



Storm Water

2014 Presentation

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Introduction

- Storm water 101
- Rules and regulations
- Ongoing responsibilities
- Major projects to date
- Anticipated major projects 2014
- Factors to address
- Summary
- Contact Information



Storm water 101

- **Surface flow**
 - Water that runs over the ground, usually because of reduced infiltration into the ground
- **Run off**
 - The total of all surface flow from pervious surfaces, where water is able to infiltrate and impervious surfaces, where it is not
- **Design capacity**
 - Maximum amount of water that can be conveyed by a pipe or ditch
- **Quantifying storm frequency**
 - 100 year: 1% statistical probability of being equaled or exceeded during any year
 - 500 year: 0.2% statistical probability of being equaled or exceeded during any year
- **BMP**
 - **Best Management Practices**
 - Condition of the NPDES permit used in place of or in conjunction with limitations on storm water effluent to prevent or control the discharge of pollutants

Storm water 101

- MS4
 - Municipal separate storm sewer system
 - Stow is considered a Small MS4 co-permitted with Summit County
- EPA
 - Environmental Protection Agency
 - Agency of the U.S. federal government which was created for the purpose of protecting human health and the environment by writing and enforcing regulations based on laws passed by Congress
 - Enforces NPDES
- Waters of the United States
 - **Corps of Engineers, Dept. of the Army, DoD § 328.3**
 - All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
 - All interstate waters including interstate wetlands;
 - All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce
- Army Corps of Engineers
 - Regulations for stream
 - Issues permits for altering any of the waters of the U.S. or those tributary to

NPDES Permit for MS4

- NPDES
 - National Pollutant Discharge Elimination System
 - Permit aimed to decrease the high pollutant concentrations and illicit discharges into the storm system
 - Phase One began in 1990
 - Phase Two became effective in 2003
- Stow is a subdivision of Summit County NPDES Permit
- Stow has local jurisdiction having regulatory authority
- New development and re-development are required to implement storm water management plans

NPDES Permit Requirements for MS4

Phase 1

- Mapping of storm drainage network
- Outfall screening
- Removal of illicit discharges
- Source identification
- Structural and source control measures to reduce pollutants
- ESC program
- Demonstrate legal authority
- Fiscal analysis

Phase 2

6 Minimum Control Measures

- Public education/outreach
- Public participation/involvement
- Illicit discharge detection
- Construction site runoff control
- Post-Construction runoff control
- Pollution prevention/Good house keeping

City of Stow Maintenance Responsibilities

- 656,500 linear feet of storm sewer pipe
- 281 storm water discharge points inspected for illicit discharges
- 252 storm water management facilities including retention and detention ponds, water quality ponds, bio-swales etc. inspected yearly
- NPDES permit requirements with verification of collection including:
 - Street sweepings
 - Storm structure cleaning
 - Leaf pick up
 - Trash pick up



Additional Storm Water Responsibilities

- **Continual Commitments**
 - Improve and make repairs on existing storm
 - Evaluate drainage concerns
 - Address new problem areas that arise
 - Abide by NPDES requirements
- Brought the inception of the storm water utility fee in 2004

Major Projects to Date*

- Hampshire Rd storm sewer extension
- Hike and Bike Trail storm sewer extension
- Duquesne Drive culvert extension
- Allen Rd box culvert extension
- Nottingham Lane storm sewer
- Elmwood storm sewer replacement
- Higby Drive storm sewer
- Franklin Rd storm sewer replacement
- Young Rd culvert replacement
- Greentree Rd sump
- Darrow Rd rear yard drainage
- Cherryhurst Drive rear yard drainage
- Norman Drive rear yard drainage
- Springdale Rd creek bank restoration
- Fishcreek retention basin
- Baumberger ditch

*Does not include small projects or projects done by street dept.

Major Projects to Date*

- Ritchie Rd rear yard drainage
- Charring Cross rear yard drainage
- Waxwing rear yard drainage
- Applewood and Hile drainage
- Oaklawn Park 84" culvert lining
- Call Rd 66" culvert replacement
- Leewood/Greentree culvert replacement
- Arndale Rd storm sewer replacement
- Homewood Ave storm sewer replacement
- Young Rd detention basin and storm pipe install
- Kenneth/Samira storm and sanitary separation
- Arndale/Ritchie retention pond
- Darrow Lake overflow repairs

*Does not include small projects or projects done by the street dept

- **Oaklawn Culvert**



Culvert Lining

- 84” culvert re-lined due to deterioration



- **Fishcreek Pond**

Retention Pond

- Facilitates drainage in District 14
- 275 acres drain into pond



- Waxwing/SR 91



Storm sewer install

- To address poor drainage in the rear yards of Waxwing and over flow from SR 91
- 410' of 18" and 21" pipe installed

- S.O.A.R

Storm sewer install

- To alleviate drainage around park area
- 235 linear feet of 10" pipe installed



• Arndale/Ritchie Pond



Detention Pond

- Installed to help alleviate the flooding in District 22
- Flow monitoring requirements for the CWA Section 401 Water Quality Certification submitted annually for 5 years
- Post-construction mitigation is actively inspected by EnviroScience



• Mohican/Kenwood Storm sewer

- 436 linear feet of 12” pipe installed
- Assists rear yard drainage for Kenwood residents
- Reduces the amount of water run off from Mohican Rd
- Eliminated the safety hazard of sink holes that formed due to failing clay pipes



• Young Rd Storm sewer

- Covers 14.6 acres of drainage area
- Improves rear yard drainage for Turnberry Trail residents and front yard drainage for Young Rd residents



- Leewood/Greentree

Culvert Replacement

- Upgraded existing 36" culvert with a 3'x5' box culvert to accommodate increasing storm water



(BEFORE)

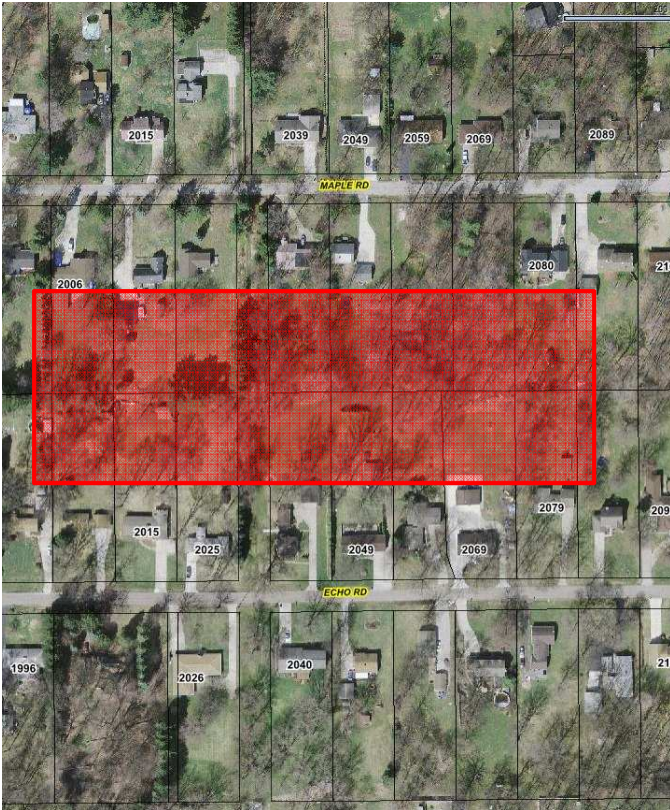
Anticipated major projects 2014*

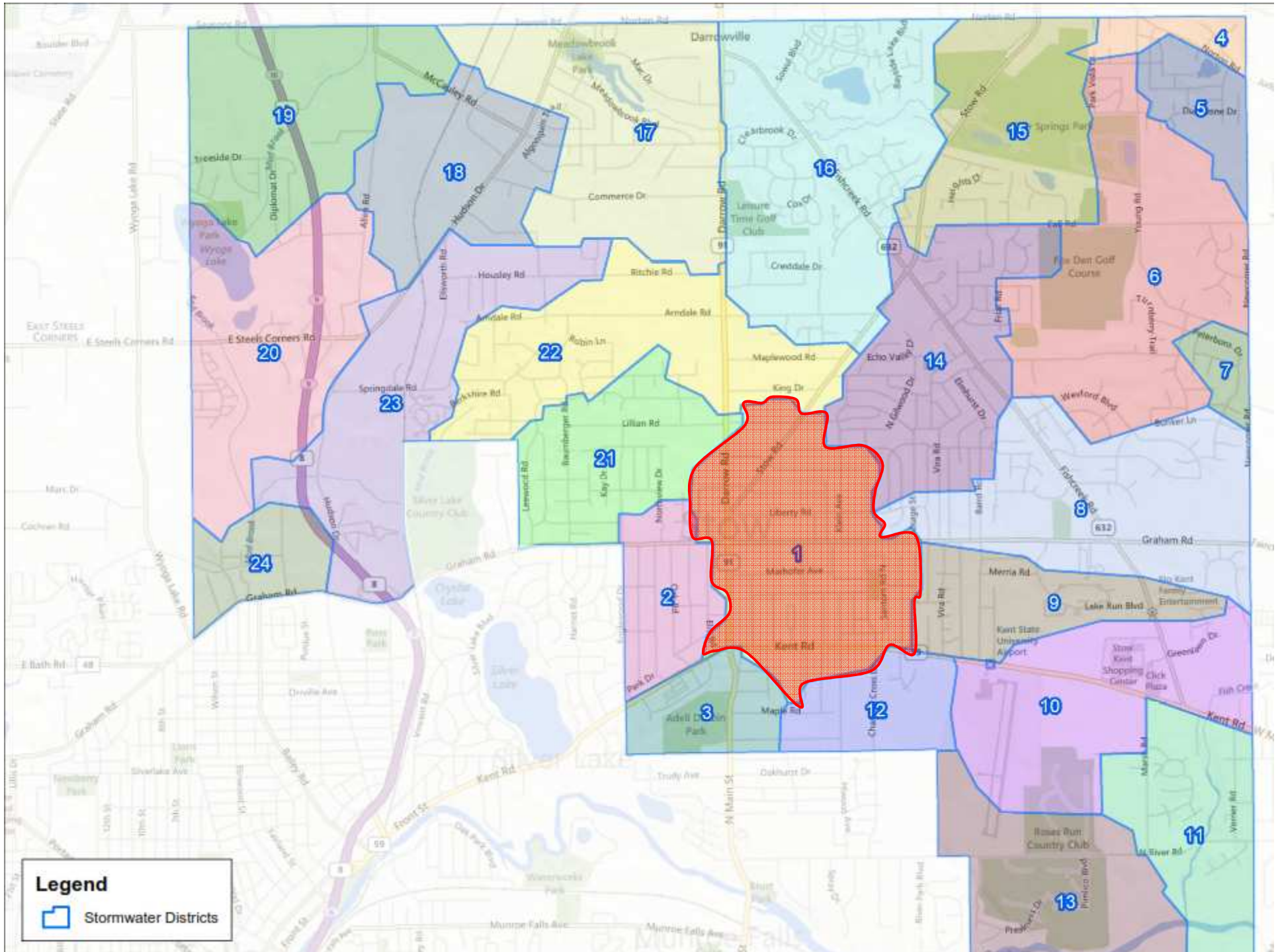
- Echo/Maple
- District 1:
Marhofer/Williamson
 - Storm sewer improvements
- District 22: Meadows
 - Stream Restoration
- District 2:
Oak/Adaline/Wetmore
 - Drainage evaluation
- District 21:
 - Data consolidation, evaluation and upgrade determination
- Treeside Drive Culvert
 - Replacement
- Springdale Culvert
 - Upgrade
- District 1: Klein/Genevieve
 - Drainage Evaluation
- Martinique Drive Headwall
 - Replacement
- Maplewood Park Storm Sewer
- Pembroke Court
- Meadowbrook Blvd front yard ditch line

*Does not include small projects or projects done by the street dept

- Echo/Maple Rear Yard

Storm sewer installation with
bio-swale

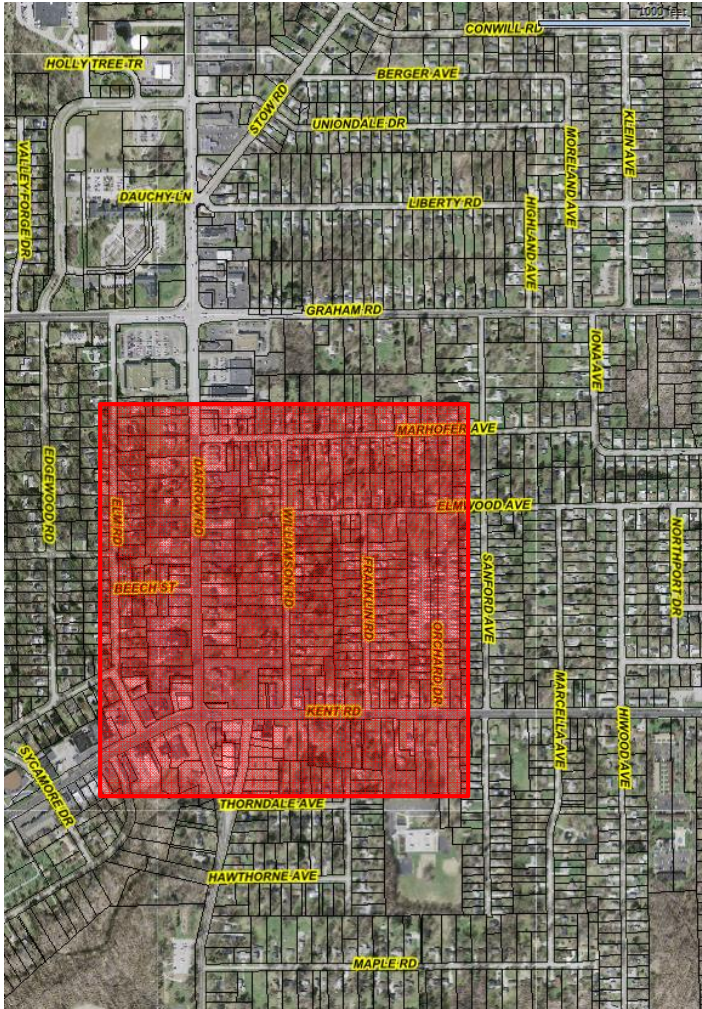




Legend

 Stormwater Districts

- District 1



Marhofer/Williamson

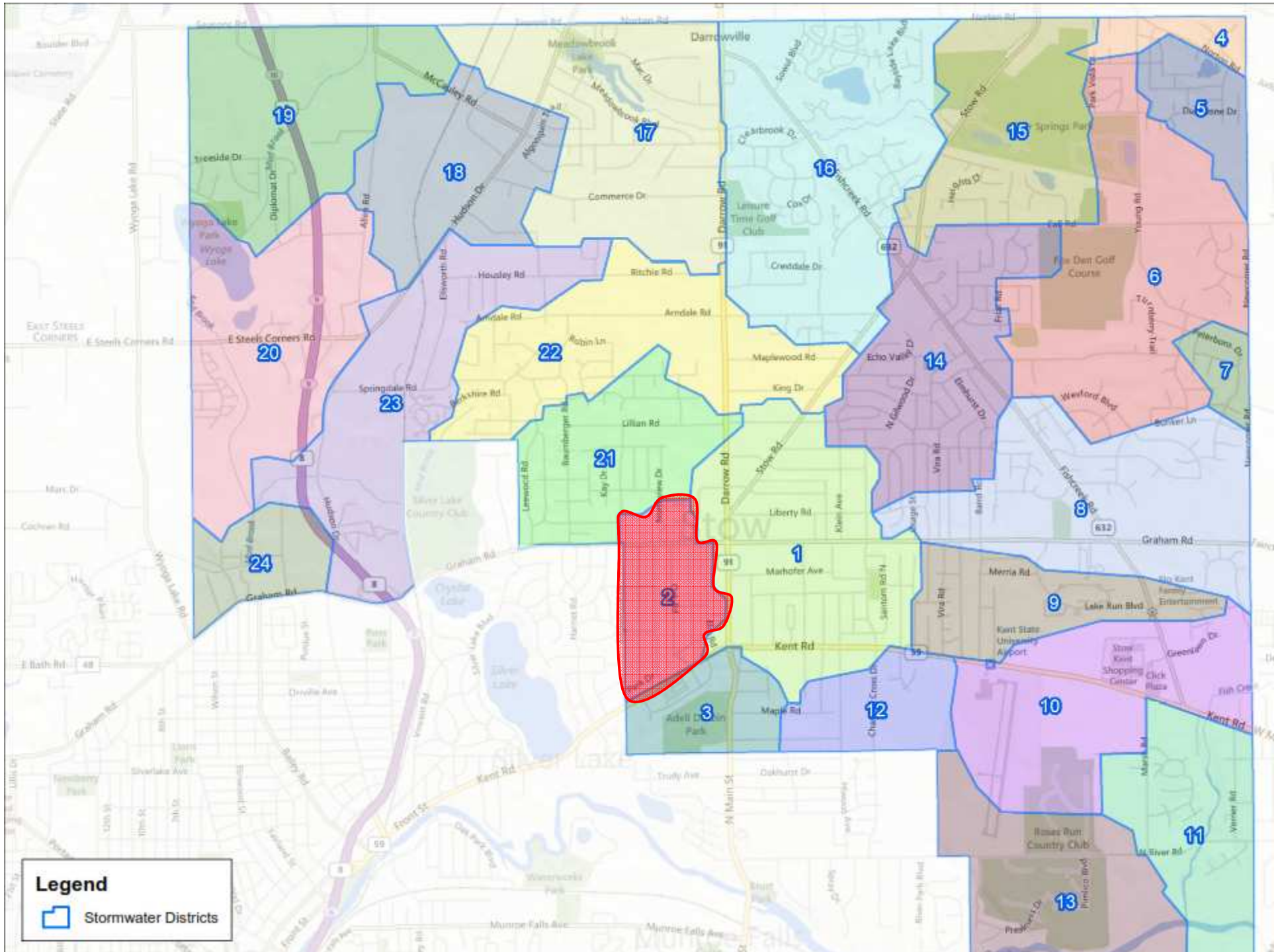


- Meadows



Stream Restoration



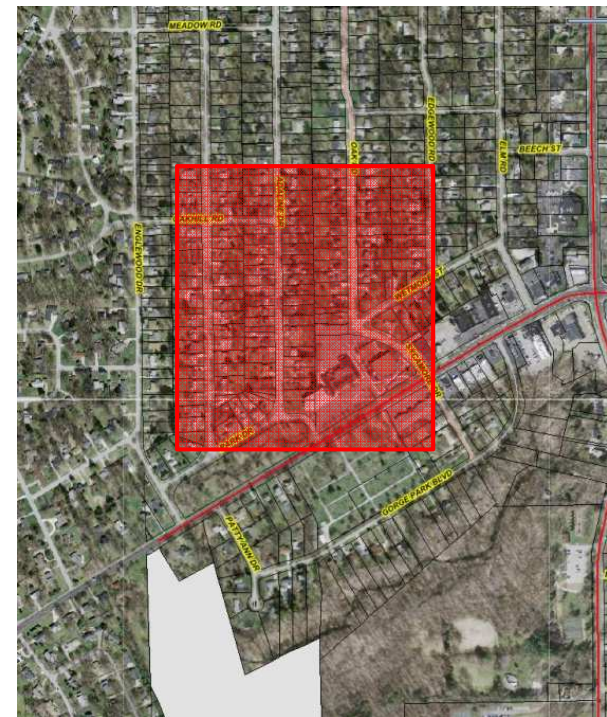


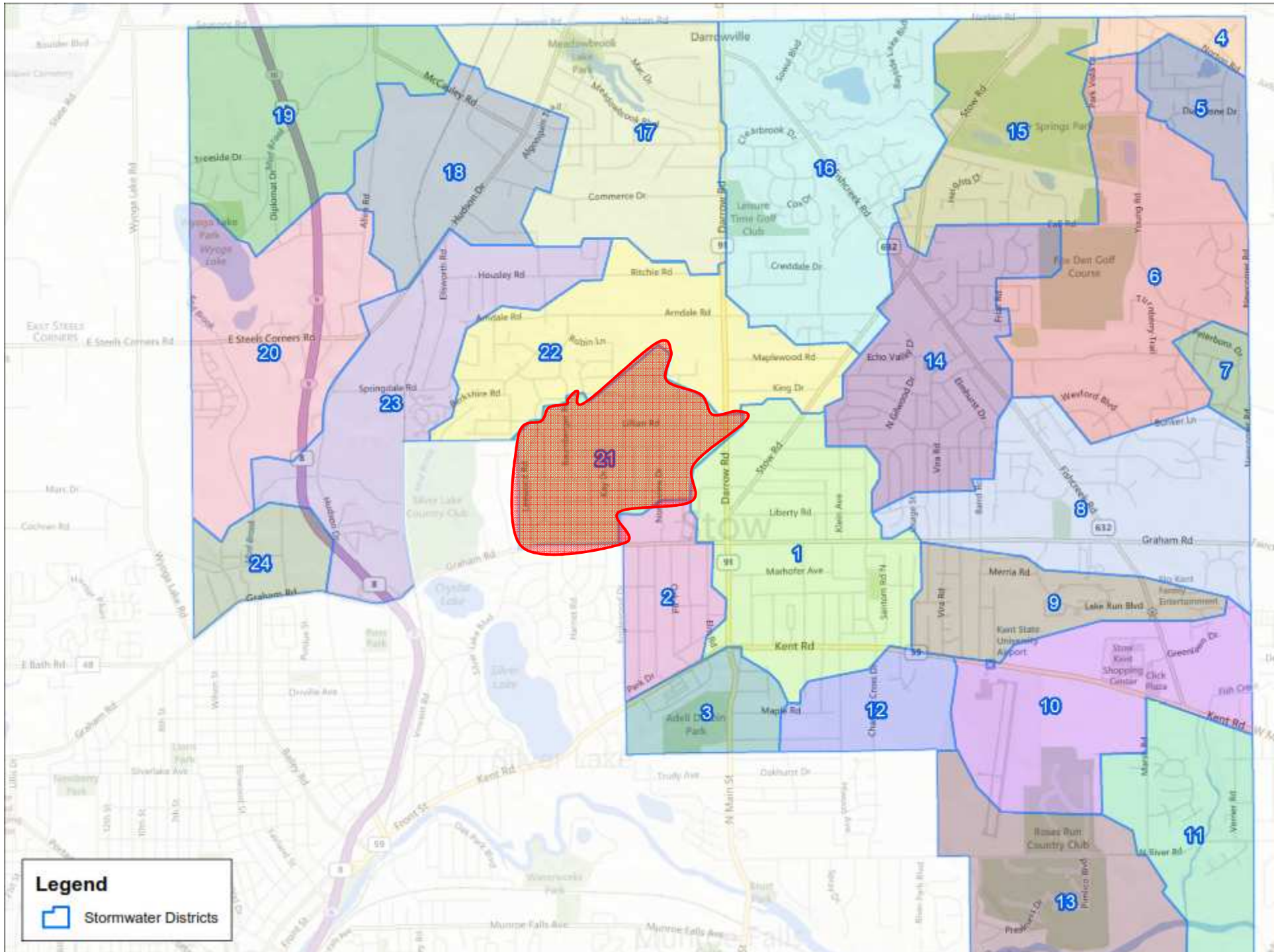
Legend
Stormwater Districts

- District 2



Oak/Adaline/Wetmore

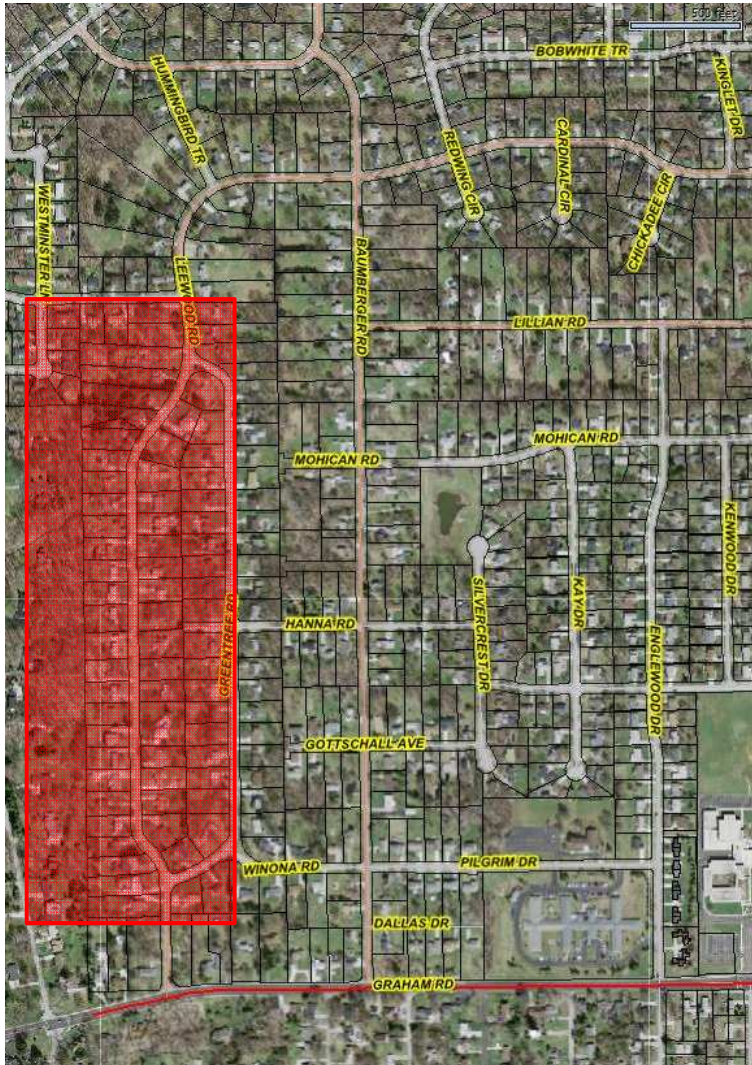




Legend
Stormwater Districts

- District 21

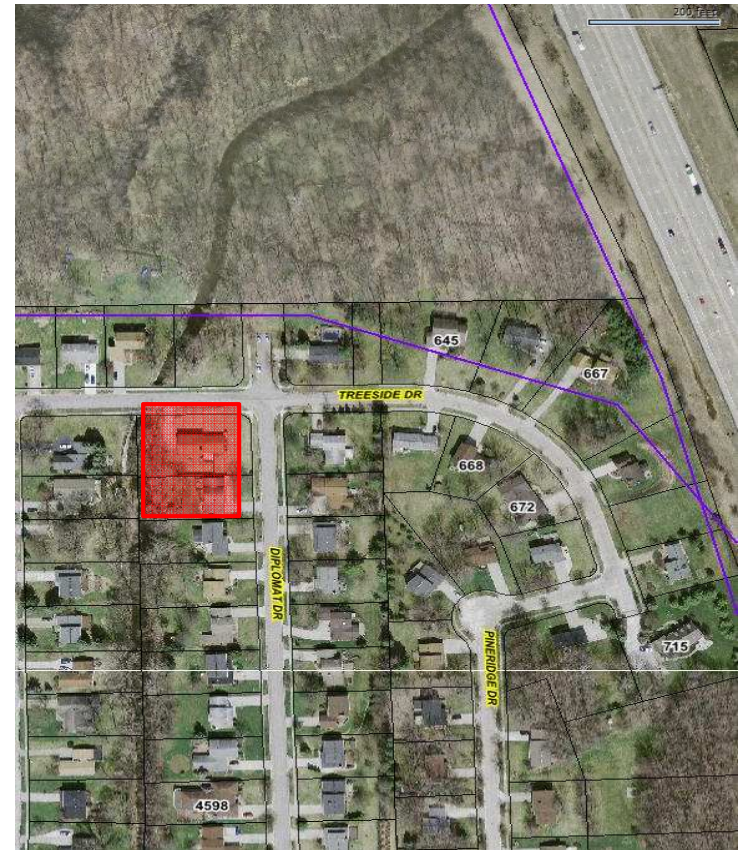
Leewood/Greentree



- Treeside Drive Culvert



Culvert Relacement

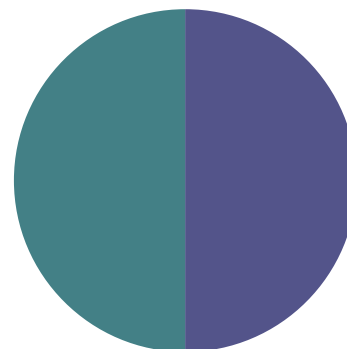


How is this paid for?

- Estimated yearly revenue from storm water utility fund \$800,000
- 50% for ongoing MS4 maintenance requirements **\$400,000**
- 50% for municipal storm water projects **\$400,000**
- Continual submissions for grant money



Yearly Revenue



- Municipal storm water projects
- MS4 Maintenance requirements

Summary

- Progress
- Storm water as a global impact
- To maximize productivity every year with available revenue
- More improvements=More maintenance responsibility



Contact Information

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