

2023

MACOMB COUNTY PUBLIC WORKS WINTER REPORT

COMMISSIONER
CANDICE S. MILLER



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Commissioner

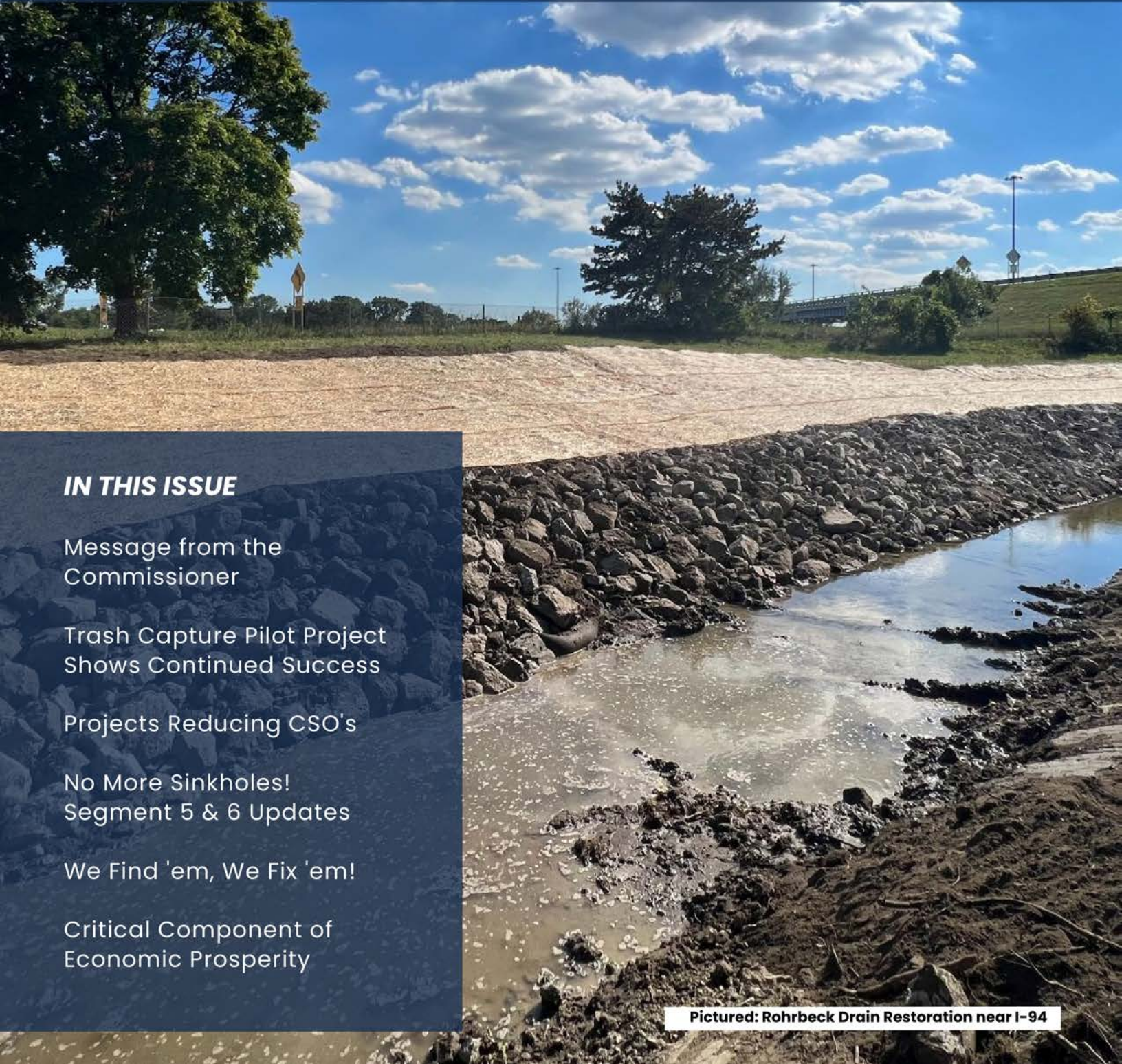
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Critical Component of
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Pictured: Rohrbeck Drain Restoration near I-94



Our Mission

Improve
Water
Quality

Improve
Quality
of Life

Critical
Component
of Economic
Prosperity

The Macomb County Public Works Office has three goals:

improve water quality, improve the quality of life for our residents, and serve as a critical component of economic prosperity in our community.

The MCPWO maintains 475 county drains that prevent flooding in our communities.

Some of these drains are open streams or creeks, while others are massive underground structures that carry storm water away from neighborhoods and businesses. Given our responsibility for these waterways, we are actively engaged in numerous initiatives to enhance the overall water quality in our lakes and rivers, most notably the Clinton River and Lake St. Clair. In addition, we operate 68 miles of sanitary sewer lines which transport waste from more than 800,000 residents and businesses to the Great Lakes Water Authority (GLWA) Water Resource Recovery Facility (WRRF) for proper treatment.

COMMISSIONER'S MESSAGE

From major construction projects to sewer inspections, from clearing logjams to reviewing land development engineering plans, the Macomb County Public Works Office has been working hard in a variety of ways to improve our underground infrastructure and manage our storm water.

Our office has jurisdiction of 475 drains with a total of 732 miles of open and enclosed drains. All are a factor in our ongoing mission: Improve water quality, improve quality of life and be a key component of economic prosperity.

Since taking office in January 2017, I have been committed to transparency. Much of the critical work we perform occurs far below the surface, out of view from passersby. Everywhere I go, people tell me they appreciate our efforts to explain our projects and services, why those activities are important and how we're spending their dollars.

Our various projects demonstrate Macomb County has the foresight and political will to make major investments in our underground infrastructure. Failure to maintain or rehab many miles of interceptor sewers would lead to infrastructure disasters like the one that occurred in late 2016 on 15 Mile Road that would threaten property and the public's safety.

Included in this report is an overview of our In-System Storage construction project in the drainage district that serves all of Eastpointe and most of St. Clair Shores to reduce overflows of combined storm water runoff and sanitary sewage into Lake St. Clair. Coupled with previous operational changes and plans for another project at the Chapaton Pump Station, we will dramatically reduce CSOs.

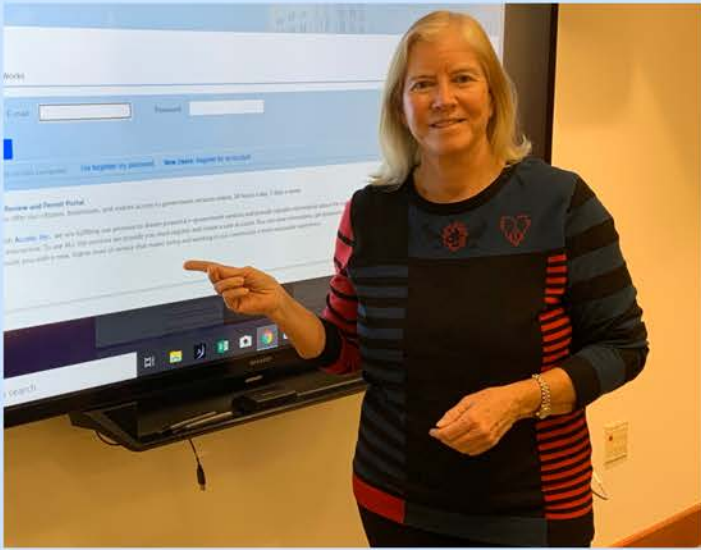
Continuing to allow CSOs - although permitted by the state - simply because "it's how they've always been done" isn't right. For our children, our grandchildren and Michigan's environment including our wonderful lakes, all counties must do better.

You'll also find information about our convenient online portal that allows developers and homeowners alike to request drain permits and soil erosion permits from our office and submit plans, any hour of any day. And because all of us must be good shepherds of our waterways, we have included the phone number for our toll-free 24-hour "Report a Polluter" hotline.

For more information about the Public Works Office, visit us at macombgov.org, subscribe to our e-newsletter and follow us on social media.



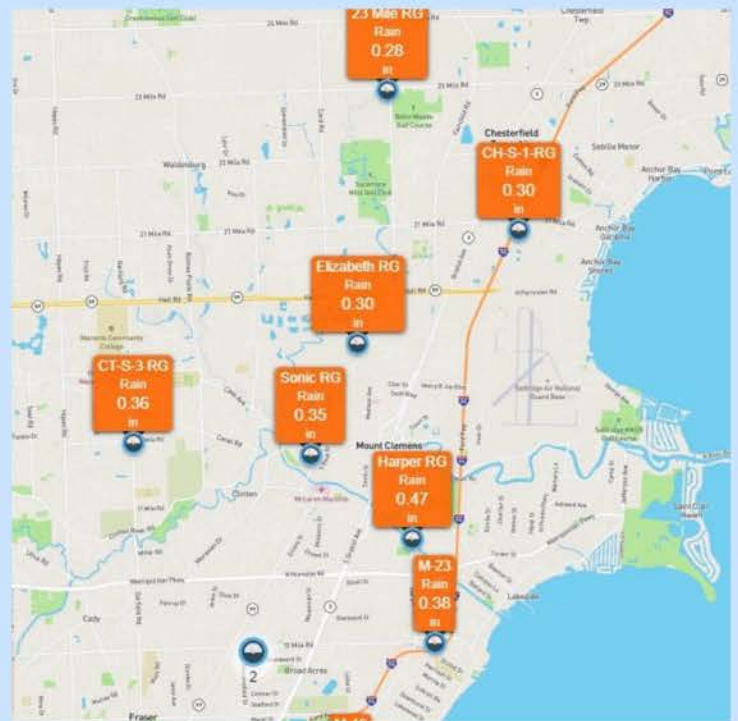
Cardie S. Miller



How Much Rain Did YOU Get?

You can track how much precipitation has fallen in your area by checking the Macomb County Public Works Office's online data from our department's rain gauges.

The near-real-time data from 22 of our rain gauges across the county can be viewed on an interactive map on the Public Works website.



LIVE 24/7: Macomb County Public Works Permit & Plan Review Portal

- Request a drain permit or soil erosion permit
- Submit plans for review by Public Works staff and schedule an inspection
- See comments by engineers and inspectors in real time
- Pay the permit fee online using a credit card
- Download the permit once it's approved

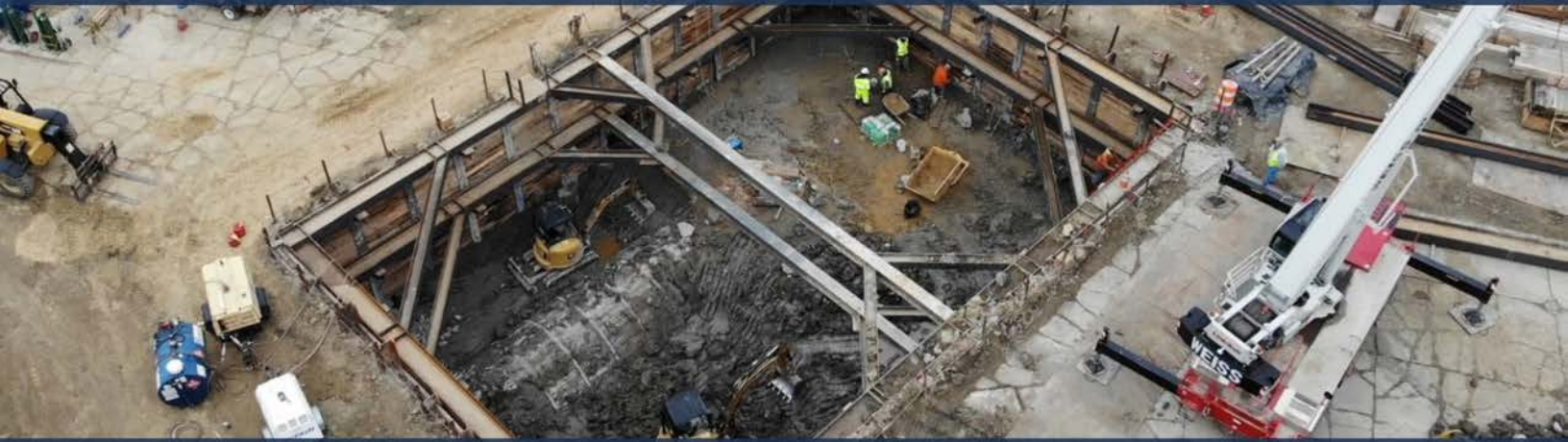
Visit the Permit and Plan Review Portal on our website today!

REPORT A POLLUTER: 24-Hour Toll Free Emergency Hotline 1-877-679-4337

If a discharge is detected in a Macomb County drain, please contact the Macomb County Public Works Office.



Reducing Combined Sewer Overflows (CSO's)



"The In-System Storage is an innovative and important project involving major construction that demonstrates our office's continuing commitment to reducing CSOs," -Public Works Commissioner Candice S. Miller



A major underground infrastructure project to reduce combined sewer overflows into Lake St. Clair continues to move forward.

The contractor on our In-System Storage project on Beaconsfield near Nine Mile Road in Eastpointe has made excellent progress with the excavation of a large shaft that will provide access to a section of the 11-foot-diameter pipe located 35 feet below the surface. Known as an "interceptor" pipe, it's part of the drainage district that handles combined storm water, snow melt and sanitary sewage from all of Eastpointe and most of St. Clair Shores.



In a later phase of the project, a large rubber dam will be installed within the massive pipe and inflated as needed to temporarily hold back and store flow instead of discharging into Lake St. Clair. After the rain event, the flow can be released downstream to the Great Lakes Water Authority wastewater treatment facility in Detroit for full treatment. This project will reduce chemically treated discharges during heavy rain events into Lake St. Clair. The inflatable dam, also referred to as a bladder, will provide 12 million gallons of additional storage in the upstream portion of the system and reduce CSOs by 36%.



Emergency Drain Construction Protects I-94



Emergency construction by the Macomb County Public Works Office to halt severe erosion at two locations close to Interstate 94 in Roseville has prevented an infrastructure and commuter nightmare.

Erosion of the banks of the Rohrbeck Extension Drain accelerated rapidly early last summer north of 13 Mile Road, just east of Little Mack, and south of 13 Mile, east of Gratiot Avenue. By early August, it crept to within 25 yards of the freeway in both locations.



Public Works officials were concerned that the steep banks would begin eroding in sheets because it had reached the sand that was used as backfill when the freeway was built in that area in the 1960s. Led by Commissioner Candice S. Miller, the drain board that oversees the Rohrbeck approved an emergency contract to straighten the channel in both locations; reshape and stabilize the banks; armor them with limestone boulders; apply top soil mixed with native grass seeds that can withstand extended periods of high water levels in the channel; and topped with a mulch blanket.



"It's difficult to predict when the erosion would have reached the westbound lanes of I-94," said Miller, "but if it triggered a collapse of the freeway, it would have cost untold millions of dollars to repair and forced the daily re-routing of 42,000 drivers."



New Hike/Bike Path in Sterling Heights

Walkers, joggers and bicyclists can enjoy a scenic new route in Sterling Heights.

The 1.35-mile hike/bike trail in Sterling Heights branches south from the Freedom Trail on Metropolitan Parkway, curves behind Freedom Hill County Park along the Red Run Drain, and continues west along the Sterling Relief Drain to Schoenherr Road.

“The trail makes a beautiful area accessible to the public. It’s a suburban area but you feel like you’re up north,” Macomb County Public Works Commissioner Candice S. Miller said.

The idea for a non-motorized trail in that location was added during plans to stabilize the north bank of the Red Run Drain, including restoration in spots that had eroded. As part of the drainage work in the open channel drain, the excavation contractor removed sediment from the Red Run and painstakingly built three new peninsulas just beyond where the Sterling Relief Drain flows into the Red Run. Known as “J-hooks” because of their shape, each is made of thousands of limestone boulders and work in unison to direct strong flow – particularly after heavy rain events – toward the center of the open channel and away from the banks.





NO MORE SINKHOLES

15 Mile Road Rehabilitation Project Updates

The work continues on two major underground projects. We are working hard to ensure that another infrastructure disaster like the one that occurred in December 2016 when a massive pipe that conveys the sanitary sewage of nearly 600,000 of Macomb County's residents collapsed, doesn't occur again.

On 15 Mile Road west of Schoenherr Road, concrete has been poured to build a new pump station in the 70-foot-deep shaft. Impervious lining will also be installed in the Macomb Interceptor Drain. In a narrower stretch of pipe to the east measuring 8 feet in diameter, a geopolymer liner has been sprayed onto the interior of the pipe beneath 15 Mile near Hayes Road to protect it from further degradation caused by corrosive sewer gas. Similar work continues in phases further to the east, at 15 Mile and Garfield Road.

"Most of the work can't be seen by motorists or other passersby because it's far below the surface, but photos show the enormity of the projects," Macomb County Public Works Commissioner Candice S. Miller said. "The importance of the work can't be overstated. We simply can't afford to have another massive sewer collapse like that one that occurred a little over six years ago."



Segment 6 Gate Installation



Segment 5 Spray Lining

**"We remain committed to inspections, maintenance and sewer rehabilitation where necessary."
-Commissioner Candice S. Miller**



Segment 5 removing portions of the shaft retaining wall



Segment 5 placing rebar for next wall pour



‘Trash Capture’ Pilot Project Shows Continued Success

The “Trash Capture” pilot project started by the Macomb County Public Works Office to prevent garbage and litter from reaching Lake St. Clair continues to show positive results.



Designed in-house by our engineers, it includes a steel bulkhead at the outlet of a storm sewer that discharges into the lake at Jefferson Avenue near Martin Road in St. Clair Shores. That large, interceptor pipe drains thousands of acres in the city and neighboring Roseville.

“The amount of trash collected from the storm sewer flow varies with rainfall and the level of flow in the system, but it shows that

we can all be good stewards of our beautiful Lake St. Clair by removing plastics, paper and other debris from catch basins in neighborhood streets,” Public Works Commissioner Candice S. Miller said.

We expect to proceed with plans to design and install similar devices at 11 other drains in Macomb County that convey storm water flow to Lake St. Clair.



Minnows seen in the trash capture structure two weeks after litter was removed.



Lorraine Drain Sinkhole Repaired

A 20-foot-long section of rotted metal pipe that provides drainage for part of a neighborhood in Warren has been replaced, after a sinkhole was discovered by city officials.

Sinkholes typically occur after infiltration from the backfill dirt gets into rotted, cracked or broken sewer pipes, or the dirt beneath the pipe is gradually washed away as storm water gets through those openings.

The newly installed tap to the Lorraine Drain, along Lorraine Avenue, south of 11 Mile Road, is entirely concrete. The repair will also alleviate occasional flooding at that location.

In The Works – Northampton Pump Station renovation

At the Northampton Pump Station in Warren, the first of two pumps to undergo needed rehabilitation has been removed and is being serviced. The generator which was inoperable will be removed, and new electrical components will have the capability to connect to our mobile generator. The upgrades will be connected to our Supervisory Control and Data Acquisition (SCADA) system so that we can monitor the pump station remotely 24/7.

Constructed in 1984, this pump station is located at the southeast corner of 14 Mile and Chicago roads. Its purpose is to ensure effective conveyance of storm water for homes in the area of Northampton Drive during extreme high-water events in the nearby Red Run Drain. The entire cost of this project is \$150,000 and will be funded by the City of Warren using American Rescue Plan funds.





Drain Maintenance Reduces Risk of Flooding

Maintaining our drains by removing logjams and debris to ensure proper flow, reducing the risk of flooding and improving water quality is a core function of the Macomb County Public Works Office. More than 401 miles of open channel drains are under the jurisdiction of our office.

Our maintenance team has worked in nearly 100 drains in the past year, including: the Ray-Lenox Drain in Ray Township; the Shafer and Lambert drains in Richmond Township; the Rabe Drain, the Salt Slang Gloede Drain, the Pingle Drain and the Nichol Drain, all in Macomb Township; the Harrington Drain in Clinton Township; and the Plumbrook and Gibson drains in Sterling Heights.

After fallen trees and debris are pulled out, sediment is removed and placed on the banks which are then graded and topped with a bed of top soil, grass seed and a mulch blanket. This practice is important not only in residential, commercial and industrial areas, but also near farms common in the northern third of Macomb County. Prolonged flooding along open drains that wind through agricultural areas that are an important part of Macomb County's economy could cause farmers to lose their crops.

By working closely with officials in cities, townships and villages, much of the work is paid and prioritized through a cost-sharing program between Public Works and those participating municipalities. It's part of a program launched by Public Works Commissioner Candice S. Miller with a yearly allocation from the county Board of Commissioners.

DRAIN MAINTENANCE BEFORE AND AFTER

Rabe Drain
Macomb
Township



Lambert Drain
Richmond
Township



Gibson Drain
Sterling Heights



Assisting Economic Prosperity

The Macomb County Public Works Office reviews the engineering plans for all new developments to ensure proper storm water drainage.

Our engineering team determines whether new basins, sewer pipes, culverts, taps to existing drains and relocations of drains that are under the jurisdiction of our office, meet our standards. Once construction gets underway, our inspectors monitor those improvements. As such, our office is a key component of economic prosperity.

One recent example: the Meldrum Creek Drain in New Haven was improved as part of a developer-led project to allow the owner of an auto salvage yard to develop a neighboring parcel.

“Ensuring that rainfall runoff and snow melt are handled properly before any buildings are constructed will reduce the risk of severe flooding,” Public Works Commissioner Candice S. Miller said.



We Find 'em - We Fix 'em

After a sinkhole was discovered along westbound 10 Mile Road near Mound Road in Warren, an inspection revealed that the bottom of a 30-foot-long portion of the elliptical, corrugated metal pipe had rotted. This pipe was installed in the early 1960s when a portion of the Bear Creek Drain was enclosed.

Storm water got through those openings and caused the dirt underneath to be washed away and the fill dirt around and above the pipe to sink.

A contractor installed temporary internal bracing inside the pipe and used a concrete mix to fill the sinkhole. That was followed by a spray lining of the interior of the pipe to complete the rehabilitation of this section.

“We find them, we fix them,” Macomb County Public Works Commissioner Candice S. Miller said.

MACOMB COUNTY PUBLIC WORKS



2022 BY THE NUMBERS

472 MILLION GALLONS OF CSO'S PREVENTED FROM ENTERING LAKE ST. CLAIR



Thanks to operational changes from our team, we were able to reduce combined sewer overflows in 2022 to the lowest level in 20 years!



4 SEWER REHABILITATION & CSO REDUCTION PROJECTS UNDER CONSTRUCTION

No more sinkholes!
Segment 5, Segment 6, Garfield Interceptor and 8.5 Mile In-System Storage Projects.

ONLY 25 MILLION GALLONS OF TREATED CSO'S DISCHARGED AT CHAPATON RTB



In comparison, George W. Kuhn facility in Oakland County discharged 470 million gallons or 2,000% (20x more).



194 ENGINEERING PLANS REVIEWED

Fostering economic developments such as subdivisions, condominiums, industrial and commercial projects or redevelopments that discharge stormwater into a county drain are carefully reviewed by our team every day.

1,024 SOIL EROSION PERMITS ISSUED



Sediment is one of the largest pollutants in our rivers, lakes and streams. MCPWO ensures the protection of our waterways from sediment generated from construction sites.



92 DRAIN CLEANOUTS

MCPWO inspected, maintained and improved 92 county drains in 25 communities utilizing grant funds, the county's 50/50 Drain Match Program and prior assessments.

12,449 INSPECTIONS



To facilitate the proper operations of our drains, this department provides soil erosion inspections, inspects construction of storm drains, sanitary sewers, drain taps, crossings and illicit discharges.



22 RAIN GAUGES AVAILABLE ONLINE

The public can now easily view the same rain information used by the MCPWO for stormwater management. Real time rainfall data is now available on our website.



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