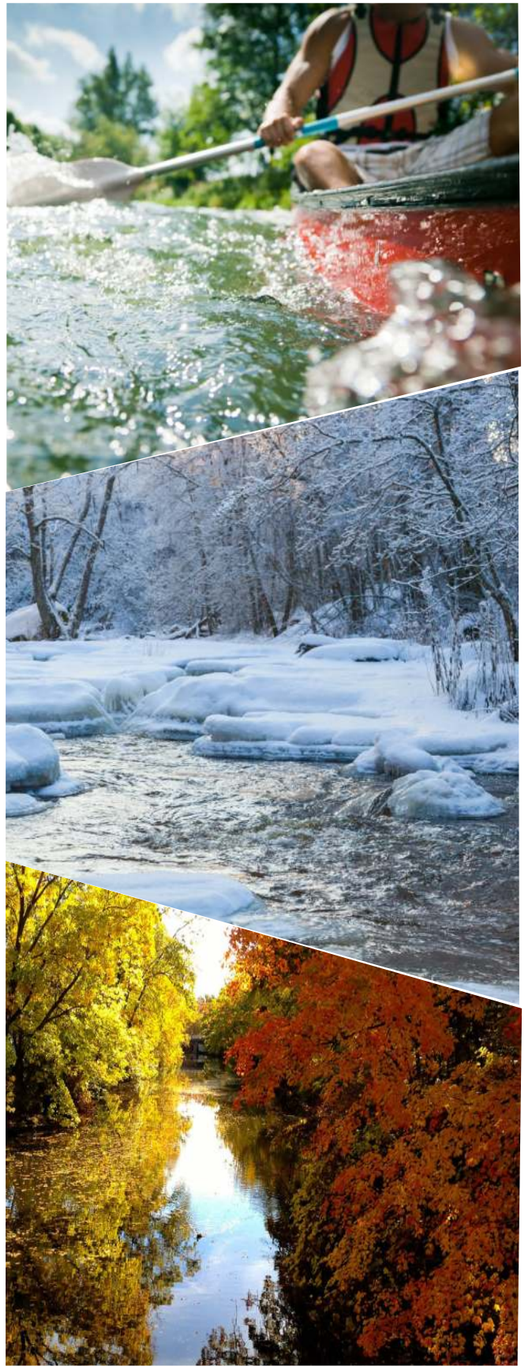
GREATER LANSING REGIONAL COMMITTEE FOR STORMWATER MANAGEMENT

www.mywatersheds.org

2021 ANNUAL REPORT



GLRC Members

Clinton County
Clinton County Road Comm.
Delhi Charter Township
Delta Charter Township
DeWitt Charter Township
City of DeWitt
City of East Lansing
Eaton County
City of Grand Ledge
Ingham County
Lansing Charter Township
Lansing School District
City of Lansing
City of Mason
Meridian Township
Michigan State University
Waverly Community Schools

TRI-COUNTY
regional planning commission

A LETTER FROM OUR CHAIR

Dear Friends of the GLRC,

2021 has been another productive year for the GLRC and its member communities. In early April, MS4 Progress Reports were due for the first time in six years, requiring communities to dig deep in their records and show compliance with stormwater permits. The results were positive and highlighted the strength of our regional approach on these issues. The GLRC also forged new connections, spearheading multiple projects to become more involved in area schools and partner with more businesses in our outreach efforts. This year's accomplishments include:

- Developing an innovative Augmented Reality watershed education tool
- Coordinating the submittal of EGLE MS4 Progress Reports
- Developing a new home runoff calculator tool
- Participating in EGLE MS4 Inspections and Desk Audits
- Developing ordinance tools to encourage adoption of Green Infrastructure
- Hosting the GLRC Annual Dog Photo Calendar Contest
- Partnering with PhD students to develop new business outreach strategies
- Joining our national peers in the National Municipal Stormwater Alliance
- Seeking funding for developing watershed focused Teacher Professional Development coursework
- Participating in regional climate adaption discussions

This year, we also noticed a growing interest in understanding stormwater systems and wet weather management from our residents and community leaders, largely in response to the occurrence of multiple intense storm events and localized flooding this summer. The GLRC responded with new educational tools to address these concerns, and will continue to serve as the stormwater resource in this region.

We hope that after viewing this report, you will be inspired to action! Visit the GLRC website to see how you can be involved with the committee or what you can do as a citizen to protect and improve water quality no matter where you live.

Sincerely,

Nicole McPherson, Acting Director of Public Works, City of East Lansing
2021 GLRC Chair

THE BASICS

Who Is the GLRC?

The Greater Lansing Regional Committee for Stormwater Management is a guiding body comprised of regulated Municipal Separate Storm Sewer System (MS4) communities within the Greater Lansing region of Clinton, Eaton, and Ingham counties. The committee was established in 1999 to guide the implementation of the stormwater program for participating communities within the Red Cedar River, Grand River, and Looking Glass River watersheds. The GLRC is administered by the Tri-County Regional Planning Commission.

What Is an MS4?

Municipal Separate Storm Sewers Systems (MS4s) capture runoff water in catch basins and pipes that lead directly to rivers, streams, and lakes without being processed at a treatment plant. Oil, pet waste, and other pollutants "hitch a ride" with runoff water, enter the storm system, and accumulate in waterbodies. To limit pollution, the Environmental Protection Agency's Phase II rule requires operators of MS4s in urbanized areas to implement programs and practices to control polluted stormwater runoff through the use of National Pollutant Discharge Elimination System permits. For permit compliance, MS4 municipalities must meet six "minimum control measures."

Minimum Control Measures

Public Participation/Involvement

Providing opportunities for citizen participation in program development and implementation, including effectively publicizing public hearings and/or encouraging citizen representatives on a stormwater management panel.

Public Education

Distributing educational materials and performing outreach to inform citizens about the impacts polluting stormwater runoff discharges can have on water quality.

Illicit Discharge Detection & Elimination

Developing and implementing a plan to detect and eliminate illicit discharges to the storm sewer system. Activities include developing a system map and informing communities about hazards associated with illegal discharges and improper disposal of waste.

Construction Site Runoff Control

Developing, implementing, and enforcing an erosion and sediment control program for construction activities that disturb one or more acres of land. Controls could include silt fences and temporary stormwater detention ponds.

Post-Construction Runoff Control

Developing, implementing, and enforcing a program to address discharges of post-construction stormwater runoff from new development and redevelopment areas. Applicable controls could include preventative actions such as protecting sensitive areas (e.g., wetlands) or the use of structural best management practices (BMPs) such as grassed swales or porous pavement.

Pollution Prevention/Good Housekeeping

Developing and implementing a program with the goal of preventing or reducing pollutant runoff from municipal operations. The program must include municipal staff training on pollution prevention measures and techniques, such as regular street sweeping, reduction in the use of pesticides or street salt, or frequent catch basin cleaning.

"The GLRC continues to excel at using adaptive stormwater management to promote behavior change and address water quality impairments. The updated Public Education Program is an excellent example of using a variety of implementation tools to successfully deliver content to a wide-ranging audience. The adaptive stormwater practices used by the GLRC continue to be shared throughout the state as high performing examples."

Christe Alwin
Statewide MS4 Program Coordinator
Michigan Department of Environment, Great Lakes, and Energy

STRUCTURE AND FINANCES

The GLRC is supported by the Tri-County Regional Planning Commission (Tri-County), which provides program staff, administrative, and financial support. GLRC members pay annual dues for the services provided. The following committees coordinate and complete the work necessary to ensure the GLRC maintains compliance with MS4 permit requirements.

Illicit Discharge Elimination Program Committee

Guides the organization and implementation of the Illicit Discharge Elimination Program (IDEP), mapping guidelines, field-sampling protocols, and how the watershed will be monitored for progress. The IDEP Committee has reviewed pet waste management, septic tank maintenance issues, IDEP ordinances, and provided staff training.

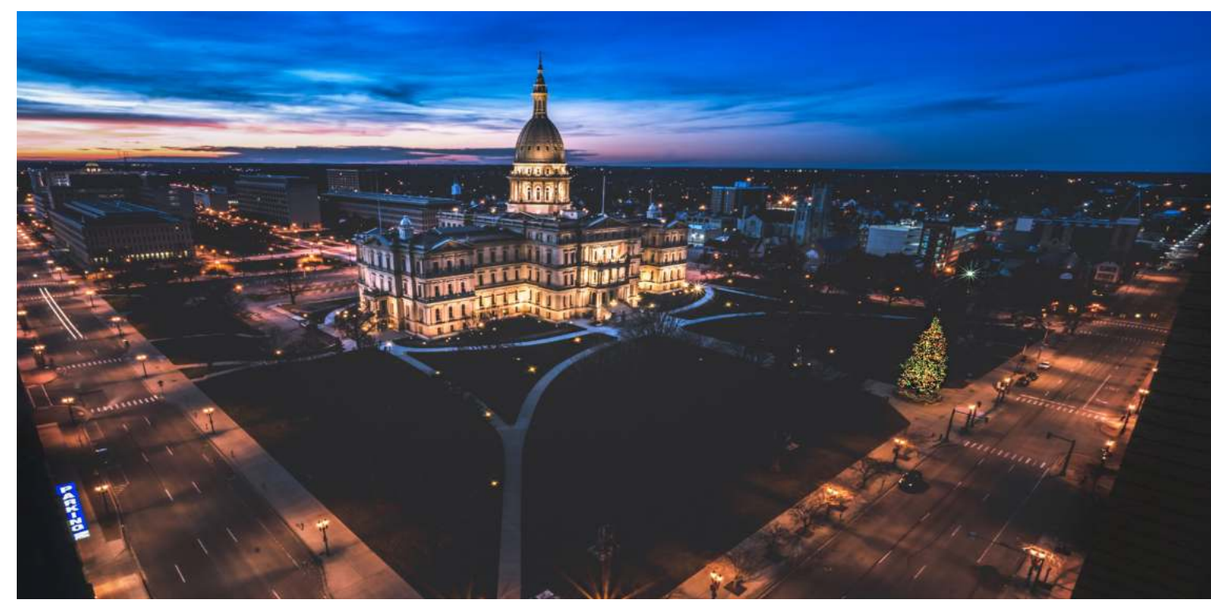
Total Maximum Daily Load Committee

Makes recommendations regarding the Grand River and Red Cedar River E. coli Total Maximum Daily Load (TMDL) requirement. The committee provides education and updates to GLRC members to assist in the development and implementation of TMDL programs.

Public Education Program Committee

Guides the overall public education, participation, outreach, and involvement process for the stormwater program. This effort includes evaluation and assessment of public knowledge and activities.

Category	2021 Expenses
TCRPC Administrative Cost and Support Staff	$95,084
Illicit Discharge Elimination Plan (IDEP) Committee	$0
Public Education Plan (PEP) Committee	$11,926
Total Maximum Daily Load (TMDL) Committee	$0
Monitoring Support	$0
Website Hosting	$30
Annual Report Printing	$600
Total	**$107,640**



HEAVY RAINS AND BACKED-UP DRAINS

Areas of Greater Lansing experienced waves of localized flooding throughout summer 2021, leaving many looking to their neighbors and leaders for answers. Long-term residents who have typically avoided flood damage at their property are asking what's changed? Why is this flooding happening now? In short, these were no typical rain events.

On August 11th and 12th, areas of Ingham County saw over 8 inches of rainfall. In late June, 3.76 inches fell in East Lansing alone. Both rain events met or exceeded the 30-day total precipitation that is normal for their respective months and the single August 11-12 event brought more than twice the rain that is typical for all of August! The speed and intensity of these storms played a critical role in the flooding impact, as they produced stormwater-runoff faster than our storm sewer systems were designed to handle.

The 8-inch event in August fell over a 7j-8 hour period, and a smaller, yet more intense event in mid-September saw 2 inches of rain within 15 minutes! Per the National Oceanic and Atmospheric Administration's (NOAA) Atlas-14 Precipitation Frequency Estimates, rain events like these have a 0.1% likelihood of occurring in any given year. Simply put, they are expected once every 1,000 years.

ALTERED LANDSCAPES, CHANGING CLIMATE

The increased volume, intensity, and frequency of these events are due at least in part to our warming climate. As air warms, it allows the atmosphere to hold more moisture resulting in more precipitation, and climate models project that the Great Lakes region will become wetter and warmer with more intense storms in the future. Under these conditions, what was once a 100- or 500-year rain event may be experienced much more frequently.

Intense storms can have a greater impact on developed areas like Greater Lansing. In urban and suburban communities, rain runoff has fewer places to go as impervious surfaces like homes, roads, and parking lots cover the landscape and prevent stormwater from infiltrating into the ground.

Normally, a two-inch rainfall event during a 24-hour period occurs once or twice a year. In an undeveloped, forested area with sandy soil, little to no runoff is generated by this type of rain event. However, on a highly developed parcel like a shopping center, the same storm would create over an inch of runoff! For that much runoff to be generated in a natural, undeveloped area, 5.5 inches of rain would have to fall within 24 hours - something that would be considered a 100-year event. This means that once land is developed, storms that happen one to two times a year generate as much runoff as what a natural, undeveloped area would historically see every 100 years.

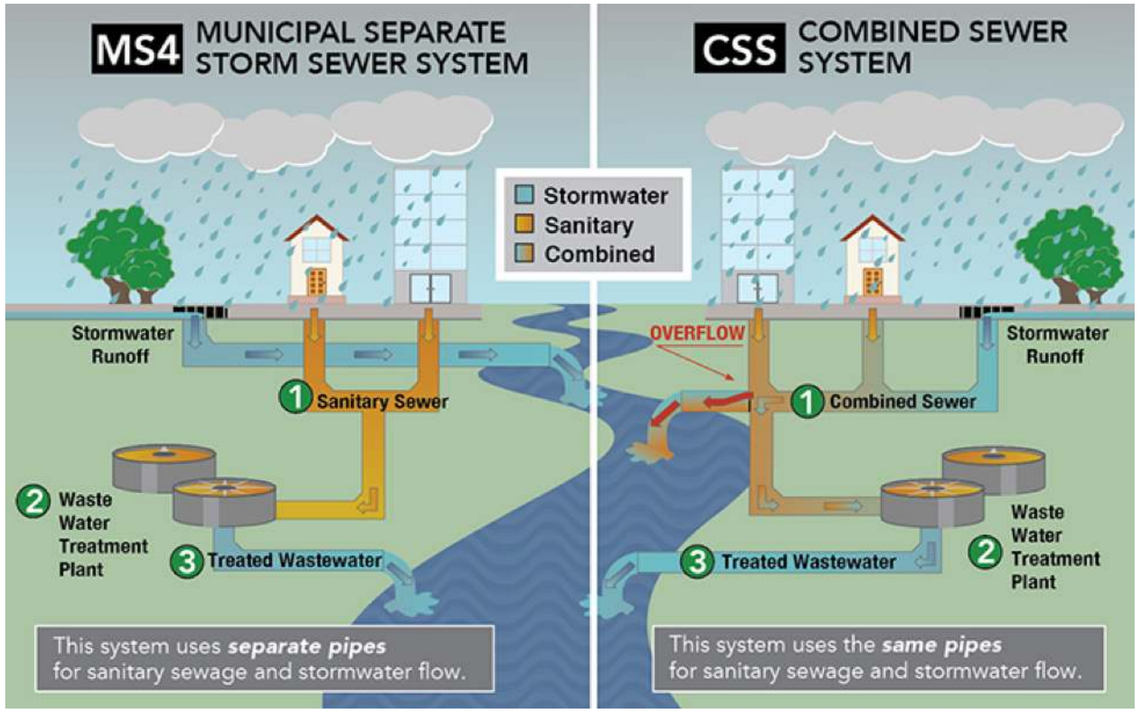
Communities work to prevent this excess runoff from becoming flooding through networks of storm sewers that carry would-be floodwaters away from developed areas and discharge them into water bodies (and in some cases, a treatment plant). Detention and retention ponds, rain gardens, and other structural practices are also used to capture, infiltrate, or slow the water on site. However, these systems were not designed to handle the volume or intensity of rain that is becoming more common.

SEWERS, EXPLAINED

Many residents use the term "sewer" interchangeably when referencing the different types of waste and storm sewer systems, though there are important distinctions. Some older communities may have combined sewers known as **Combined Sewer Overflows**, or CSOs. They are outdated systems that are still in place in some older communities. This "one pipe system" combines both surface runoff (stormwater) with wastewater (sewage) and leads to a treatment plant for processing. However, these systems were designed to overflow when a heavy rain or snow melt event backlogs the system and exceeds its storage and treatment capacity. When this occurs, the mixture of stormwater and raw sewage overflows directly into a river, stream, or lake. In rare cases, extreme rain events and/or blockages can cause combined sewers to back up through a home basement drain.

Untreated sewage entering our surface water or property has obvious impacts to water quality, ecosystems, and human health. To combat this, modern storm sewers have moved away from the "one pipe system" of the past (though some remain) and now separate wastewater from storm runoff. Most of the storm sewers in the Greater Lansing area are what we call **Municipal Separate Storm Sewer Systems (MS4s)**. In these systems, the sanitary sewer still directs sewage to the treatment facility, but stormwater is diverted directly to water bodies.

The MS4 reduces the risk of large quantities of sewage entering surface waters or backing up into homes, but since the stormwater doesn't go to the treatment plant, it has its own risks and must be "treated" in other ways. MS4s rely on catch basins and built infrastructure to filter out large pieces of litter, sediment, and oils, but these systems only work if they are cleaned and maintained, and understood by the public. If they are clogged with debris, grass clippings, or leaves, or if intense rains fall faster than the system can carry it away, the MS4 can back up and cause localized flooding in roads, neighborhoods, and business districts.



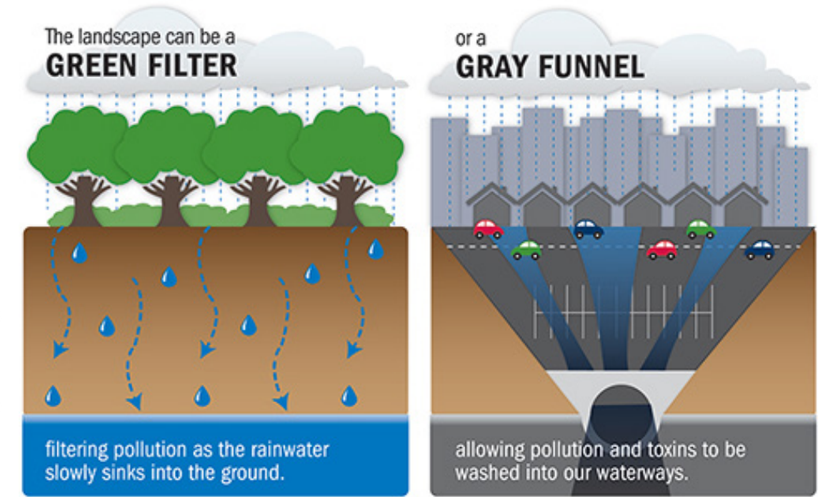
To put it in perspective, consider Cook County, Illinois, the home of Chicago. One inch of rain across this heavily developed county yields ***16 billion*** gallons of water, so every drop kept out of the storm sewer system helps, and every clogged drain can cause problems. You can take steps to reduce the risk of flooding on or near your property by capturing or infiltrating precipitation, which can limit the likelihood of backed-up drains and catch basins and lower the burden on the storm sewer system.

YOU CAN HELP

What can you do to reduce your contribution to the storm sewer system?

- Install a rain garden that features deep-rooted, native plants and a depression in the landscape to capture and infiltrate runoff.
- Install a rain barrel and connect it to a downspout to save water and use it later.
- Consider the impact of impervious surfaces when redoing driveways or adding outbuildings. Use bioretention, porous pavers, or other green techniques to negate increases in runoff.

All of these stormwater tips can help protect your home from flooding, either directly by preventing the pooling of runoff in your yard, or indirectly by reducing your contribution to the storm sewer and therefore lessening the burden on the system. But there are other ways to protect your home against water damage from heavy rain.



- Adopt a drain! Keep debris clear of the storm drain catch basins to allow for proper drainage, and/or alert your local municipality of issues with drainage.
- Ensure your gutters are clear to avoid water overflowing before reaching the downspout.
- Place your downspout discharge at least four to six feet away from the home, which reduces the amount of water near your foundation and basement.
- Grade the landscape around your home to move water away, not toward, your foundation. A good rule of thumb is that the ground should drop one inch for every one foot you move away from the house. Build up soil and landscaping to create this downslope.
- Use a sump pump and hook it up to a battery backup in case of a power outage.
- Consult with a plumber about flood prevention tools like backflow preventors, sewer traps, check valves, and more.
- Plan your landscaping to avoid root intrusion into sewer pipes. Roots can damage sewer lines and cause blockages.

It's also important to share these ideas with your neighbors and support investment in our local infrastructure. If residents, businesses, and municipalities work together to reduce stormwater runoff and improve both our public and private wet-weather infrastructure, we can be better prepared for intense rain events in the future. Visit MyWatersheds.org to learn about how communities in Greater Lansing and throughout the country are managing their stormwater challenges and how you can help at home.

PROGRESS REPORTS

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) requires MS4 communities to submit documentation showing they have met or are making progress toward the commitments outlined in their permit. These aptly named "Progress Reports" are due to be submitted every two years and serve as a compliance monitoring mechanism for EGLE to monitor program success in between on-site audits and inspections (which can be 5-10 years apart). In April 2021, all 17 GLRC member communities successfully filed their Progress Reports with the State.

Despite the typical two-year cycle, unanticipated delays for issuing EGLE permits resulted in a five-year gap between Progress Report due dates for Greater Lansing MS4s. This delay meant GLRC communities were not required to submit a Report since spring of 2016. This posed a potential challenge to member communities, as a long gap and staff turnover can impact records retention and institutional knowledge. It also tripled the reporting period and required a greater time investment to develop.

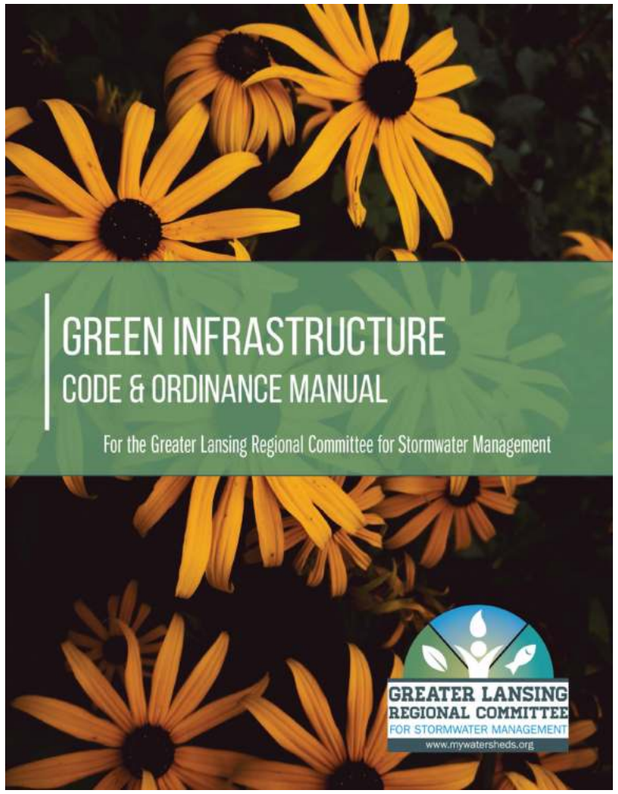
The GLRC helped to ease this burden by developing a Progress Report template for members. Due to the GLRC's regional approach and coordinated efforts, much of the required reportables are shared and can be reported out by the GLRC coordinator. Public outreach is supported by dues from all organizations, so each has claim to the educational campaigns' reach. Training events are coordinated for staff of all members, so new staff training is completed on time. These and other records are maintained by the coordinator and are compiled into one, shared Progress Report template that is completed by individual members. This method highlights another important benefit of the GLRC's regional approach by saving staff time for 17 communities and ensuring that final submittals meet the expectations of EGLE.

The Progress Reports are reviewed by regulators through "Desk Audit" compliance monitoring. Desk Audits seek further clarification, identify program deficiencies, and end with compliance determinations. These progress review audits began in 2021. The next Progress Reports for GLRC communities are due in April of 2023, and members are posed to be well prepared.

GSI CODE MANUAL

Last year, the GLRC assisted Meridian Township in an audit of their codes and ordinances to identify outdated language that prohibits, discourages, or is silent on the use of green stormwater infrastructure (GSI) solutions. Policies regarding specific requirements for landscaping species and spacing may not accommodate well-designed rain gardens, and surfacing standards for asphalt and concrete may prevent porous pavement options. By identifying these and similar gaps in the code, communities can make changes to better reflect their "green" priorities within their guiding policies.

Following the completion of the Township's audit, so began the task of replacing problematic code with GSI-friendly alternatives. Rather than developing boilerplate specific to the Township and each subsequent community that participates in a similar review, staff recognized this as an opportunity to create standardized code language for adoption throughout the GLRC and the region. This resulted in the development of the GLRC's Green Infrastructure Code and Ordinance Manual.



The GLRC hopes the Manual will establish a regional approach to GSI implementation for Greater Lansing communities. Not only does standardized, pre-approved language reduce the workload for the staff and boards at individual communities overseeing code updates, but it also creates a regional consistency that eases the burden on developers. As with many other GLRC initiatives, the Manual aims to level the playing field for the region and limit the variation between stormwater regulations across jurisdictions.

While the document is still under final review, it will soon be available as a resource for all Greater Lansing communities. Users are encouraged to adopt and adapt individual sections of boilerplate that address high priority opportunities they've identified in a GSI code audit, and not consider it a guide for a holistic overhaul of municipal ordinances.

2021 DIGITAL OUTREACH STATS

+500k
YouTube Impressions

+60k
YouTube Video Views

+300k
Total Facebook Reach

+3k
Facebook Post Engagement

Facebook and YouTube have become the GLRC's primary tools for sharing environmental information with residents. We have seen particularly great success in utilizing paid social media advertising, allowing the Committee to reach more people than ever before.

These "boosted" posts and advertisements allow the Committee to bring local environmental messages to the screens of people who are not already following the GLRC or individual members' social channels, ensuring that content will reach individuals who are less likely to be familiar with stormwater issues. Additionally, ads can be geographically targeted, ensuring that the outreach budget is spent where it matters most to members: the Greater Lansing area.

In 2021, the GLRC's "MyWatersheds" YouTube channel had over a half million impressions, which means the video, or parts of the video were seen by viewers over 500,000 times. These videos also received over 60,000 views. A "view" is counted when a user watches at least 30 seconds of the video or watched it in its entirety if the video is less than 30 seconds (which many of the GLRC videos are). This translates into a 12% view rate, which is the average expected rate for videos on YouTube and indicates that this outreach campaign is performing well.

Facebook continues to be a good educational tool for the GLRC, although with algorithm changes and the prioritization of videos on the platform, "reach," or the number of people exposed to our content, has declined over the past few years. Still, with over a quarter million encounters of our content and thousands of post interactions, we're able to demonstrate that our message is being seen by the community. Coupled with YouTube outreach, we're meeting people where they are (online) and reaching more people than ever with water quality information.

Car Washing

Household Hazardous Waste Recycling

Pick Up After Your Pets

Lawn Care

Road and Sidewalk Salt

Motor Oil Management

CLIMATE ADAPTATION

With extreme rain events and irregular weather patterns becoming more common in the region, municipalities have intensified their efforts to adapt and plan for a changing climate. In early 2021, regional stakeholders met to discuss opportunities for coordinating on these issues, and that effort evolved into the "Capital Area Sustainability Partnership," or CASP. The group is a regional collaboration network of governments, non-profits, and academia dedicated to promoting best practices that demonstrate environmental stewardship, economic vitality, and social responsibility, bringing together partners from across the Tri-County area to create a broad forum.

Tri-County's environmental sustainability planner, who coordinates the GLRC, was asked to facilitate this group. This connection to the GLRC has helped nurture a close focus on stormwater management and green infrastructure. A CASP working group has selected the GLRC Green Infrastructure Manual as one of its initial priorities, hoping to supplement the GLRC's efforts by promoting it outside of the regulated, urbanized area. The groups hope that CASP can help educate non-MS4 communities on the benefits of green stormwater infrastructure and highlight the economic and social benefits that can be seen in communities that aren't compelled by permits to manage their runoff.

The CASP network is also very interested in building standards, sustainable land use, watershed protection, and flood prevention, all areas where the GLRC can offer expertise and grow our audience.

AUGMENTED REALITY SANDBOX

After a long year of planning and building, the Augmented Reality Sandbox (ARS) is finally ready to debut to the region!

The GLRC, in proud partnership with the Eaton Conservation District (ECD), designed and assembled the ARS in 2021 and have it ready for deployment in the new year. The Augmented Reality Sandbox uses a projector, a Microsoft Kinect 3D camera, and powerful simulation and visualization software developed by the University of California, Davis that allows users to create topography models by shaping real sand, which is then augmented in real time by contour lines and simulated water. The system teaches users of all ages about watersheds, catchment areas, hydrologic concepts, and how to read topographic maps.

Recent public surveys have indicated that nearly 75% of area residents do not understand what a watershed is. To meet permit requirements of the MS4 program, the GLRC has had to explore creative ways to address this knowledge gap. The GLRC hopes that the ARS is the continuation of these efforts.

Financial support for the ARS was provided by both the GLRC and ECD, and both organizations will be coordinating with local schools, science fairs, libraries, and other organizations for presentations and longer-term installments.

If you or your organization is interested in a presentation, please reach out to the GLRC or ECD to coordinate!

Photo is an example of what the final augemented sandbox looks like.

SMALL BITES

TEACHING THE TEACHERS

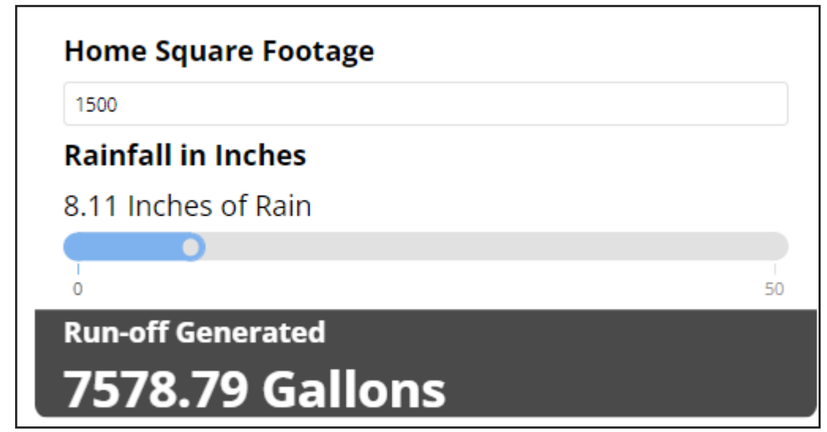
The GLRC partnered with the three county conservations districts, the Mid-Michigan Environmental Action Council, and a retired teacher to assemble a grant proposal for a National Oceanic and Atmospheric Administration (NOAA) Bay Watershed Education and Training (B-WET) grant opportunity. If successful, the funding will support the creation and administration of a professional development program for area teachers that will provide them the tools, knowledge, and support to effectively teach stormwater and watershed management concepts. Participating teachers will receive a stipend to support this after-hours development, and their classrooms will be invited to participate in field days where students learn to sample waterways, identify invasive species, and be exposed to a variety of environmental professionals. The project team hopes the program establishes long-term sustainable relationships between environmental practitioners and educators while highlighting potential environmental career paths for young students. Award announcements will be coming in spring of 2022!

NATIONAL MUNICIPAL STORMWATER ALLIANCE

This year marked the first of the GLRC's membership in the National Municipal Stormwater Alliance (NMSA), a national organization comprised of groups representing at least five MS4 permitted communities. The GLRC is the first organization in Michigan to join and is currently working to establish a statewide MS4 organization to participate in NMSA's discussions. The NMSA allows for us to communicate our local MS4 challenges to the national level, highlight the funding needs of our programs, and advocate for support from the federal government. The GLRC plans to continue involvement with the group and even lead a virtual workshop to share our outreach successes with our national peers!

RUNOFF CALCULATOR

As detailed earlier in this report, one particularly wet weekend in June brought over 8 inches of rainfall to Greater Lansing! In response, the GLRC developed a new calculator tool to help residents understand how many gallons of runoff their homes generate during these weather events (and how much water they can capture with green stormwater infrastructure solutions). Visit www.mywatersheds.org/calculator to plug in your home's square footage.



RETURN OF IN-PERSON EVENTS

Following the long pandemic-induced pause of in-person events, the GLRC finally reemerged in the community this fall! GLRC member Delta Township represented the group at the Township's annual Trick or Treat Trail. Over 700 people attended and received GLRC outreach materials, candy, and our new branded color-changing cups.

GLRC PLANS FOR 2022

- Implement the GSI Code and Ordinance Manual
- Host the GLRC Seminar
- Renew the GLRC Memorandum of Agreement to reaffirm the future of the GLRC regional approach
- Host dry-weather outfall screening field training
- Develop a standard approach to post-construction BMPs
- Perform IDEP training for members' municipal staff

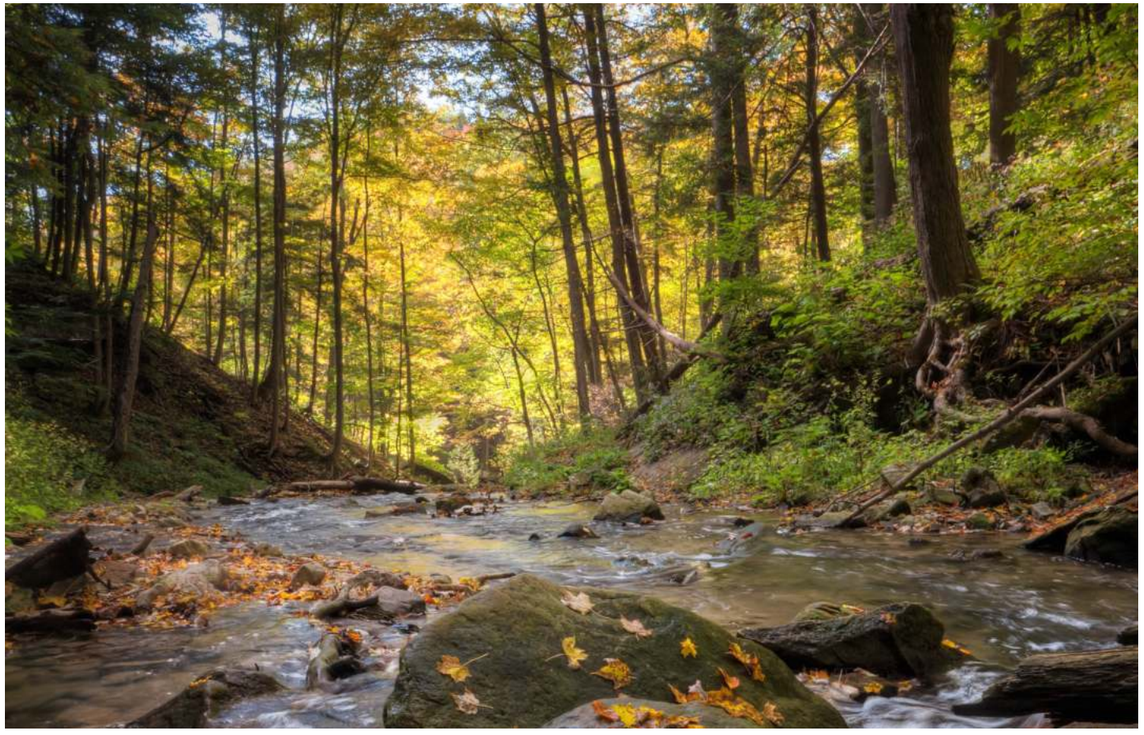


Photo Credits
@LenonJames: cover photo, pages 4, 14, 17

"At the request of the DEQ, the GLRC successfully piloted a new MS4 permitting approach. The GLRC framework of engaged membership focused on regional collaboration was used by the DEQ to guide development of the new MS4 permitting approach. The GLRC continues to be an example of a successful model for collaborative stormwater management by maximizing financial resources, delivering consistent messaging across the watershed, and developing regional stormwater control standards."

Christe Alwin
Statewide MS4 Program Coordinator
Michigan Department of Environmental Quality (Now Michigan Department of Environment, Great Lakes, and Energy)

Produced by

TRI-COUNTY
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Stay Connected.

Follow the GLRC and Tri-County online for updates on regional planning and stormwater management!

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