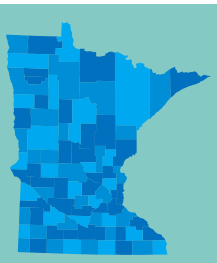
Wastewater

January 2020

National Pollutant Discharge Elimination System / State Disposal System Permits, Water Quality Standards, and Municipalities

MINNESOTA POLLUTION CONTROL AGENCY



Legislative charge

This report fulfills the requirement of Laws of Minnesota 2015, First Special Session chapter 150, article 4, section 101. This law changed the language of Minn. Stat. § 115.44, subp. 9.

The agency shall report on the activities the previous calendar year to implement standard and classification requirements into National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permits held by municipalities. This includes:

- A summary of permits issued or reissued, including any changes to effluent limits due to water quality standards adopted or revised during the previous permit term.
- Highlights of innovative approaches implemented by the agency and municipalities to develop and achieve permit requirements in a cost-effective manner.
- A summary of standards development and water quality rulemaking activities over the previous calendar year, including economic analyses.
- A summary of standards development and water quality rulemaking activities anticipated for the next three years, including economic analyses.
- A process and timeframe for municipalities to provide input to the agency regarding their needs based on information provided.
- A list of anticipated permit initiatives in the next calendar year that may impact municipalities.
- The agency's plan for involving municipalities throughout the planning and decision-making process, including opportunities for input and public comment from municipalities on rulemaking initiatives prior to preparation of statements of need and reasonableness.

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Contents

Acronyms

ALJ	Administrative Law Judge
Chla	Chlorophyll-A
EPA	United States Environmental Protection Agency
IRRB	International Red River Board
MPCA	Minnesota Pollution Control Agency
NPDES	National Pollutant Discharge Elimination System
PFA	Public Facilities Authority
PFAS	Per- and polyfluoroalkyl substances
RRBC	Red River Basin Commission
SAR	sodium adsorption ratio
SONAR	Statement of Need and Reasonableness
TMDL	Total Maximum Daily Load
TP	Total Phosphorous
TSD	Technical Support Document
WQBEL	Water Quality Based Effluent Limits
WQS	Water Quality Standard
WWTP	Wastewater Treatment Plant

Foreword

This report includes a description of activities that occurred during the previous calendar year to implement water quality standard and classification requirements into National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permits held by municipalities.

The purpose of this report is to share information with municipalities about permitting-related activities that have occurred over the past year and that are anticipated for the near future, to:

1. Foster awareness of and engagement in Minnesota Pollution Control Agency (MPCA) initiatives that may affect municipalities.
2. Promote coordination and dialogue between the MPCA and municipalities on permitting and water quality improvement efforts.

The MPCA wants to extend a thank you to all Minnesota cities for their efforts to keep Minnesota's waters safe and clean for future generations. This hard work is fundamental in improving our water quality and providing safe and clean water to the citizens of Minnesota.

Permitting summary

River eutrophication standards validated by United States District Court

On March 31, 2019, the United States District Court for the District of Columbia upheld the United States Environmental Protection Agency's (EPA) approval of Minnesota's river eutrophication standards (RES) which had been adopted in 2015. (D.D.C. No. 16-1435) The Center for Regulatory Reasonableness had claimed that the EPA's approval of the (RES) was based on flawed science. The court held that the extensive administrative and scientific record supported the adoption of the standards. This decision precipitated the withdrawal of a pending Minnesota Court of Appeals case on the same issues. (In the Matter of Petition for Amendments to Minn. R. 7050.0150, 7050.0220 and 7050.0222 (A16-1220).

Municipal wastewater permits and new effluent limits

This section includes a summary of permits issued or reissued during the previous calendar year; including any changes to permit limits (i.e. effluent limits) due to water quality standards (WQS) adopted or revised during the previous permit term. The below figure illustrates the difference between WQS and permit limits and how they are related.

New water quality based effluent limits (WQBELs) may be assigned when a National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permit is issued or reissued. In 2019, the MPCA issued or reissued 139 NPDES wastewater permits including 34 industrial permits, 104 municipal permits, and 1 ballast water permit. Nine permits received new water quality based effluent limits due to a new water quality standard revised or adopted during the previous permit term (Table 1). All nine of these permits received new phosphorus limits derived from river eutrophication standards (RES), which were adopted in 2015.

Table 1. Wastewater treatment facilities receiving new or modified phosphorus WQBELs in 2019 based on a water quality standard adopted over five years ago.

Facility
Atwater WWTP
Cedar Mills WWTP
Cokato WWTP
Greenfield WWTP
MRVPUC WWTP
New Germany WWTP
Stewart WWTP
Watertown WWTP
Windom WWTP

Pond general permit

The MPCA has final issued the NPDES/SDS Wastewater Pond General Permit No. MNG585000. The permit was issued December 1, 2018, for a term of five years. The permit recently underwent a major modification to include an additional option for reporting a mass total phosphorus limit type; this modification did not result in any changes to any limits to any facilities. The modification was placed on public notice on October 30, 2019 through December 30, 2019. The agency is currently responding to the comments that were received. This general permit authorizes surface water discharges from controlled discharge wastewater pond facilities.

The MPCA is issuing Notices of Coverage (NOCs) to the pond permittees in batches. The first batch of NOCs were issued on December 26, 2018 and included 86 pond facilities. The second batch of NOCs is

currently on public notice and is projected to be final issued on February 2, 2020; dependent upon resolving public comments; there are 62 pond facilities included in the second batch. A list of all pond facilities included in the first batch can be found on the MPCA website: https://www.pca.state.mn.us/sites/default/files/wq-wwprm9-27a.pdf.

Pond facilities not included in the first or second batches of NOCs will remain covered under the expired Stabilization Pond General Permit No. MNG580000 or the facility's individual permit until included in a future batch of pond facilities that will be issued NOCs under the new general permit or until they are issued individual permits.

For more information on the new general permit and the batch process of issuing NOCs, see the Frequently Asked Question (FAQ) fact sheet on the MPCA website: www.pca.state.mn.us/sites/default/files/wq-wwprm1-33.pdf.

Summary of water quality standards development

This section describes work on new or revised water quality standards during the 2019 calendar year.

Wild rice sulfate standard

The Minnesota legislature in 2011 directed the MPCA to undertake further study and, as necessary, revise the wild rice standard.

Following the study period, in August 2017, the MPCA proposed revisions to the wild rice standard. The goal of the revisions was to:

1. Revise the numeric standard to incorporate the latest scientific understanding of the impacts of sulfate
2. Clarify the beneficial use and which waters support the beneficial use
3. Clarify what it means to meet or exceed the standard

As required by Minnesota law, the proposed revisions were reviewed by an administrative law judge (ALJ). The judge, with concurrence of the Chief ALJ, disapproved the revisions in January 2018. The MPCA subsequently withdrew the proposed revisions and changes have not been promulgated.

In the fall of 2018, two task forces were convened – a Governor's Task Force on Wild Rice and a Minnesota Tribal Wild Rice Task Force. Both task forces produced final reports with recommendations about how Minnesota could move forward with comprehensive approaches to wild rice protection and restoration. The Commissioners of the MPCA and Minnesota Department of Natural Resources are undergoing formal consultation with Minnesota's Tribal nations about wild rice health and ongoing stewardship which includes discussion on the current sulfate standard.

Selenium

Site-specific selenium standard for the Lower Minnesota River

As part of Minnesota rule, site-specific standards may be developed when available information demonstrates that a site-specific modification to statewide or ecoregion standards is appropriate (Minn. R. 7050.0220, subp. 7). Minnesota's statewide selenium standard (5 micrograms per liter (µg/L) total selenium as a four-day average (chronic standard), 20 µg/L total selenium as a one-day average (acute standard)) is based on the criteria value derived by EPA in 1987. Extensive research has been conducted since that time, and EPA has updated their protective selenium value to take into consideration that

selenium is bioaccumulative and the risk to aquatic life comes from consumption of selenium in the diet, rather than exposure in the water column. The updated EPA values include protective selenium concentrations in fish tissue, as well as water column values.

Using the information in the updated EPA guidance, a site-specific value was calculated for a portion of the lower Minnesota River, including associated oxbow areas and floodplain lakes. The new fish tissue values for all of the above waters are 15.1 milligrams per kilograms dry weight (mg/kg dw) in egg/ovary fish tissue, 8.5 mg/kg dw in fish whole body tissue, and 11.3 mg/kg dw in fish muscle tissue. The new water column value for the Minnesota River main channel is 11-µg total selenium/L and 5.7-µg total selenium/L for the oxbows and floodplain lakes.

EPA approved the site-specific standards on October 21, 2019. Because selenium is not typically found statewide at elevated concentrations, revising the existing standard is not a priority.

Class 3 and Class 4

Revision of existing Class 3 (industrial consumption), Class 4 (agriculture and wildlife) designations, and associated water quality standards

A request for comments on planned revisions to rules governing water quality standards (WQS) for industrial (Class 3) and agricultural and wildlife (Class 4) usage was published in the State Register on March 11, 2019. The request included a description of the planned peer review process and associated charge questions, which were also open for comment along with the draft technical support document (TSD) through April 22, 2019. Comments received have been posted on the MPCA's website, and the peer review process has been completed. The Minnesota Pollution Control Agency (MPCA) anticipates publishing the proposed rule, TSD and statement of need and reasonableness (SONAR) in the first half of 2020.

Class 2 and Class 7 use designation rule

Revisions to aquatic life and recreation use Classes 2A (cold waters) and 2B (cool and warm waters) and Class 7 (limited resource value waters)

This revision is focused on making updates and corrections to Class 2 (aquatic life and recreation) and Class 7 (limited resource value waters) beneficial use designations or classifications for streams and lakes. These corrections and updates are mostly related to implementation of the Tiered Aquatic Life Use framework (rules adopted in September 2017), which added new Class 2 beneficial use tiers for aquatic life. In addition, a number of cold (Class 2A) and warm/cool (class 2Bd and 2B) water use designations have been reviewed and corrected. A request for comment on the proposed rule was published in the State Register on September 23, 2019 and ran through November 7, 2019. A public hearing was held on December 11, 2019. It is anticipated that the final rule will be published in spring 2020.

Rock River site-specific irrigation standards

As part of Minnesota rule, site-specific standards may be developed when available information demonstrates that a site-specific modification to statewide or ecoregion standards is appropriate (Minn. R. 7050.0220, subp. 7). The Minnesota Pollution Control Agency (MPCA) is evaluating site-specific modifications to the specific conductance and sodium standards for Class 4A (irrigation use) waters for an approximately 16-mile section of the Rock River starting at the Luverne wastewater treatment plant discharge and ending at the Iowa border (part of AUID 10170204-509 and all of AUID 10170204-501).

The site-specific standard being considered is based on an evaluation of critical local factors to determine site-specific numeric specific conductance and sodium values that will be protective of the irrigation use. The current Class 4A sodium value would be replaced with a numeric standard for sodium adsorption ratio (SAR). Current sodium irrigation water quality literature suggests that protecting soil health from excess SAR will also provide protections for direct sodium toxicity to plants. Therefore, a SAR value protective of a given location's soils should also provide generalized protections from excess sodium to crops. The values being considered will include growing season average durations (May to October) and a never to be exceeded frequency.

Minnesota River – review of existing standard

Eutrophication data (i.e., nutrients, algae) and associated parameters from the Minnesota River main stem were analyzed to determine if a site-specific river eutrophication standard (RES) is needed. During the analysis process, permits were not reissued unless explicitly requested by the permittee. Overall, the study demonstrated that a site-specific standard is not needed for the Minnesota River at this time, based on available data.

Data analysis indicates that total phosphorus (TP) levels in the Minnesota River are so high that significant reductions in phosphorus are a necessary first step before determining what, if any, impact other factors are having on algal growth. Because most in-stream phosphorus samples have concentrations that far exceed the existing standard, data from other large river systems in Minnesota with a range of nutrient concentrations were also used to model nutrient-algal relationships. Analysis of these data indicated that the algal-nutrient relationship for the Minnesota River is consistent with those used to develop the RES (Heiskary et al. 2013). Although the large river TP-chlorophyll-a (Chl-a) model is similar to the original models and within the prediction intervals for these models, the large river model predicts that a summer average concentration of 150 µg/L or lower is needed to meet the Chl-a standard. Residence time (or hydraulic flushing rate), shading, and TP have the greatest influence on algal concentrations in the Minnesota River. At the highest flows, residence time and shading due to suspended sediment limit the growth of algae in the Minnesota River despite a surplus of nutrients. At lower flows, residence time and light are not limiting and high levels of TP allow the growth of undesirable levels of algae. In order for the Minnesota River to meet the RES, reductions in TP loading are needed with a focus on reducing loading during periods of average to low flows.

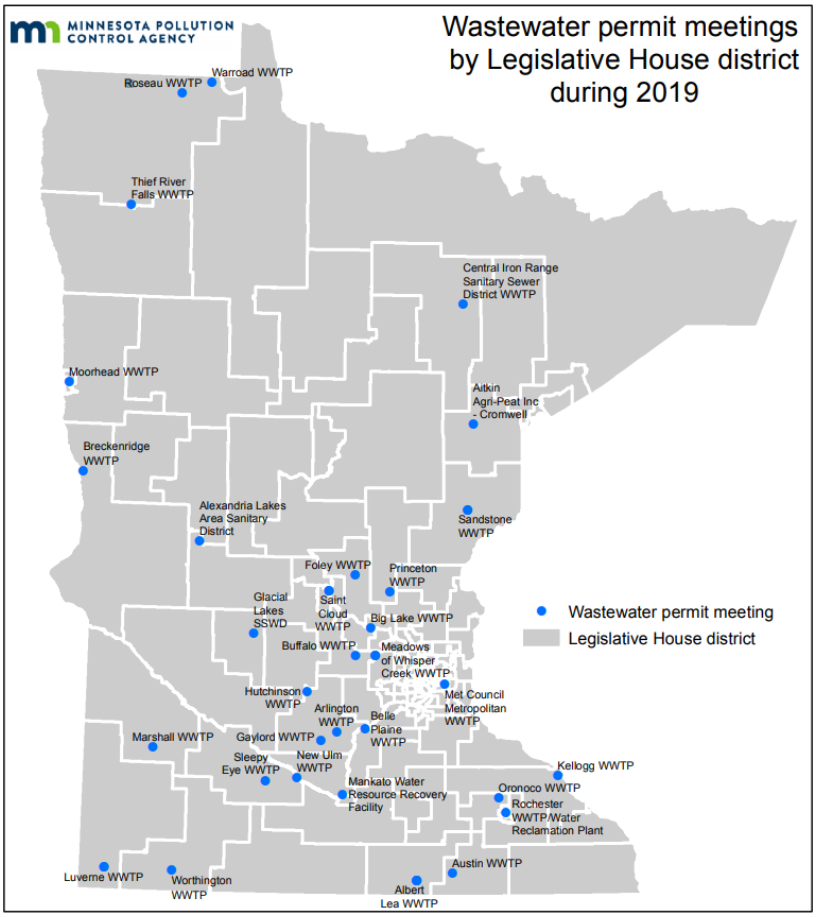
Outreach

PCA staff outreach efforts to municipalities

MPCA strives to be as communicative with municipalities and industrial permittees as possible regarding water quality standards, effluent limitations, facility planning, and compliance options available. Public funding and financing options continue to be a topic of high interest as well for municipalities.

Over the course of 2019, MPCA's effluent limits staff, and municipal liaison were pleased to have visited with more than 33 site visits with municipal wastewater permittees to discuss water quality and NPDES permit issues (Figure 1). This measure does not include the additional phone calls and communications MPCA's permit writers and compliance staff engage with municipalities on a daily basis.

Figure 1. Locations of municipal wastewater permit meetings in 2019.



In addition, MPCA staff conducted monthly permit development meetings with Oronoco, bi-monthly permit development meetings with Rochester, and quarterly meetings with Albert Lea. MPCA staff also continued to meet with the cities of Moorhead, Warroad, Thief River Falls, Roseau, and Breckenridge on issues particular to the Red River Basin. Commissioner Laura Bishop, Assistant Commissioner Katrina Kessler, as well as many additional MPCA staff members conducted significant engagement with the City of Luverne and Premium Minnesota Pork through multiple in person meetings in the City of Luverne and MPCA St. Paul office, phone calls, and written communication. The focus of the efforts were on the shared goals of goals of collaborative problem-solving, economic growth, and water quality protection.

Des Moines River Watershed meeting

On Thursday, November 21, 2019, MPCA staff worked with the City of Worthington to bring watershed information to the permittees in and around the Des Moines River Watershed of southwest Minnesota. As with past watershed meetings, the goal was to provide information regarding water quality of the watershed's lakes and streams, how the water quality may be reflected in NPDES requirements, and provide ample opportunity for communities to ask questions and share information.

The Heron Lake total maximum daily load (TMDL), located within the Des Moines River – Headwater Watershed, is among the oldest TMDLs the agency has completed. To better reflect current TMDL best practices, MPCA has reopened the project and will be reallocating the waste load, and this is the type of information we feel permittees should be aware of.

Additionally, salty parameters, such as total dissolved hardness, bicarbonate and specific conductance - which are associated with Class 3 & 4 Water Quality Standards - and chloride standards, are a particular concern in that part of the state.

Other topics included RES and LES phosphorous standards, public funding options available through Public Facilities Authority and permit-compliance options that are available to permittees.

Figure 2. MPCA Permitting and Compliance Supervisor Paul Kimman, addresses the group at watershed meeting in Worthington, Minnesota.

In all, 27 municipal and industrial permittees attended. To measure how well we communicated, MPCA conducted a survey of attendees. Respondents said the local water quality, relevant water quality standards and phosphorus limit development information was "very useful" (62.5%), or "somewhat useful" (37.5%). About 87% felt the level of technical information was about the right level, while 12% felt it was too technical. Perhaps most importantly, 100% of respondents felt they were treated with respect; and 75% said their relationship with MPCA is very positive, while 25% felt it was somewhat positive.

Ag-Urban Partnership

MPCA staff coordinated with Minnesota Department of Agriculture, the City of Mankato, and Minnesota State Mankato to host a workshop in Mankato on November 18, 2019 on how to build ag-urban partnerships to improve the Minnesota River. About 200 participants listened to panels of city officials and farmers, all discussing ways to improve water quality in the Minnesota River. Senator Frentz and Representative Brand made opening remarks as the event took place in their districts. In addition, Representatives Greg Boe, Todd Lippert, and Richard Bierman all attended the session. MPCA Commissioner Laura Bishop and Mn Agriculture Commissioner Thom Peterson gave keynote speeches.

The workshop featured breakout sessions for small group discussions and brainstorming possible solutions. Several communities indicated a willingness to work to establish partnerships with local landowners to install practices to reduce nutrient pollution to the Minnesota River and improve soil health. The Water Resources Center at Minnesota Stake Mankato is working to summarize the feedback from the workshop that will include ideas for next steps.

New watershed review memo notification process

In 2019, the MPCA heard from Municipalities that there was a desire to provide a greater opportunity for permit holders to review total phosphorus watershed review memoranda's (phosphorus memo) earlier in the permitting process to allow for better planning and address necessary changes. At the time, the MPCA's practice was to post completed watershed reviews on its webpage and to provide notifications to permittees through its monthly newsletter. However, it was not specifically targeted to impacted permittees and it was left up to the permittees to check the website. Through collaboration, the Agency developed a new process whereby the Agency will share the following information with permit holders:

- A notification that the phosphorus memo is complete
- A copy of the completed phosphorus memo
- The possible impacts of the review
- Contact information if they would like to ask questions or recommend changes
- What to expect for next steps
- How they can submit official comments for public record
- How they can find information on the status of other phosphorus reviews in the state

The new process was developed in 2019 and implemented in January 2020.

Clean water discussion series

The Clean Water Discussion Series is a cooperative enterprise for clean water policy lead by the MPCA. The impetus to the group forming was a recognition by municipal wastewater leadership that regulators, policy makers, and permittees all want clean water but there are differing opinions on the role each party has in achieving it, and acceptable steps to achieve it. The goal for the discussion series is to develop/build upon existing strong, healthy professional relationships with city leadership and wastewater professionals; and, recognizing that there are many perspectives on clean water policy, developing opportunities for all perspectives to be shared and heard. In order to achieve these goals, the members of the group have agreed to listen and respect all the voices in the room, be authentic, and engage in active constructive communication even in times of disagreement.

The group started in late 2018 and meets on a quarterly basis. The team members set the agenda through a confidential survey process. This process results in a prioritized list that allows the group to work on strategies that meet the need in a manner that all can live with; also realizing that we may not be able to resolve all of them. This has resulted in a realization that when we are able to stop focusing solely on the areas of disagreement, that we have much more in common and are able to make positive changes that benefit the majority at the optimal time.

Participants include representatives from the following groups with guest attendees as needed:

- League of Minnesota Cities
- Coalition of Greater Minnesota Cities
- Minnesota Rural Water Association
- Minnesota Environmental Science and Economic Review Board
- Minnesota Association of Small Cities
- Minnesota Municipal Utilities Association
- Association of Metropolitan Municipalities
- Metropolitan Council Environmental Services
- MPCA municipal Wastewater program leadership

In addition, small teams work on focus areas outside of the quarterly meeting. The smaller teams report to the larger group. A few examples are discussions pertaining to wastewater operator workforce planning and resiliency and PFAS communication efforts. For each, there are small teams that are working on recommendations from the larger group such as expanding the conditional certification requirements for operators, reestablishing the certification advisory board, and developing PFAS communication tools for cities to use with their residents.

The group has recently expanded to include Public Facilities Authority leadership.

Innovative approaches

Wastewater treatment plant and pond optimization pilot project

Figure 3. Frank Stuemke, a pond expert with MRWA, measures the sludge depth of a pond in Sandstone, Minnesota.

The Wastewater Optimization Pilot Project made significant progress toward identifying ways for facilities to improve nutrient removal while avoiding costly infrastructure projects. Under MPCA's direction, the Minnesota Technical Assistance Program coordinated with five wastewater treatment plants across the state. They created computer models of each facility using modeling software that predicts outcomes from calibrated inputs. This high-tech method of optimizing wastewater treatment has identified cost-savings of $184,700 per year, and eliminated as much as 4,172 kilograms of potential phosphorous per year to our lakes and streams.

A low-tech optimization effort conducted with the Minnesota Rural Water Association (MWRA) focusses on wastewater ponds. By working with operators, MRWA staff bring ground-level knowledge transfer onsite to wastewater pond operators to assist with daily operations, asset management, and emergency response actions. To date, MRWA has worked with 29 pond facilities to bring greater understanding of pond dynamics, water transfers, and best practices.

The two project partners will collaborate to learn more about what is in happening high-performing ponds, tracking dissolved oxygen, pH, microbial activity, and phosphorous concentrations in the water. We will then be able to use this knowledge to boost the performance in other ponds.

This work is made possible through two appropriations, brought by the Legislative-Citizens Commission on Minnesota Resources: $700,000 in 2018 and $500,000 in 2019. The funds support outreach and technical assistance through our project partners and will result in a tangible resource to help operators find low-cost means to reduce nutrients before selecting expensive infrastructure projects.

Wastewater Treatment Facilities participating in the pilot program include:

- New Ulm WWTP
- Glacial Lakes Sanitary Sewer District
- Hutchinson WWTP
- Whitewater River (Dover-Eyota-St. Charles) WWTP
- Le Sueur WWTP, formerly Minnesota River Valley Public Utilities Commission (MRVPUC)

Participating pond facilities include:

- Sandstone WWTP
- Adrian WWTP
- Butterfield WWTP
- Gaylord WWTP
- Moose Lake WWTP
- Mountain Lake WWTP
- Nicollet WWTP
- Rush City WWTP
- Warroad WWTP

- Winthrop WWTP
- Edgerton WWTP
- Taylors Falls WWTP
- Deer River WWTP
- Osakis WWTP
- Onamia WWTP
- Beaver Creek WWTP
- Littlefork WWTP
- Clearbrook WWTP
- Geneva WWTP
- Grand Meadow WWTP
- Ortonville WWTP
- Cook WWTP
- Stockton WWTP
- Wheaton WWTP
- Big Fork WWTP
- New Folden WWTP
- Good Thunder WWTP
- Winthrop WWTP
- Willow River WWTP

The team conducted 103 additional site visits and preliminary assessments and have sufficient work completed on these facilities to begin optimization work, as capacity becomes available.

A Fiscal Year 2020 EPA Nutrient Reduction grant has provided MPCA with the opportunity to fund University of Minnesota research into the combined phosphorus and nitrogen reduction potential of Minnesota wastewater facilities. The University's research results will inform and advance State funded wastewater nutrient optimization projects. This ongoing research will benefit wastewater facility optimization approaches in the coming months and years.

Red River municipal permitting approach

In 2014, the MPCA developed a revised approach for Implementing total phosphorus effluent limits in the Red River Basin. Using that approach, the MPCA issued two permits with effluent limits for phosphorus. Since 2014, there have been two separate efforts within the Basin to address nutrient management. These efforts include projects by the International Red River Board (IRRB) and the Red River Basin Commission (RRBC).

The IRRB has been working to develop targets for phosphorus and nitrogen concentrations and loads in the Red River at the international border and at the rivers outlet to Lake Winnipeg. In late 2019, the IRRB presented proposed targets to the International Joint Commission (IJC). Also in late 2019, a representative of four cities in the Minnesota portion of the basin requested a hearing before the IJC to discuss the proposed targets. They have concerns about the work used to develop the targets and that the targets for nutrients at the border will lead to the need for expensive upgrades to their wastewater treatment facilities. The IJC has granted the hearing request and the hearing will be on January 16, 2020 in Grand Forks, ND.

In 2016, the RRBC received funding from the Minnesota Legislature to develop a basin wide nutrient reduction strategy. The RRBC completed development of the strategy and submitted a final report in 2018. In 2019, the RRBC held several meetings with key stakeholders to begin discussing implementation of the strategy. While it is still early in the process, there is a commitment from both point and non-point sources to work together on the strategy.

The MPCA continues to work with some of the cities in the Red River Basin to develop permits that both protect surface waters and allow the flexibility needed to ensure successful implementation of the nutrient strategy developed through the RRBC process. The MPCA will continue to work with the cities and the RRBC to ensure that these efforts address the cities concerns while maintaining progress towards meeting nutrient goals for the basin.

ALASD adaptive lake management permit development

In early 2018, MPCA and representatives of the Alexandria Lake Area Sanitary District (ALASD) board of directors began developing a new permitting approach to protect water quality, and remediate the

impairments of two lakes, while avoiding expensive physical upgrades to the facility. Under the conditions of the new permitting approach, adaptive lake management activities are being proposed to be employed including the removal of an invasive common carp species, prevention of carp repopulation, and application of alum in a second lake in the chain.

ALASD discharges effluent into Lake Winona, which is classified as a shallow lake, having a maximum lake depth of seven feet. Lake Winona discharges into Lake Agnes, which discharges into Lake Henry. All three lakes are impaired for eutrophication – excessive algae growth. These impairments have required a phosphorus limit of 0.157 mg/L to address ALASD's part of the solution and to restore the water quality to meet the lake eutrophication standards.

The tentative adaptive lake management approach would conceptually allow ALASD the time necessary to study the carp behavior and ultimately remove a carp infestation from Lake Winona that continually uproots plants and suspends phosphorus-rich sediment. If all goes as planned, the absence of the carp will promote establishment of native aquatic plant species, leading to greater water clarity. Carp barriers will also be installed where Lakes Winona and Agnes connect, preventing the carp from returning to Lake Winona.

Lake Agnes, which is also currently impaired for excessive algae growth, linked to ALASD's effluent, will be treated with alum. This chemical treatment will cause the suspended phosphorus that leads to algae growth to precipitate out of the water column and be sequestered in the sediment below.

If these activities are successful, an alternate, less-restrictive phosphorus limit of 0.25 mg/L and 665 kg/year would become effective in ALASD's NPDES permit. However, adaptive lake management practices require that if one activity does not work, another becomes necessary. If the carp management in Lake Winona does not achieve the desired effect of a net reduction in algae growth, as measured by chlorophyll-a, ALASD will be required to make investments in the physical infrastructure of the wastewater treatment facility, thereby ensuring that the water quality of Lake Winona and Lake Agnes are ultimately improved. ALASD will have two permit cycles (10 years) to evaluate the effectiveness of the adaptive lake management techniques. It is important to note that the NPDES/SDS permit will be placed on public notice in 2020 and could change based on public input.

Sanitary sewer overflow strategy

The MPCA and cities have implemented several actions over the years to improve collection system operation and maintenance and reduce the amount of raw or partially treated wastewater from entering homes and the environment. These incidents, collectively referred to as sanitary sewer overflows (SSOs), are always unfortunate, frustrating for those impacted, costly, and often difficult to resolve.

It has become increasingly clear that collections systems are not designed to handle the intensity and frequency of rain events that Minnesota has been experiencing. An updated strategy was developed due to the growing trend of issues related to climate change and aging infrastructure.

The goal of the strategy and program efforts is to further reduce the impacts of these untreated SSOs for human health and environmental protection and mitigate the impacts of the increase in wet weather events on aging infrastructure. The strategy motto is "towards zero SSOs". The program has begun or reinitiated several items such as:

- Newly revised 'Release reporting and sampling' form to get better data on causes, quantities and locations of SSOs to better evaluate where and why the problems exist and to find better long term solutions

- Development of communication tools for cities to aid in providing adequate notification to their residents
- More emphasis through permits and inspections on asset management for cities to assess and plan for needed upgrades to aging infrastructure
- Climate adaptation analysis with SSOs being a main priority
- Developing tools for cities to evaluate inflow and infiltration from private lateral lines
- Promoting the League of Minnesota Cities newly developed model ordinance for private lateral evaluation and mitigation
- Beginning discussions on possibly expanding certification of collection system operators to some private collection systems that are also having more frequent SSOs.

Properly addressing SSOs will take years to complete and requires great collaboration between state agencies, cities, residents, and elected officials. The collaborative efforts including but not limited to the completion of risk assessments and long term planning, enhanced outreach and education, and pursuit of adequate funding will continue in 2020.

Conclusion

The activities and accomplishments highlighted in this report are not comprehensive; there are many more that could be mentioned. But the content of this report fulfills the statutory requirements of Minn. Stat. § 115.44, subp. 9, as they relate to municipal NPDES permitting. The MPCA's municipal wastewater program considers our efforts to engage municipalities as partners in clean water to be essential in protection of the waters of the state of Minnesota. Municipalities are the front line protection for protecting and enhancing human health and environment through proper wastewater management, collection, and treatment. We greatly appreciate their efforts in protecting Minnesota's valuable water resources.