MS4 Annual Report

Board of Public Works

Phil Gaebler – City of Madison Engineering Department

3/3/2021

Report Overview

- 2nd Year of Online Reporting
  - Minimal Control Measures
  - Fiscal Analysis
  - Progress

Minimal Control Measures – Each Required a Written Program

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Pollutant Control
5. Post-Construction Storm Water Management
6. Pollution Prevention – SWPPPS Required
7. Storm Sewer System Map
8. TMDL Progress and Plan

Public Education and Outreach

- Waterways Newsletter
  - Leaf management
  - Green Infrastructure Pilot
  - Watershed Studies
- Ripple-Effects
  - https://www.ripple-effects.com/
  - Storm Drain Murals – 2 planned
  - Plant Dane
  - Rain Garden Workshops

MadisonWaterWays

News from your Stormwater Utility & Sewer Utility

cityofmadison.com/engineering/stormwater FALL, 2020

City Engineering Leads Innovative Thinking with Distributed Green Infrastructure Options for Residents

Distributed Green Infrastructure (DGI) is a network of smaller storm water practices throughout an area. The idea is to treat storm water closer to where it falls. "The City is starting to study DGI to determine the benefits for flood mitigation and for water quality improvements," Greg Fries, City of Madison Engineering Division Assistant City Engineer, said. "We are working with the USGS (United States Geological Survey) on a five-year pilot program that will help inform our decisions on DGI and help residents and policy makers understand the numerous benefits along with the costs associated with these options."

Residents in a near west side neighborhood were "digging" a green infrastructure pilot project this summer as part of a larger reconstruction project.

Residents in the study area, in the Westmorland neighborhood, on the City's near west side, embraced a pilot project that was part of a reconstruction project. The City used the road reconstruction project as an opportunity to dig in with green infrastructure, and provide residents more options than the standard raingarden terrace. In this study area, the Engineering Division is working with volunteers to educate, promote and incentivize DGI options such as installing permeable pavement, more rain gardens and green roofs on private property.

"Friends of Lake Wingra have been a collaborative partner in all of this work. When residents are enthusiastic about new ideas and ways to improve, it's exciting for our division and really beneficial to our community," Fries said. "If anyone has interest in future potential green infrastructure options, and they fit with the projects planned for the year, please reach out to City Engineering."

Residents within the pilot projects perimeter were offered green infrastructure options to try on their terrace or property, with no mandatory costs for the resident, such as:

- Permeable pavement
- Stormwater terraces (bronze, silver or gold options depending on vegetation, infiltration impact)
- Rock cribs
- Rain gardens
- Rain barrels
- Property suggestions like: redirecting downspouts off of impervious areas, native landscaping

City Engineering and United States Geological Survey presented a virtual public informational meeting in June about the City's Green Infrastructure Pilot Program.

In addition to the options for residents to choose for the terrace in front of their home, which is part of the City-owned street right of way, the City of Madison Engineering Division also launched a reimbursement incentive for those in the pilot project to build green infrastructure projects, such as rain gardens, on their private land.

If you want to learn more about green infrastructure, the reimbursement program, want to explore working with the City on a future project, email **engineer@cityofmadison.com** or visit: **cityofmadison.com/engineering/projects/green-infrastructure-study.**

A Word from the City Engineer, Rob Phillips

Our community is resilient, strong and creative. Whether rising to the challenges presented by the worst flooding in our city's history in 2018, or standing strong in the face of the COVID-19 public health emergency, these events have impacted our everyday lives. However, they do not prevent the Engineering Division from moving forward with stormwater infrastructure projects and working in collaboration with our community.

In 2019, the Engineering Division moved from emergency response and repair after the historic floods, to engaging in widespread community discussions with the first round of watershed public information meetings. Staff presented, listened and answered the public's concerns during face-to-face meetings. Residents were given options to better prepare their homes and focus groups were facilitated to learn more specifically where residents are still struggling with stormwater issues.

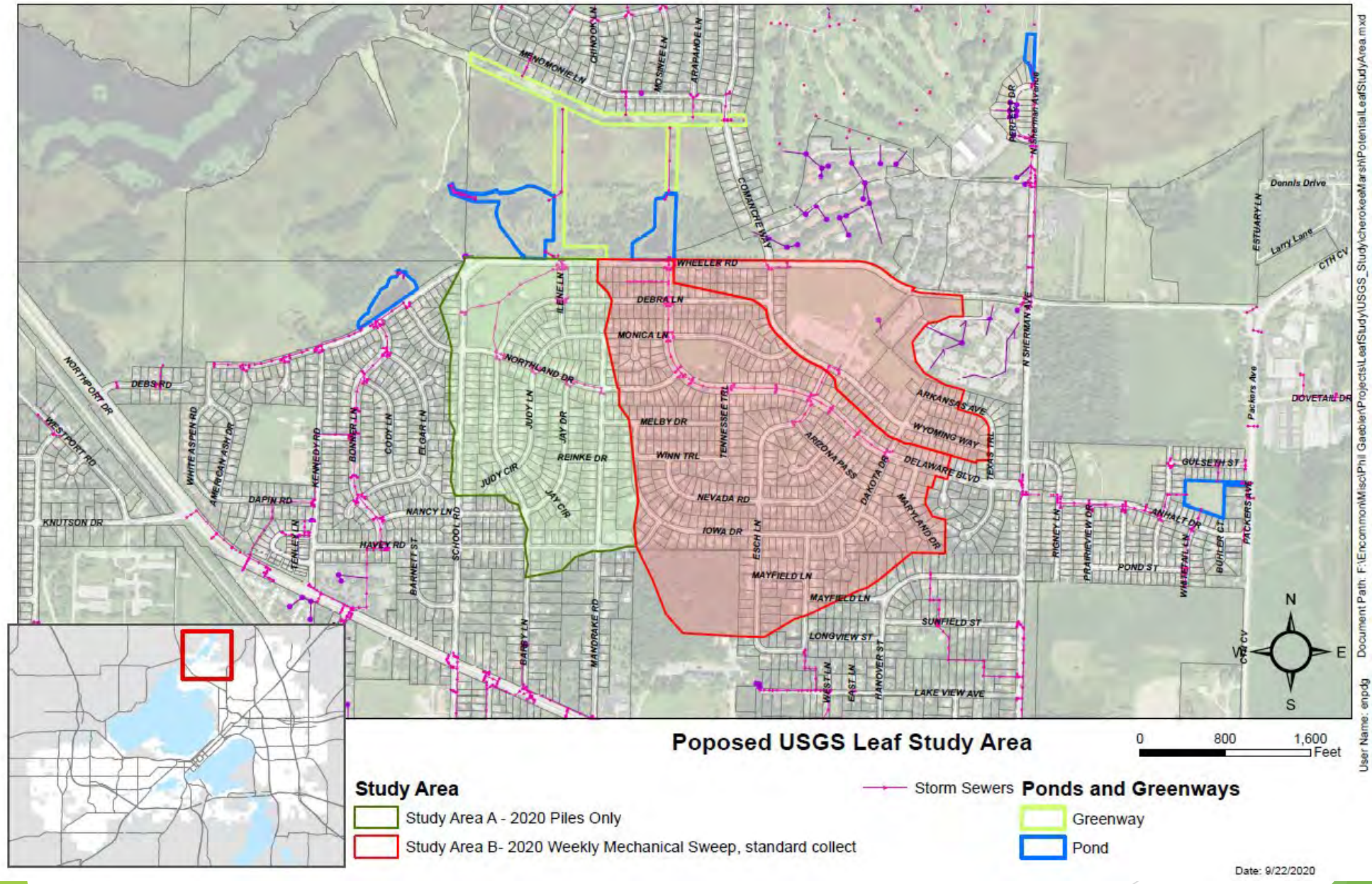
Our world once again changed in March. With Safer at Home orders and social distancing protocols in place, Engineering staff rapidly shifted gears to conduct community outreach virtually. In Going Virtual: COVID-19 Challenges Won't Stop Watershed Study Progress (page 2), staff shares how the virtual platform has helped to connect with more people than in person, and what this means for future public participation.

More time at home has resulted in many residents noticing what stormwater improvements can be made on their property. Residents are embracing green infrastructure projects such as stormwater terraces, rain gardens and rain barrels. Learn about a pilot program launched in the Westmorland neighborhood as part of a reconstruction project (page 1). Also, if you took advantage of time at home by building a "quarantine rain garden" share it with us as part of our City's renewed goal to reach 1000 rain gardens (page 3).

Finally, a thank you to all of our Engineering field staff and contractors for rising to the challenge of safely providing frontline service during this pandemic.

Rob Phillips

City of Madison – Leaf Study Continues



- 2 – 3 yrs
- Funded by Wisconsin League of Municipalities
- Study Goals
  - Mechanical sweeper between collections
  - Impact of detention basins

Public Education and Outreach

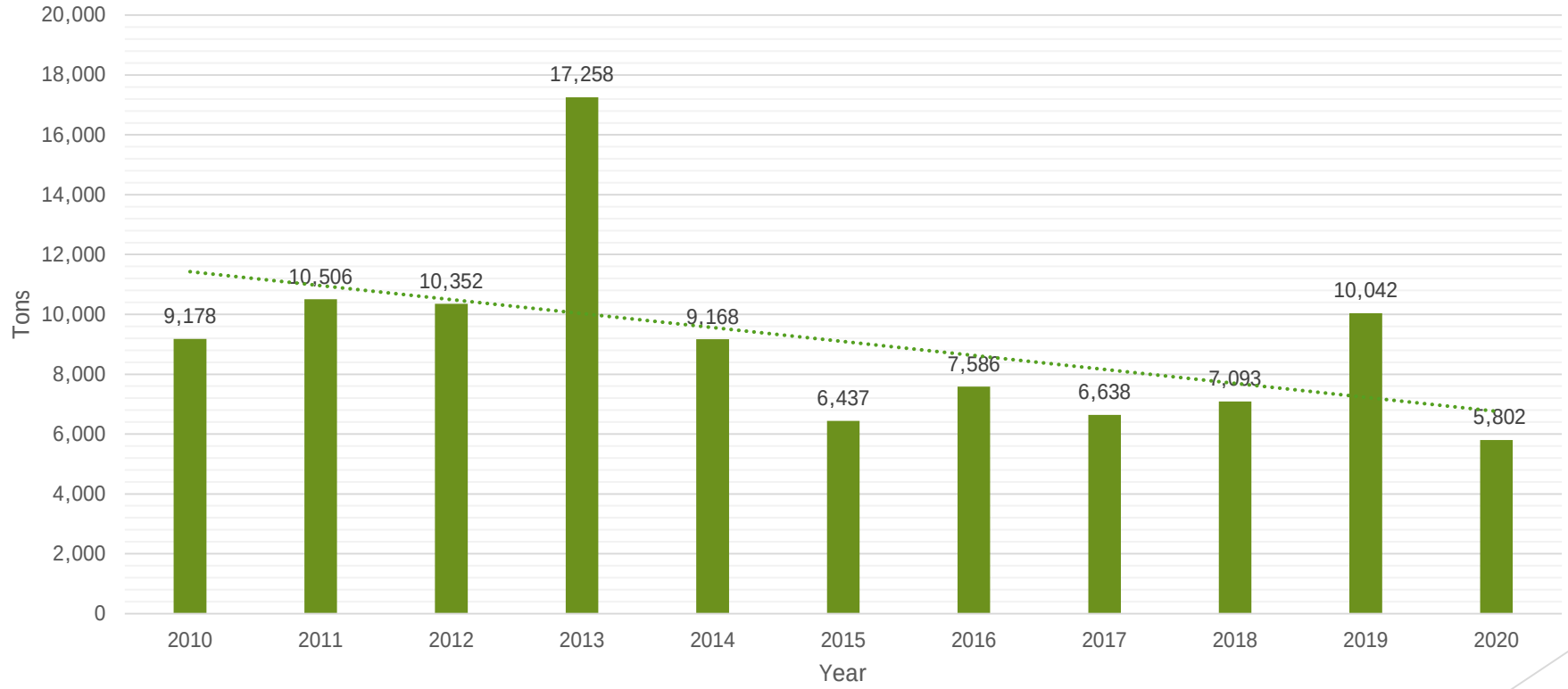
- Waterways Newsletter
  - Leaf management
  - WI Salt Wise
  - Invasive Species Removal
- Ripple-Effects
  - https://www.ripple-effects.com/
  - Storm Drain Murals
  - Demonstration Materials
  - Plant Dane
  - Rain Garden Workshops
  - Volunteer Plant Growers

Shabazz High School Rain Garden

City of Madison
Winter Salt Certification

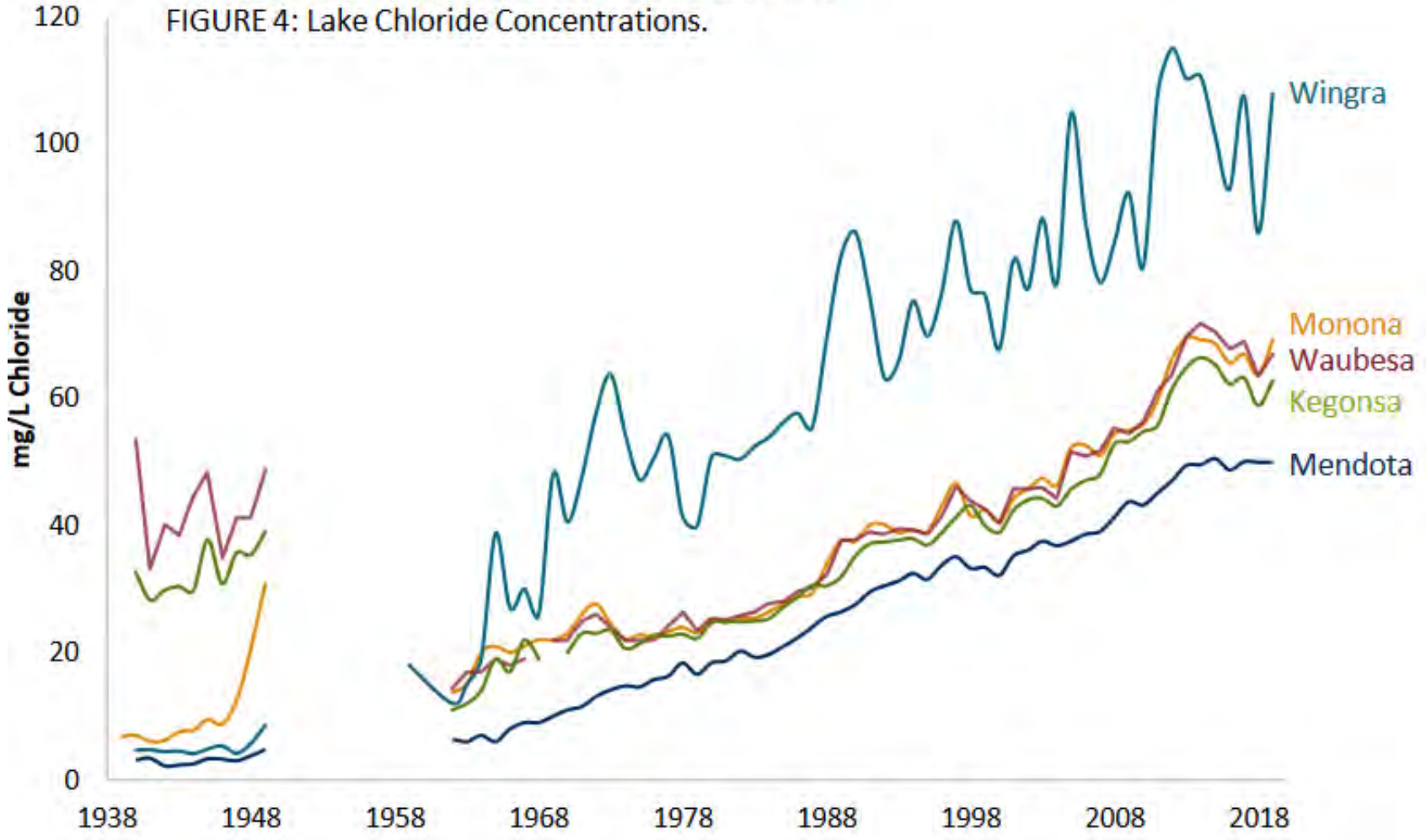
- Certification program to get public and private applicators educated on ways to effectively reduce de-icing salt.
- Wi Saltwise has an LTE
  - Allison Madison
    - Coordinating Trainings

City Salt Use



Chloride is increasing in the Yahara Lakes

FIGURE 4: Lake Chloride Concentrations.



Street Sweeping

- Clean Streets Clean Lakes Initiative
  - Weekly Sweeping with Parking Restrictions
  - 5950 Tons Collected
  - Expanded Parking Restrictions Year Round

Ponds and Greenways

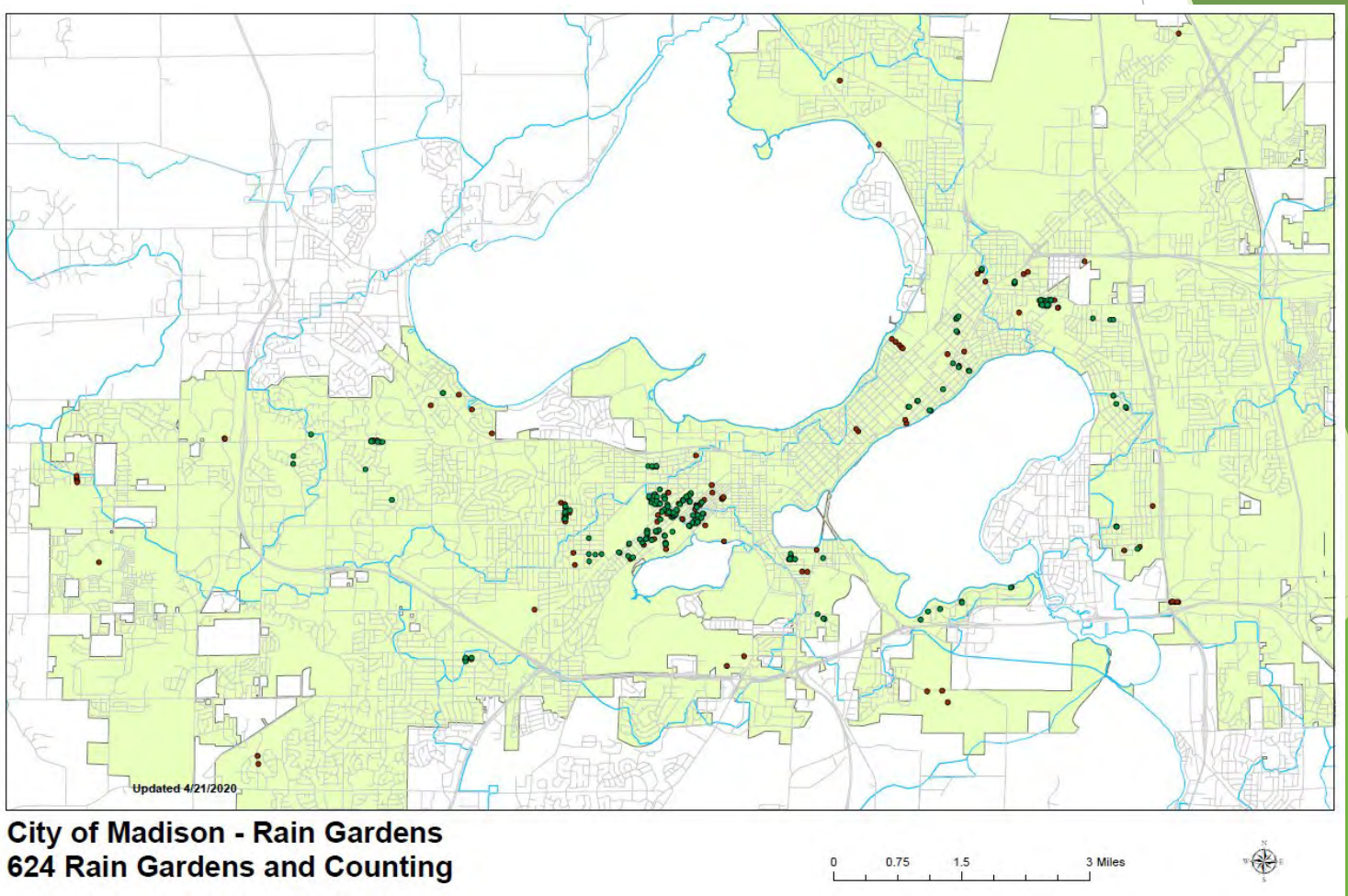
- 188 Ponds owned and managed by the City
  - Inspected for sediment depth, bank erosion and clogging
  - Maintained as needed
- 56 Ponds Managed by others in our system

IDDE

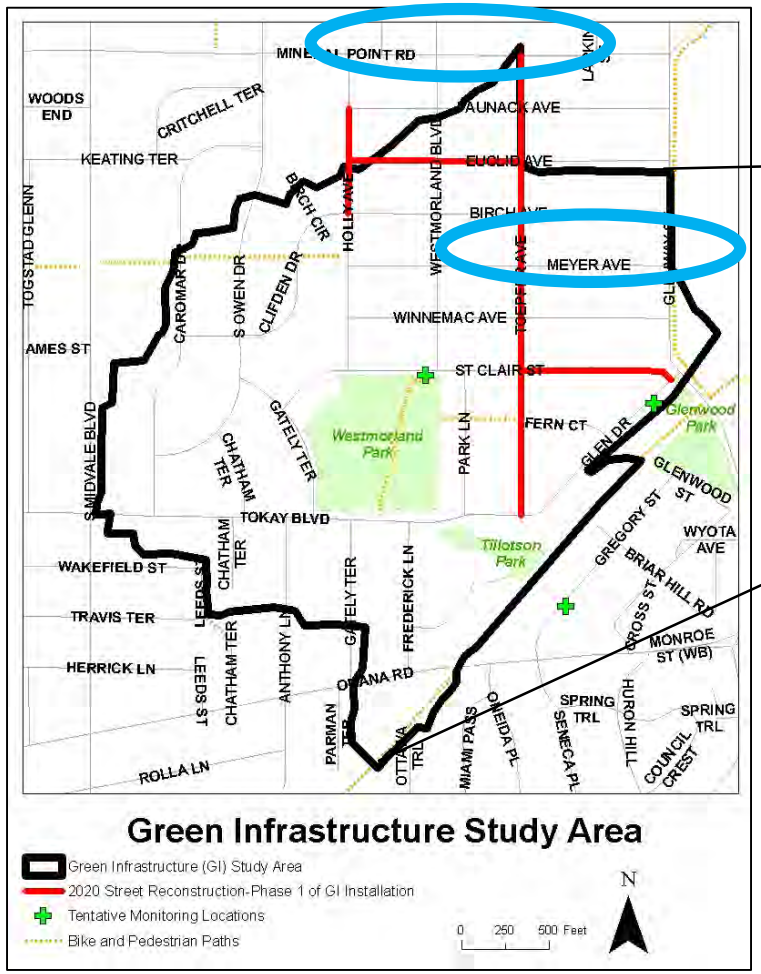
- Illicit Discharge Detection and Elimination
  - Tests all 590 outfalls on a four year rotation
  - 101 tested in 2020:
    - No issues found
  - Water that should go to Madison Metro Sewerage District that goes to Storm Sewer
    - Cross Connections
    - Dumping
      - Concrete
      - Carpet Cleaners
      - Painters
    - 21 illicit discharges confirmed in 2020
      - All but 1 resolved

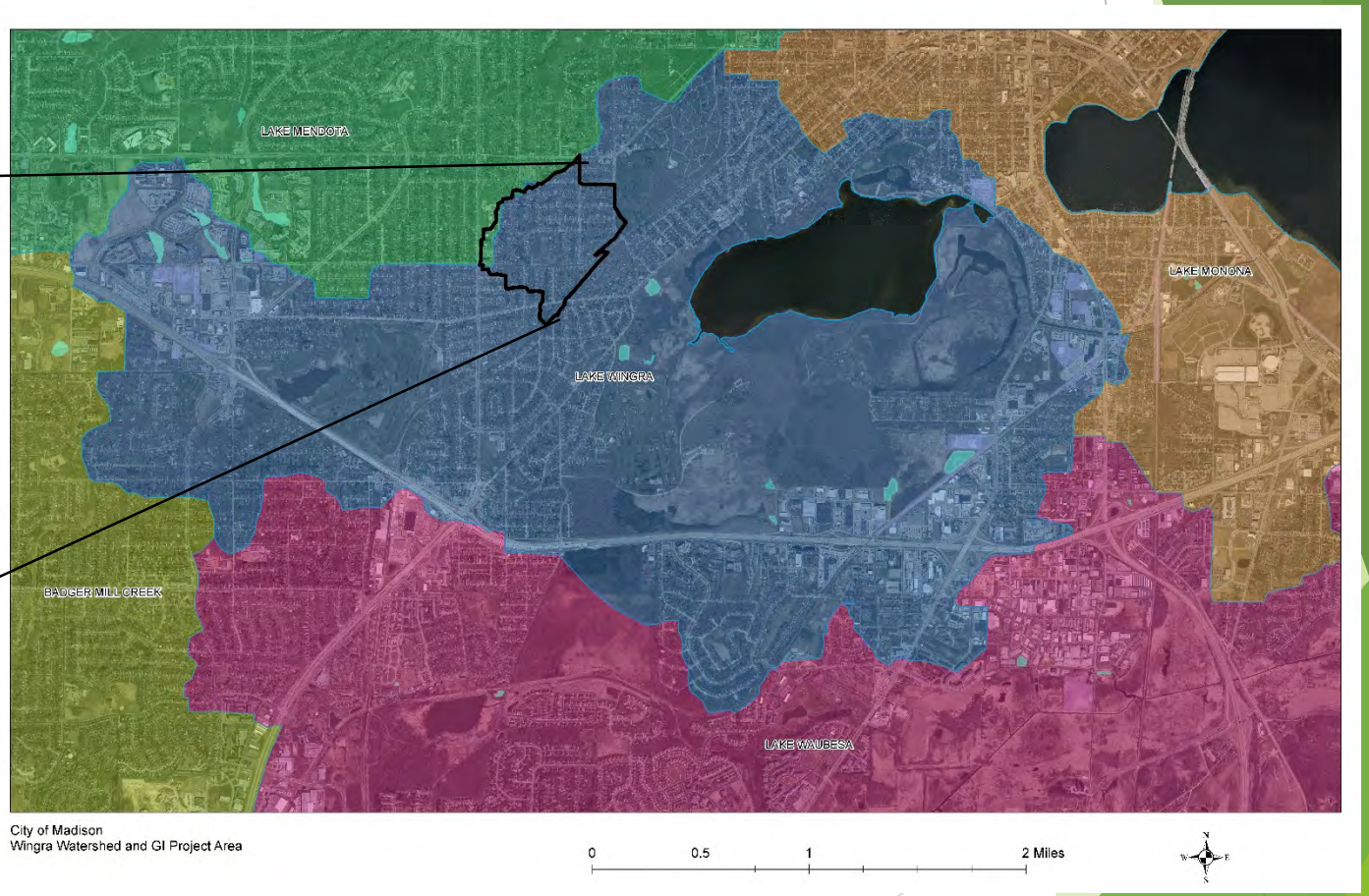
Rain Gardens

Continue to promote public and private installation



Green Infrastructure Study- USGS Madison's First Permeable Street

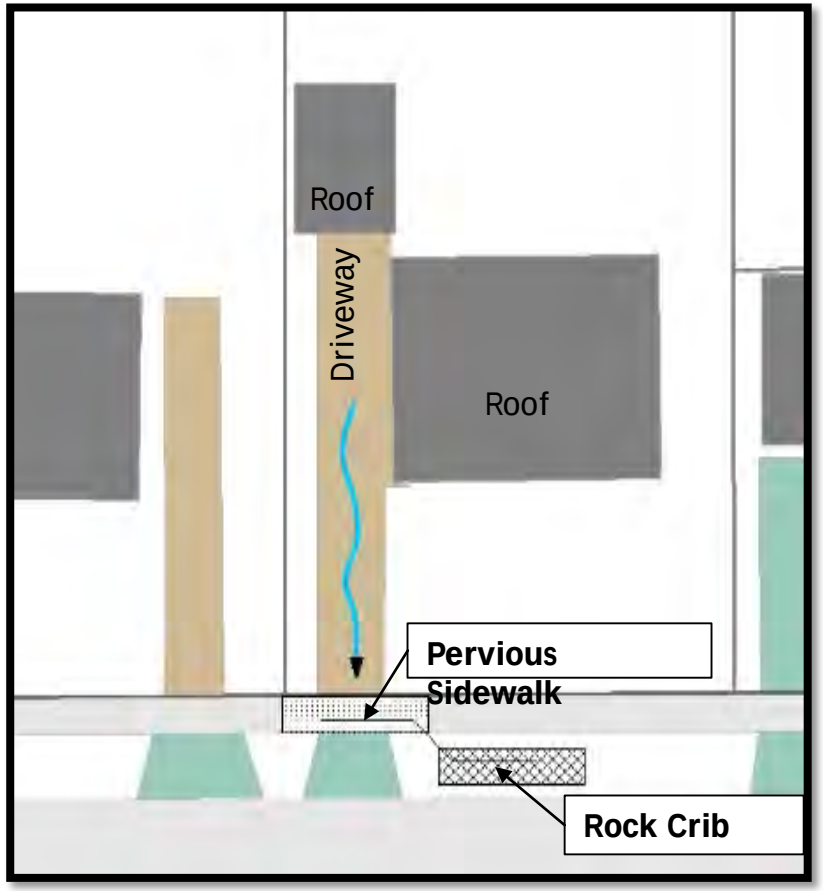




Madison's First Permeable Pavement Street

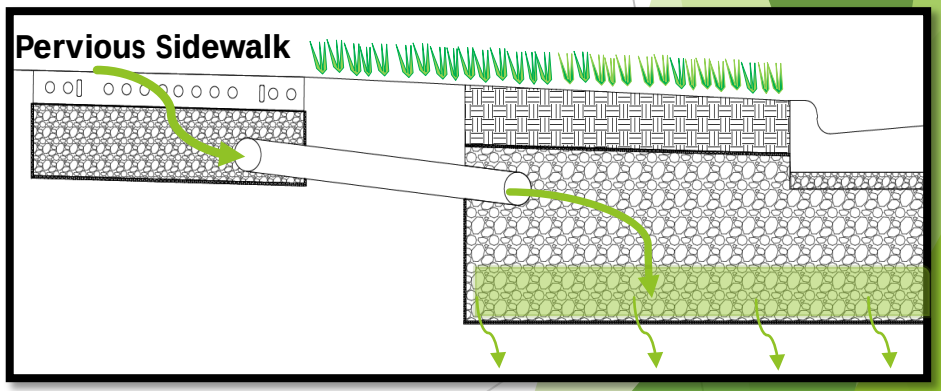
Euclid Avenue and St. Clair Street

Pervious Sidewalk with Rock Cribs



Water flows from the driveway, through the pervious sidewalk and is then routed to the rock crib in the terrace. Overflow water is directed to the storm sewer.

Comparison of Traditional and Pervious Sidewalk



The pervious sidewalk panels intercept and route water to a buried rock crib where it soaks into the ground.

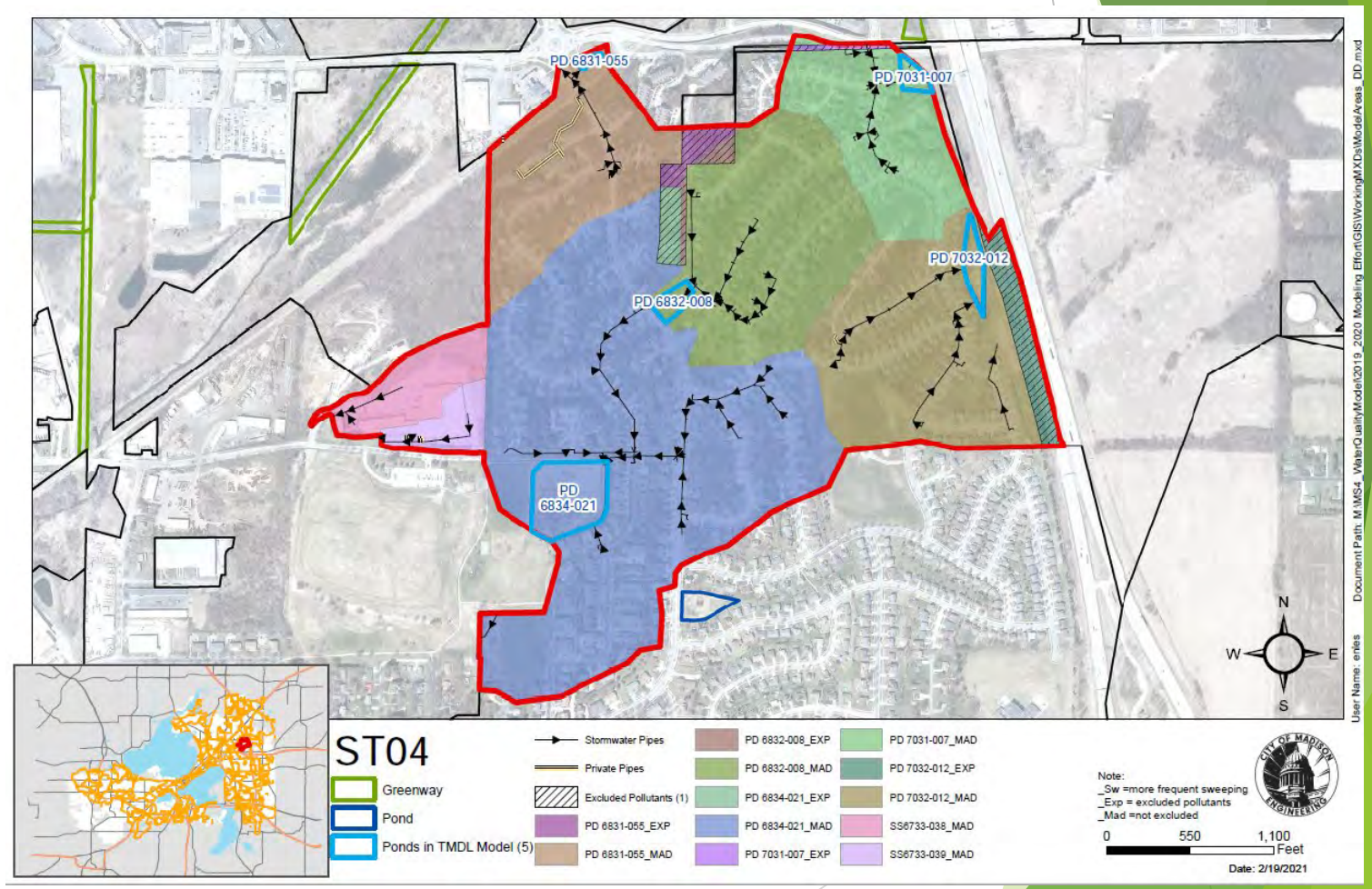
Watershed Modeling 2021 TMDL Modeling Update

- All Landuse and Treatment Updated WinSLAMM Model for TMDL Area

- TSS and Phosphorus Tracked

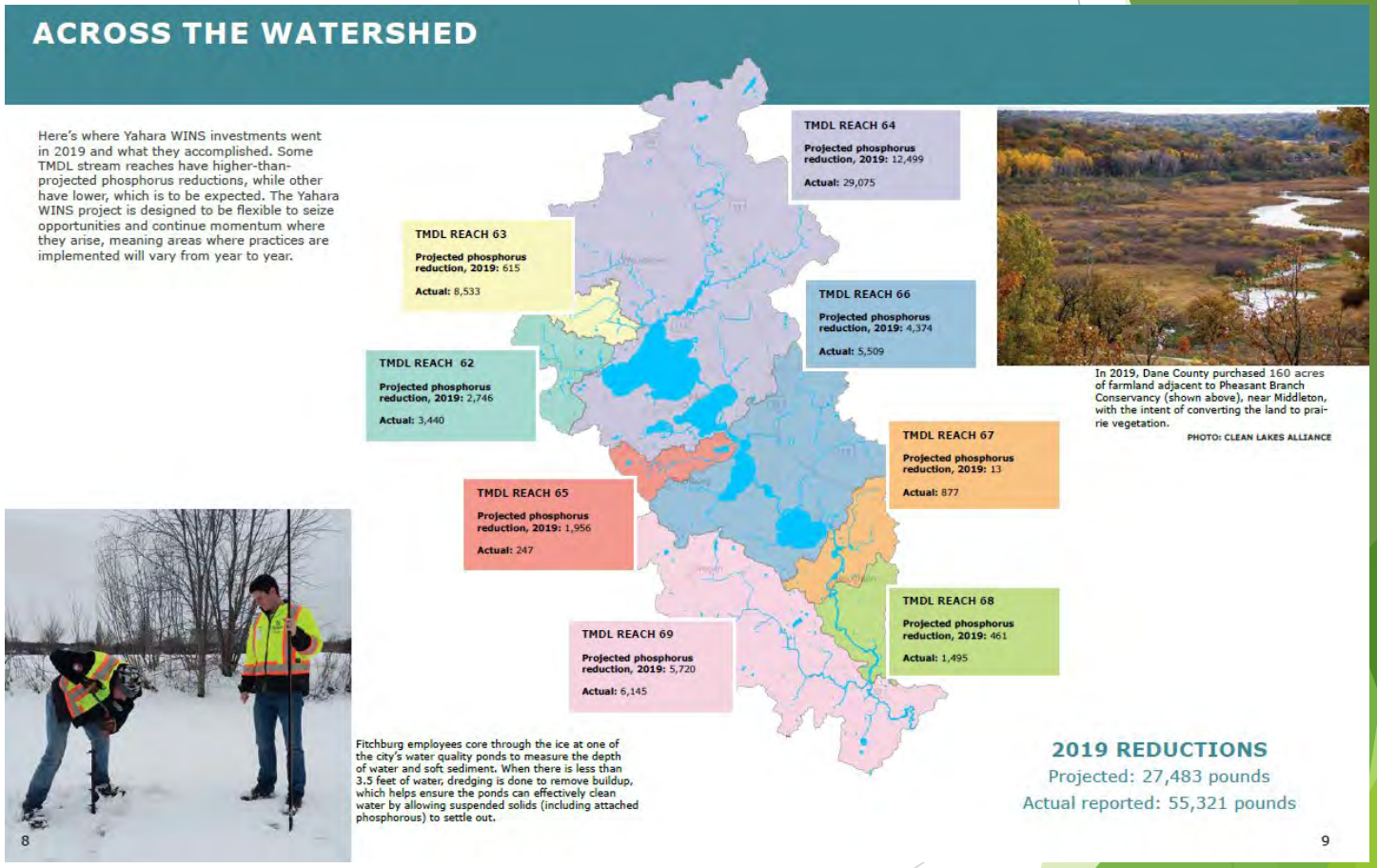
- With in TMDL 35.9% TSS and 26.4% reduction compared to no treatment

- Need Additional treatment to get to baseline
  - 392,3189 lb TSS
  - 190 lb TSS



Adaptive Management

- Madison Contributed
  - $396,290 in 2020
- Program is ahead of schedule
- TP $/lb is lower than initially thought



Stormwater Utility

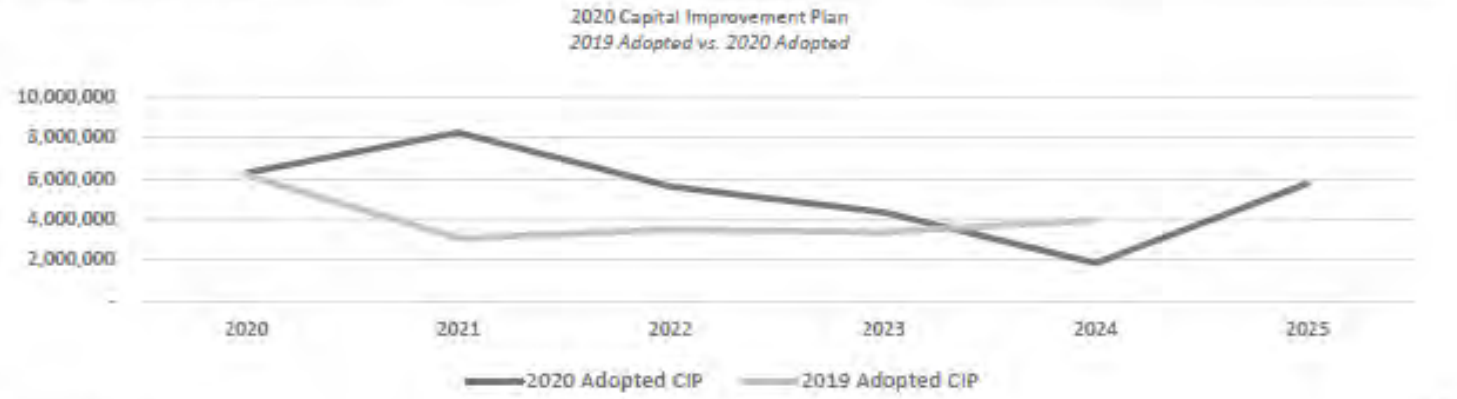
Stormwater Utility

Capital Improvement Plan

Project Summary

	2020	2021	2022	2023	2024	2025
Citywide Flood Mitigation	3,000,000	4,515,000	2,800,000	1,900,000	125,000	3,460,000
Storm Sewer System Improvements	475,000	461,000	289,000	400,000	387,000	403,000
Stormwater Quality System Improvements	2,350,000	2,840,000	2,060,000	1,755,000	865,000	1,448,000
Street Cleaning Equipment - Streets	455,000	455,000	465,000	300,000	470,000	470,000
Total	**$ 6,280,000**	**$ 8,271,000**	**$ 5,614,000**	**$ 4,355,000**	**$ 1,847,000**	**$ 5,781,000**

Changes from 2019 CIP



Project Adjustments

- Starkweather Coagulant Treatment: Project moved to the Horizon List ($1.4m)

Program Adjustments

- Citywide Flood Mitigation: Funding increased in 2020 ($4.68m)

Erosion Control

- Issued 210 Permits for 2020
  - 173 Written Warnings
  - 43 Citation
  - Green Tier Erosion Control Tour

Eagle Trace EC

Going Forward

- Continue Outreach and Education Efforts
- Green Infrastructure Pilot
  - Roger Bannerman Rain Garden Initiative
- Work to Reduce Phosphorus and TSS
  - Leaf Collection Study
  - Pond Conversions
- Watershed Study Proposed Solutions
  - Distributed Green Infrastructure Analysis
- Improve and Expand Salt Certification – Increase Brine Usage
- Continue with Erosion Control Inspections and Education
- SWPPP Inspection Trainings