

MEMORANDUM



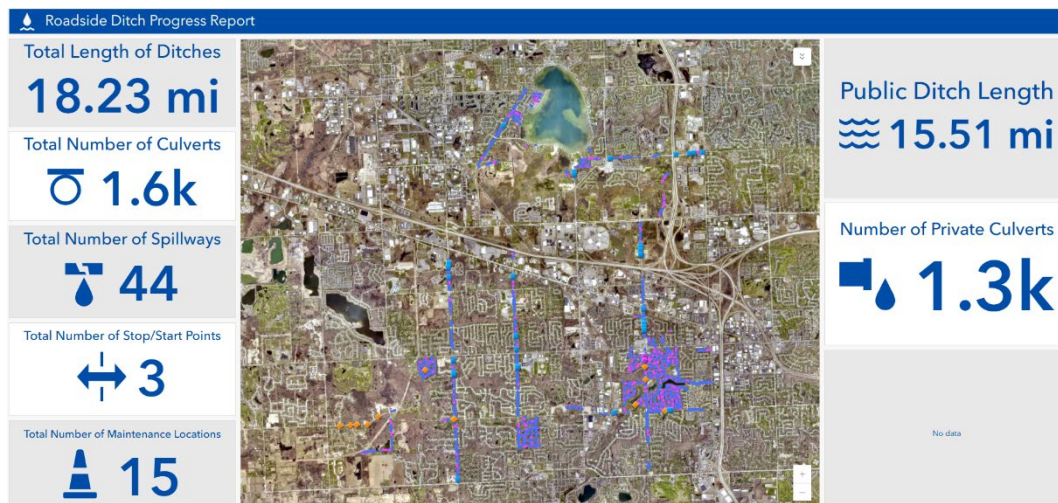
TO: JEFFREY HERCZEG, DIRECTOR OF PUBLIC WORKS
FROM: MATT WIKTOROWSKI, FIELD OPERATIONS MANAGER
SUBJECT: OPEN DRAINS (DITCHES) ASSET MANAGEMENT
DATE: MARCH 20, 2025

The DPW Field Operations Division is responsible for not only the routine maintenance of Novi's roadways but also for ensuring the effective operation of the community's stormwater system. Annually, the Division allocates over \$500,000 for the preservation of this aging infrastructure through contracted services, alongside an average of \$600,000 for labor and materials using City personnel and equipment.

While a considerable portion of the City's stormwater system is located underground (e.g. neighborhood catch basins and gravity mains), there remains a substantial network of visible assets classified as open drains or ditches. These stormwater conveyance swales were previously not seen as assets and subsequently overlooked as stormwater maintenance programs were developed. However, in recent years we have seen an increase in failed culverts, sedimentation, and vegetation encroachment. Rather than react to areas with reported flooding when these conditions were reported, staff moved to a proactive approach to the maintenance program.

Two years ago, DPW Field Operations completed field verifications to determine the exact locations of the City's open drain assets. After the assets were field verified, GIS integrated the inventory into the City's mapping system. Adding these assets into the system helps staff understand how the overall network functions in conjunction with sedimentation basins, streams, and rivers.

The field verification yielded that the community has approximately 15 miles of public ditches, 1,600 culverts, and 44 spillways requiring regular maintenance.



After collecting location data, DPW Field Operations developed an inspection report in Cityworks. Over time, the criteria and condition categories were refined to ultimately look like the following template.

These inspections, conducted annually, encompass several key criteria, including:

1) Flow measurement to identify areas susceptible to flooding;

2) Structural evaluations to effectively plan for material acquisition and equipment requirements; and

3) Assessment of vegetation to determine if the area requires regular mowing or if invasive species need to be addressed before any excavation work.

Based on inspection results, our team creates work orders that can be filtered and scheduled based on asset condition and location. Areas that regularly experience flooding are geographically addressed first.

Location: 41900 Thirteen Mile Rd		
Status: Open	Resolution:	
Insp. Date: 04/3/2024 8:55 AM	Inspected By: TATE, MIKE	
Observations		
Ditch Volume		
☐ High Volume (Culvert >24") ☒ Low Volume (Culvert <=24")		
Capacity - Ditch Flow		
☐ Good - Ditch flows freely, no debris build-up evident ☒ Moderate - Ditch flows freely, some minor build-up evident ☐ Poor - Ditch functions to <25% of capacity		
Capacity - Flooding		
☐ Good - No evidence of localized flooding ☒ Moderate - Not applicable ☐ Poor - Evidence of localized flooding		
Structural Components - Damage		
☒ Good - No damaged components present ☐ Moderate - Damaged components, but not causing flow blockages ☐ Poor - Damaged components causing flow blockages		
Structural Components - Debris		
☐ Good - No debris buildup at inlet or outlet ☐ Moderate - Debris buildup at inlet or outlet blocking 25% of inlet/outlet capacity ☒ Poor - Debris buildup at inlet or outlet blocking 50% of inlet/outlet capacity		
Vegetation - Bottom Coverage		
☒ Good - Covering 90% of ditch bottom ☐ Moderate - Covering 75-90% of ditch bottom ☐ Poor - Covering <75% of ditch bottom and/or causing line-of-sight issues		
Vegetation - Mowing		
☒ Good - Recently mowed (<1 year ago) ☐ Moderate - Mowed last year (2 years ago) ☐ Poor - Not recently mowed (3 or more years ago)		
Vegetation - Weeds		
☒ Good - No noxious weeds present ☐ Moderate - Noxious weeds present, but are actively being managed ☐ Poor - Noxious weeds present and not being managed		
Integrity - Bare Spots		
☒ Good - No bare spots ☐ Moderate - 10-20% bare spots ☐ Poor - >40% bare spots		
Integrity - Illicit Activity		
☒ Good - No evidence of nuisance animals ☐ Moderate - Evidence of illegal dumping ☐ Poor - Evidence of nuisance animals or illicit connections		

A key piece of equipment used to perform this work is a mini excavator. For several years, DPW had one unit, which was shared by crews to maintain storm drain and roadway assets, and other projects requiring small implements and minimal weight allowances. After the initiation of this program, an additional unit was specified and purchased which is equally as versatile as the original but has a greater reach to allow for deeper digging depth. This feature provides operators with the ability to expand the roadside ditching service provided to our residents through job efficiency and productivity; two crews can work at separate ditching locations. The Field Operations Division had previously been renting a comparable excavator every year for the last five years (spending on average \$15,000/year) to complete the drain ditching and other stormwater projects.

Open drains are often underestimated as vital components of community stormwater management. When these areas are compromised, flooding can occur, resulting in damage to both private and public properties. City Council's continued support to purchase the proper equipment and materials is integral in the implementation of this program, which will significantly benefit our residents, motorists, and the environment.

The following pictures demonstrate some of the work our team performs each season to maintain this open drain network.



Removing and replacing culverts between ditches



Cleaning a ditch full of sediment



Inspecting high water volume culverts before making structural repairs