review and a larger area of study such as a specific discipline or profession

Typical length 2-4 paragraphs.

#### IV. LITERATURE CITED

Literature citations in the body of your paper should be in parentheses and contain only the author's last name and the date; for multiple authors include the last name of the first author, et al., and the date. If the author's name is used in the text then just the date in parentheses is sufficient. For example: (Monod, 1949) (Neidhardt et al., 1990) or Monod (1949) compared the reaction..... List all literature cited in your report in alphabetical order by the last name of the first author in a separate section. Use the proper form for citations. If the citation is to a specific page add the page number. For a technical paper you will need to review several sources. **For this essay a minimum of four citations is required.**

##### Examples:

##### For scientific papers:

Monod, J. 1949. The growth of bacterial cultures. *Annu. Rev. Microbiol.* 3:371-394.

##### For a book:

Neidhardt, F.C, Ingraham, J.L. and. Schaechter, M. 1990. *Physiology of the Bacterial Cell.* Sinauer Associates, Sunderland, MA.

##### For a newspaper article:

McKay, D. 2000. Arsenic: how much is safe? *Albuquerque Journal.* July 30, 2000, p. A1.

##### For a web site:

National Research Council. 1999. Arsenic in drinking water. Subcommittee on Arsenic in Drinking Water. <http://www4.nationalacademies.org/news.nsf/isbn/030906337?OpenDocument>.

##### For a personal communication:

Sanchez, R. 1993. City of Socorro, Water Utilities Division, Socorro, NM. Personal communication.

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## 2018 OSTP Certification Course Descriptions and Offerings

### Introduction to Onsite Systems (15 Direct Credits)

Fee: \$360 Exam: Yes

This 15-hour workshop is the foundation for all SSTS certification courses and is best completed prior to the other workshops. It prepares participants for the Basic exam and provides an overview of onsite treatment options and concepts. Enrollment in this workshop includes a copy of the Manual for SSTS Professionals in Minnesota.

#### Topics include:

- Treatment of wastewater
- Site evaluation
- Wastewater characteristics
- Soil treatment systems

10-3 Mankato - AmericInn 11/12-14/18 Deadline: 11/5/18

### Installing Onsite Systems (12 Direct Credits)

Fee: \$265 Exam: Yes

This 12-hour workshop prepares attendees for the Installer exam and provides information about proper installation practices.

**PREREQUISITE:** Introduction to Onsite Systems

#### Topics include:

- Construction planning
- Tools for installing
- Construction practices
- Pipelayer certification

112-3 Mankato - AmericInn 11/15-16/18 Deadline: 11/8/18

### Inspecting Onsite Systems (12 Direct Credits)

Fee: \$265 Exam: Yes

This 12-hour workshop identifies Minnesota requirements for existing and new system inspections and prepares participants for the Inspector exam.

**PREREQUISITE:** Introduction to Onsite Systems.

#### Topics include:

- Administrative requirements
- New system inspection
- Existing system inspection
- Tools and procedures

30-1 Alexandria - Douglas County Public Works Building 6/6-7/18 Deadline: 5/30/18

### Installer Continuing Education (12 Direct Credits)

Fee: \$265 Exam: No

This 12-hour workshop will meet the continuing education requirements for any certification but is specifically tailored for Installers. All information will be provided from the perspective of a system installer.

#### Topics Include:

- Construction safety
- Keys to proper installation
- Pumps and dosing
- Rule change implications

69-3 Grand Rapids - Sawmill Inn 12/6-7/18 Deadline: 11/29/18

### Soils (15 Direct Credits)

Fee: \$310 or \$475 with Munsell Color Guide Exam: Yes

This 15-hour workshop prepares attendees for the Soils exam and provides participants with a detailed understanding of how particular soils affect the treatment of sewage. Participants will also receive instruction at a field location. Munsell Color Guides are available for \$165 and Sand Cards for \$10. This class does NOT meet the 6-hour soils continuing education requirement for all Designer and Inspector categories.

**PREREQUISITE:** Introduction to Onsite Systems

#### Topics include:

- Percolation testing
- Soil characteristics
- Field evaluations
- Soil survey use

515-2 Faribault - Rice County Gov't Services Center 6/12-14/18 Deadline: 6/5/18

### General Continuing Education (12 Direct Credits)

Fee: \$265 Exam: No

This 12-hour workshop is designed to meet the continuing education requirement for SSTS professional registration. The topics will be varied to give a wide range of information for SSTS professionals.

#### Topics include:

- Rule change implications
- Pressure distribution
- Working on difficult sites
- MPCA update

60-3 Alexandria - Douglas County Public Works Building 11/6-7/18 Deadline: 10/30/18

60-4 Mankato - AmericInn 12/11-12/18 Deadline: 12/4/18

### Design Field Day Continuing Education

(6 Direct Credits) Fee: \$150 Exam: No

This 6-hour workshop combines a classroom and field component to discuss the process of design. The course will review the requirements for designing a system and the required aspects to be submitted to the LGU. The field portion will be an evaluation of the soil characteristics and completion of the design report.

#### Topics include:

- Required design steps
- System loading
- Working with elevations
- Soil applications and concerns

63-1 Grand Rapids - Sawmill Inn 7/25/18 Deadline: 7/18/18

### Soils Continuing Education (6 Soils-Specific Direct Credits)

Fee: \$240 or \$405 with Munsell Color Guide Exam: No

This 6-hour course couples classroom and field training to meet soils-specific MPCA continuing educational requirements for designers and inspectors. Munsell Color Guides are available for \$165 and Sand Cards for \$10.

#### Topics include:

- Regional geology and soils
- Local soil hydrology information
- Soils observations
- System siting and design

55-2 Rushford - MiEnergy Co-op 6/19/18 Deadline: 6/12/18

55-3 Pine City - Pine County Courthouse 6/28/18 Deadline: 6/21/18

55-4 Fergus Falls - Otter Tail County Gov't Services Center 7/12/18 Deadline: 7/5/18

55-5 Grand Rapids - Sawmill Inn 7/24/18 Deadline: 7/17/18

55-6 Two Harbors - Superior Shores Resort 9/6/18 Deadline: 8/30/18

55-7 Waseca - Southern Research and Outreach Center 10/10/18 Deadline: 10/3/18



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- Student \$140 (1 person)
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Note: Your MOWA Membership includes one NOWRA membership

**Memberships are based on calendar year - After July 1st, new members pay \$140-individual / \$190-business or gov't groups for remainder of 2018**

**Individual/Group Contact:** This person will be listed as the NOWRA member on the Septic Locator website. They will be listed first in all MOWA publications. Please print clearly.

• 1<sup>st</sup> Member \_\_\_\_\_ Company Name \_\_\_\_\_  
 Address \_\_\_\_\_ City/State/Zip \_\_\_\_\_  
 Title \_\_\_\_\_ Phone \_\_\_\_\_ Mobile/800# \_\_\_\_\_ Fax \_\_\_\_\_  
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(Please list additional business/government group members on separate sheet with complete contact information.)

**Publications:** Would you prefer receiving 'Little Digger' newsletters via ...  Regular Mail  Electronically  
 We currently send one publication per address to business/government groups. Contact the MOWA office if you'd like additional copies.

**Additional NOWRA Memberships:** MOWA membership fees include one NOWRA membership per company/organization. List names of members who want additional NOWRA memberships here: Cost - \$40 per person.

2) \_\_\_\_\_ 3) \_\_\_\_\_ 4) \_\_\_\_\_ 5) \_\_\_\_\_

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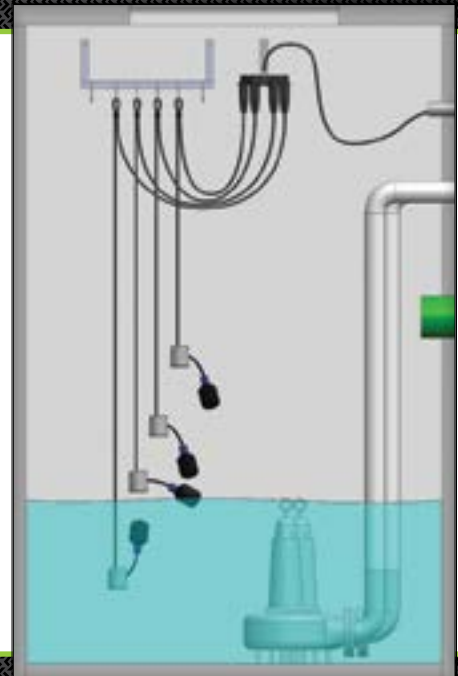
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