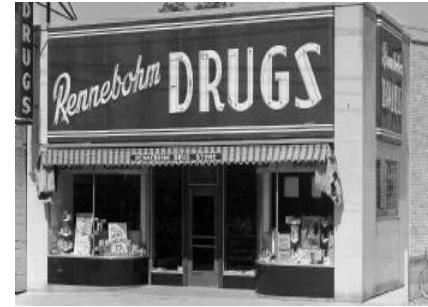
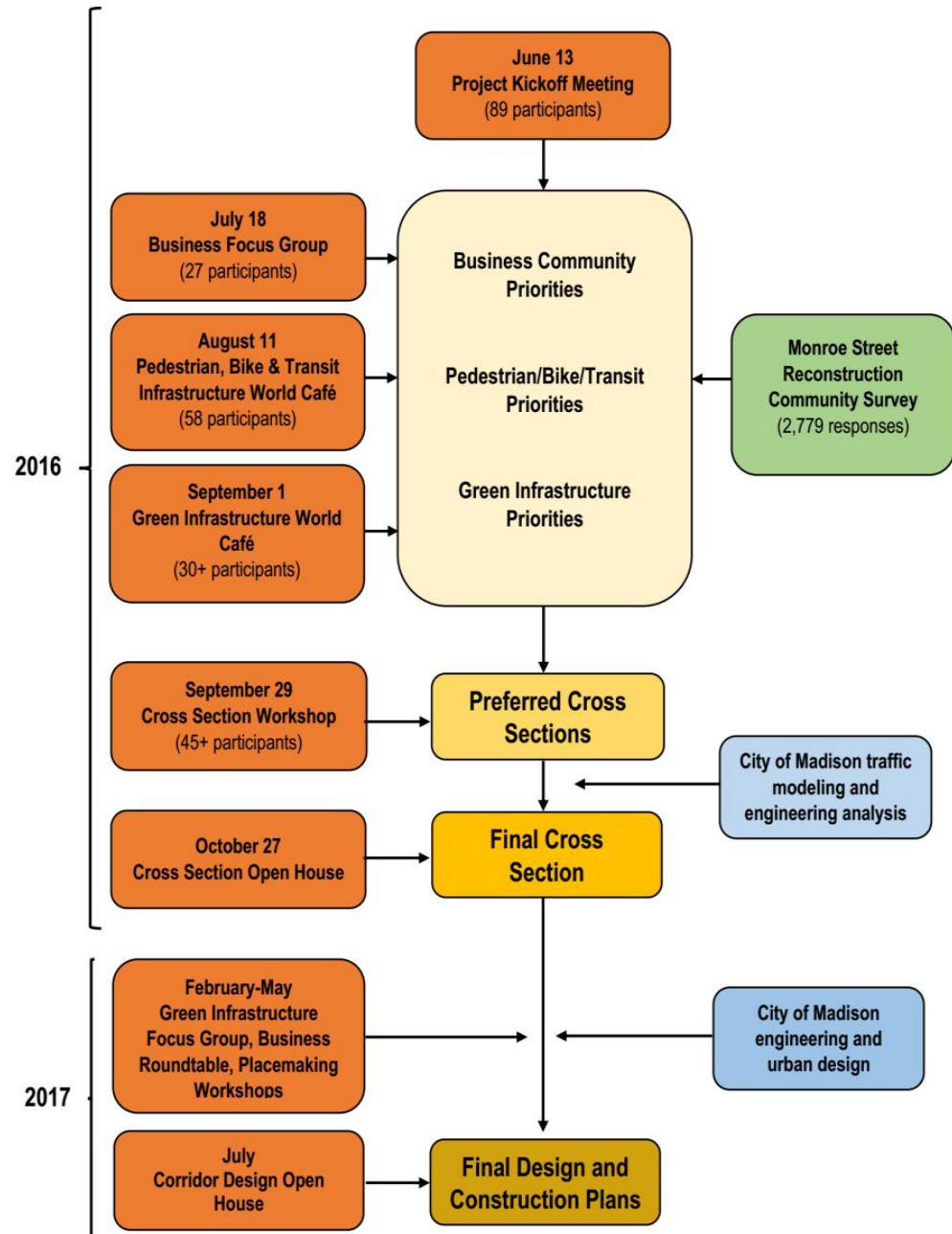


# Monroe Street Reconstruction

Green Infrastructure Focus Group  
February 16, 2017



# Monroe Street Planning Process



# 2017 Public Meetings

April 27:	East Segment Placemaking Workshop
May 24:	West Segment Placemaking Workshop
July 20:	Corridor Design Open House

## Related Community Survey Results

**What qualities would you most like to see improved or invested in?**

- 1. 54%: Walkability**
- 2. 46%: “Green street” with more plant life and sustainable design**
- 3. 43%: Bikeability**
- 4. 42%: Comfortable commuting route**
- 5. 40%: Vibrancy of the commercial districts**

## Related Community Survey Results

# What is most important to achieve as a result of the Monroe Street reconstruction?

1. 70%: Better pedestrian-friendliness and safety
2. 65%: A reconstructed street, free of cracks and potholes
3. 51%: Better bike-friendliness and safety
4. 46%: A “greener” approach to stormwater management
5. 42%: Slower vehicular traffic

# Meeting Ground Rules

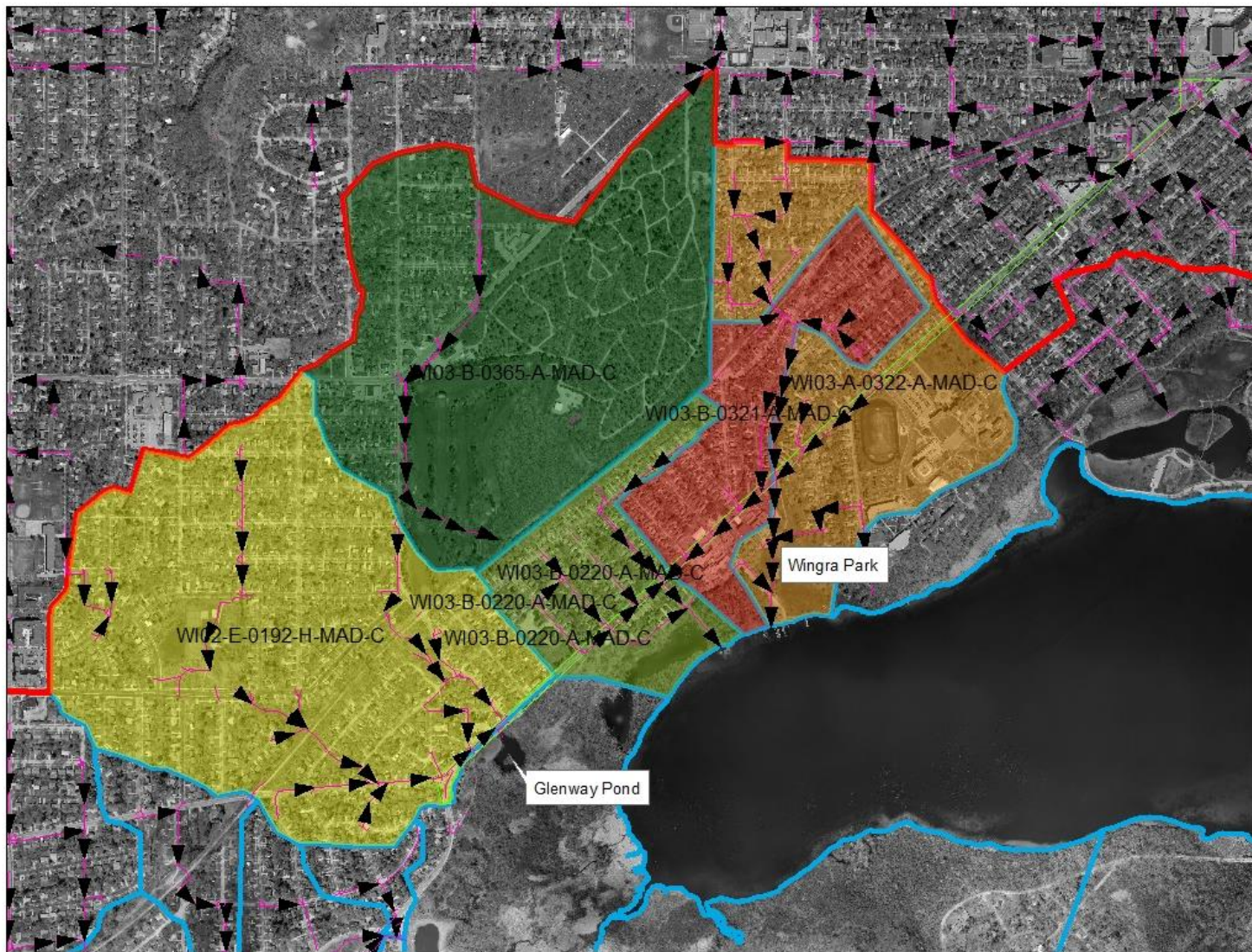
- Everyone participate, no one dominate.
- Ask “what’s possible?” not “what’s wrong?”
- Stay positive and open to new ideas.
- Listen to each other fully and non-judgmentally.
- Stay out of the weeds and swamps.
- Seek common ground.



# Agenda

- Stormwater Overview
- Proposed Treatment
- Crazy Legs Stormwater showcase
- Tree Survivability Enhancements





Area	Acre	Sediment (lb)	Sediment (lb/ac)	TP ( lb)	TP lb/ac
Wingra Watershed flowing Across Monroe Street	664.9	163,080	245.27	637.8	0.96
Monroe St ( modeled as urban cross section 4 lanes)	14.6	8,139	557.47	18.26	1.25



# Existing Watershed Treatment

- Street Sweeping
- Catch basins
- Glenway Pond

Land Uses	Junctions	Control Practices	Outfall	Output Summary																										
File Name: C:\Program Files (x86)\WinSLAMM v10\MonroeStreetWingraWatershed_WithGlenway.mdb																														
<b>Outfall Output Summary</b>																														
	Runoff Volume (cu. ft.)	Percent Runoff Reduction	Runoff Coefficient (Rv)	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction																								
Total of All Land Uses without Controls	1.816E+07		0.23	143.8	163080																									
Outfall Total with Controls	1.810E+07	0.33 %	0.23	114.3	129194	20.78 %																								
Current File Output: Annualized Total After Outfall Controls																														
	1.815E+07		Years in Model Run: 1.00		129549																									
<table border="1"> <thead> <tr> <th>Pollutant</th> <th>Concentration - No Controls</th> <th>Concentration - With Controls</th> <th>Concentration Units</th> <th>Pollutant Yield - No Controls</th> <th>Pollutant Yield - With Controls</th> <th>Pollutant Yield Units</th> <th>Percent Yield Reduction</th> </tr> </thead> <tbody> <tr> <td>Particulate Solids</td> <td>143.8</td> <td>114.3</td> <td>mg/L</td> <td>163080</td> <td>129194</td> <td>lbs</td> <td>20.78 %</td> </tr> <tr> <td>Total Phosphorus</td> <td>0.5598</td> <td>0.4784</td> <td>mg/L</td> <td>634.7</td> <td>540.5</td> <td>lbs</td> <td>14.84 %</td> </tr> </tbody> </table>							Pollutant	Concentration - No Controls	Concentration - With Controls	Concentration Units	Pollutant Yield - No Controls	Pollutant Yield - With Controls	Pollutant Yield Units	Percent Yield Reduction	Particulate Solids	143.8	114.3	mg/L	163080	129194	lbs	20.78 %	Total Phosphorus	0.5598	0.4784	mg/L	634.7	540.5	lbs	14.84 %
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<input type="button" value="Print Output Summary to Text File"/> <input type="button" value="Print Output Summary to .csv File"/>		Total Area Modeled (ac)		664.900																										
<b>Total Control Practice</b> <table> <tr><td>Capital Cost</td><td>N/A</td></tr> <tr><td>Land Cost</td><td>N/A</td></tr> <tr><td>Annual Maintenance Cost</td><td>N/A</td></tr> <tr><td>Present Value of All Costs</td><td>N/A</td></tr> <tr><td>Annualized Value of All</td><td>N/A</td></tr> </table>							Capital Cost	N/A	Land Cost	N/A	Annual Maintenance Cost	N/A	Present Value of All Costs	N/A	Annualized Value of All	N/A														
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<input type="button" value="Perform Outfall Flow Duration Curve Calculations"/>			<b>Receiving Water Impacts Due To Stormwater</b> (CWP Impervious Cover Model)																											
			<table> <tr> <td></td> <td>Calculated Rv</td> <td>Approximate Urban Stream Classification</td> </tr> <tr> <td>Without Controls</td> <td>0.23</td> <td>Poor</td> </tr> <tr> <td>With Controls</td> <td>0.23</td> <td>Poor</td> </tr> </table>					Calculated Rv	Approximate Urban Stream Classification	Without Controls	0.23	Poor	With Controls	0.23	Poor															
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# Proposed Treatment Options

- Wingra Screen Structure and Sand filter
- Side Street Bioretention
- Bed Load Trap
- Glenway Pipe Extension

# Wingra Park Screen Structure



- 14,266 lb TSS/ Yr
- 36 lb TP / Yr
- Cost ~ 250k +  
(50k to cover?)
- Annualized \$/lb  
TP = \$347- \$417

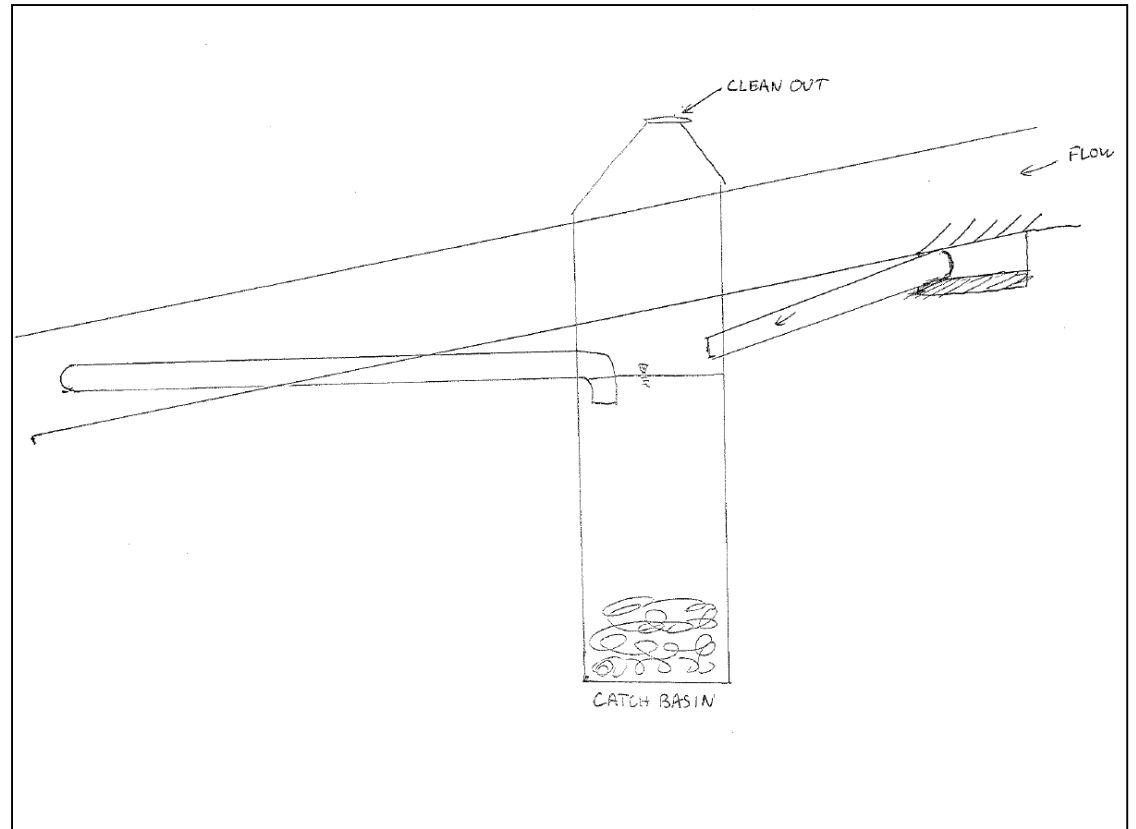
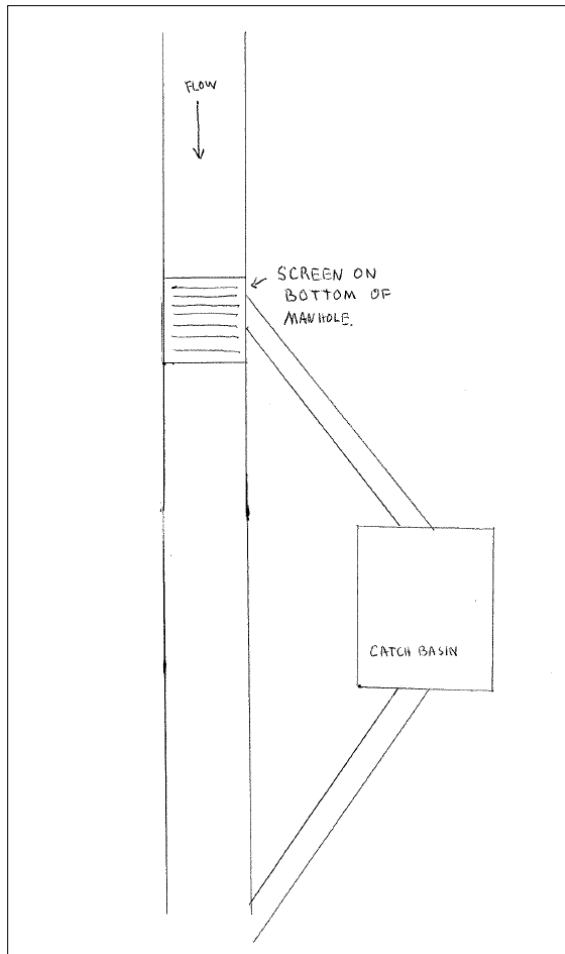
Like this, but underground

# Side Street Rain Gardens constructed as bioretention



- 20 suitable locations
- Property owner has right of refusal
- Can be maintained by others
- Construction Cost can be absorbed by city
- Potential for 1,600 lb Sediment Capture
- 4.6 lb P capture
- Construction Cost = 90k
  - $300 \text{ sf} * 15 \text{ \$/sf}$
- Annualized TP Capture Cost
  - 981  $\text{\$/lb}$

# Bed Load Trap



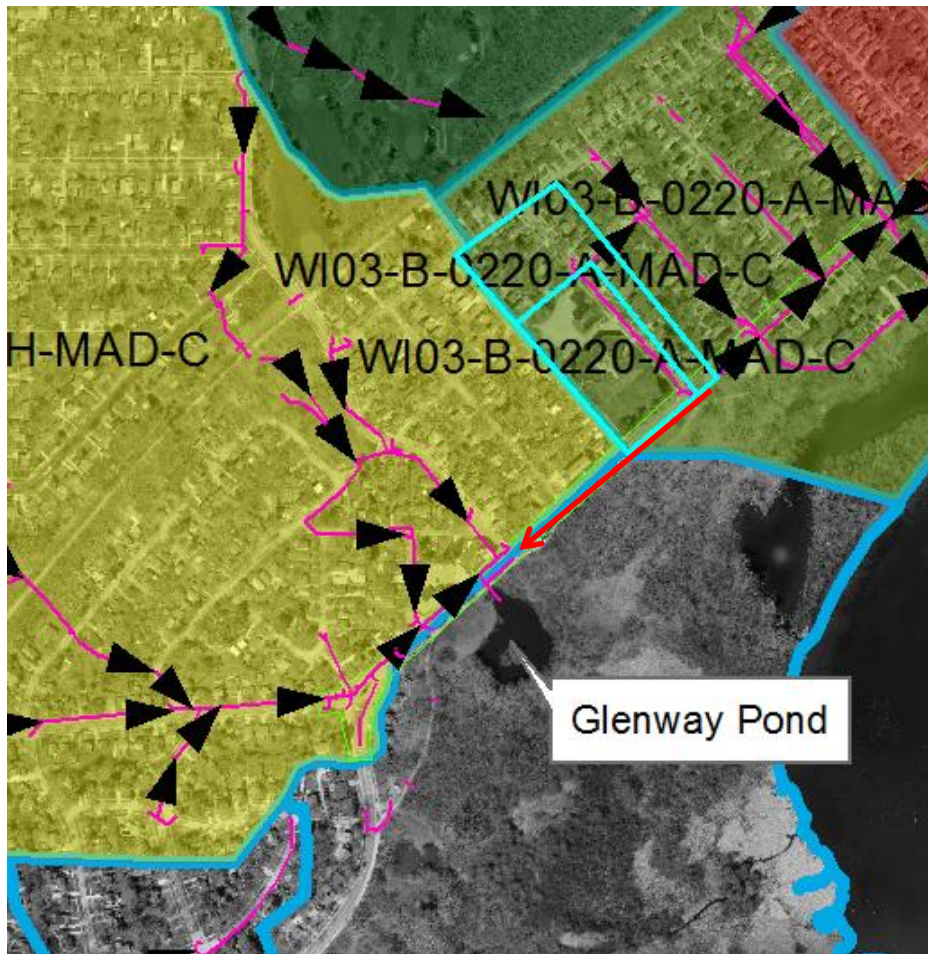
Parallel Catch basin

Requires moderately sloped streets

Assuming Capture % in between screen and standard CB



# Glenway Pipe Extension

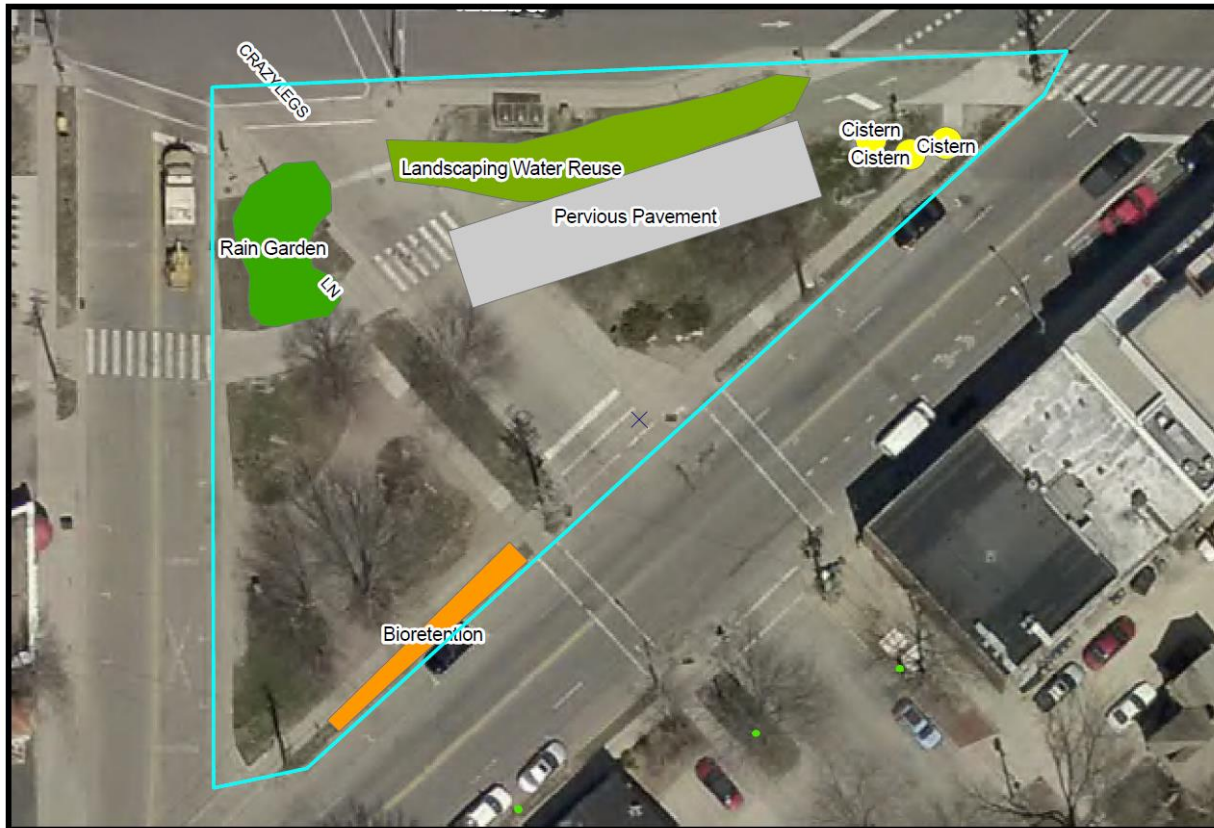


- Install 15" pipe 800 feet to capture 8.5 acres of untreated area and route to Glenwood Pond
- 666 lb/ yr sediment
- 2.4 lb/yr TP
- Construction Cost = 80k  
800 feet @ 100 \$/ft
- Annualized TP Capture Cost  
1,667 \$/lb

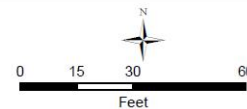
# Where does this get us?

- Screen 36 lb / year
  - Rain Gardens 4.6 lb/ year
  - Glenway 2.4 lb/ year
- Total 43 lb TP/year

# Crazylegs Stormwater Showcase



Crazylegs Stormwater Showcase



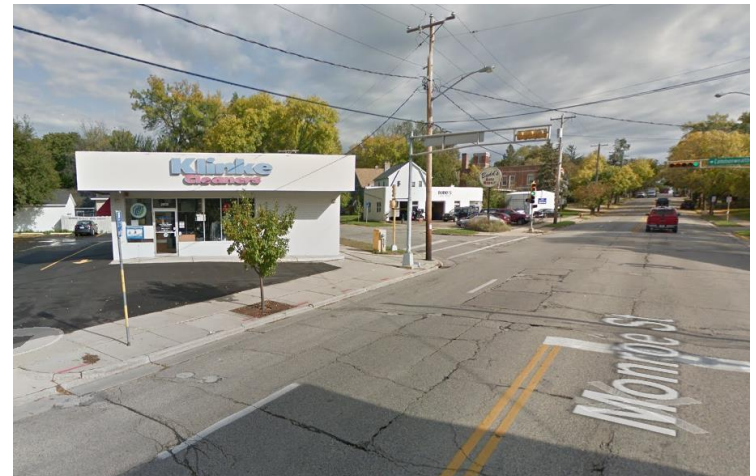
- High traffic area
- Near university
- Can work with other activities
  - Food carts
  - Buffer from traffic
- If there is a shelter a green roof could be added.



# 4' x 12' Tree Grates and Soil Improvements



- Reduce Soil Compaction
- More soil volume for trees
  - Terrace excavated from curb to sidewalk
- No filtering of street water
- Less risk of tree mortality
- Suitable where terrace is concrete from building to curb or existing soil is highly compacted

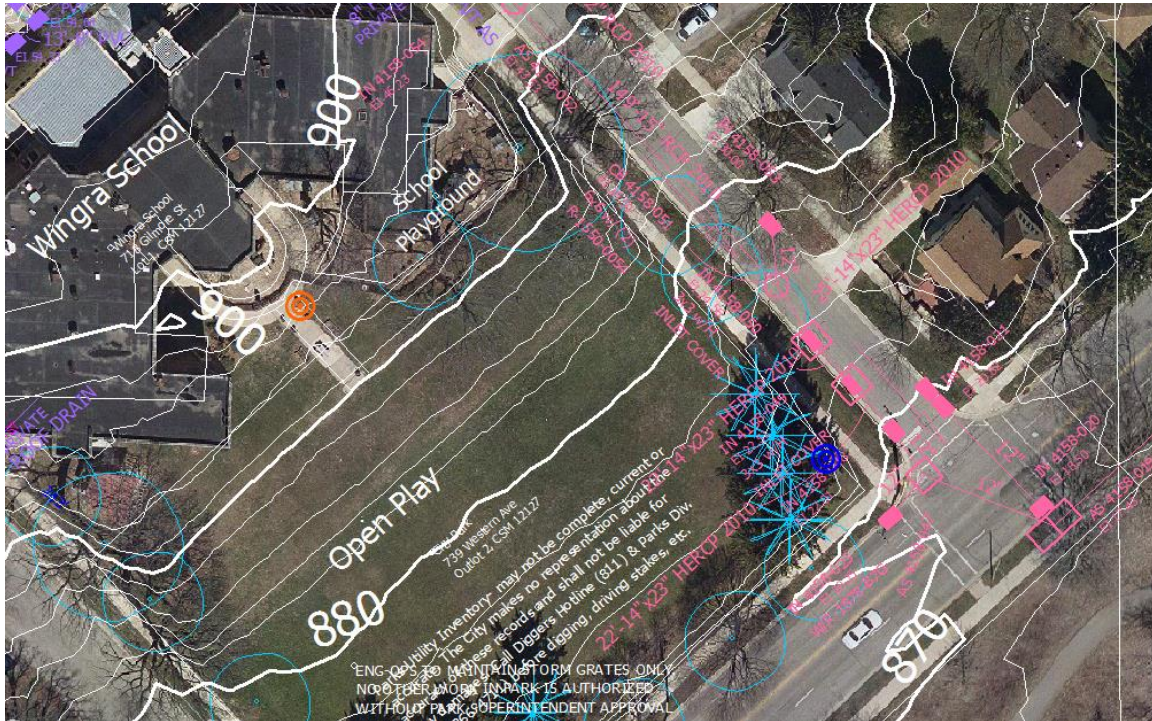


# Green Infrastructure Support Policy

- Policy Recommendation to Support Stormwater Management in Wingra and Monona Bay Watersheds
  - These waterbodies do not benefit from adaptive management
  - Support up to \$500/lb TP captured on site on an average annual basin.
    - A project capturing 1 lb of TP / yr would be eligible for  $500 * 20 \text{ year} = \$10,000$
  - Cap of \$25,000 per project



# Gilmore Rain Garden



- Adjacent to City Park
- Opportunity both in terrace and possibly in park
- Details need to be discussed with Park Commission
- Western Ave has potential in park

# Additional Ideas?





### Monroe Street Reconstruction

• Rain Gardens

• Rectangular Rapid Flash Beacon

Project Boundary

Pedestrian Island

Table Top

0 125 250 500  
Feet