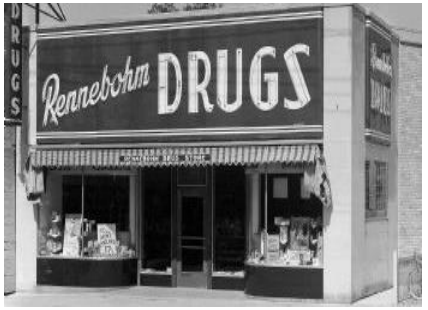
Monroe Street Reconstruction

Green Infrastructure Focus Group

June 14, 2017



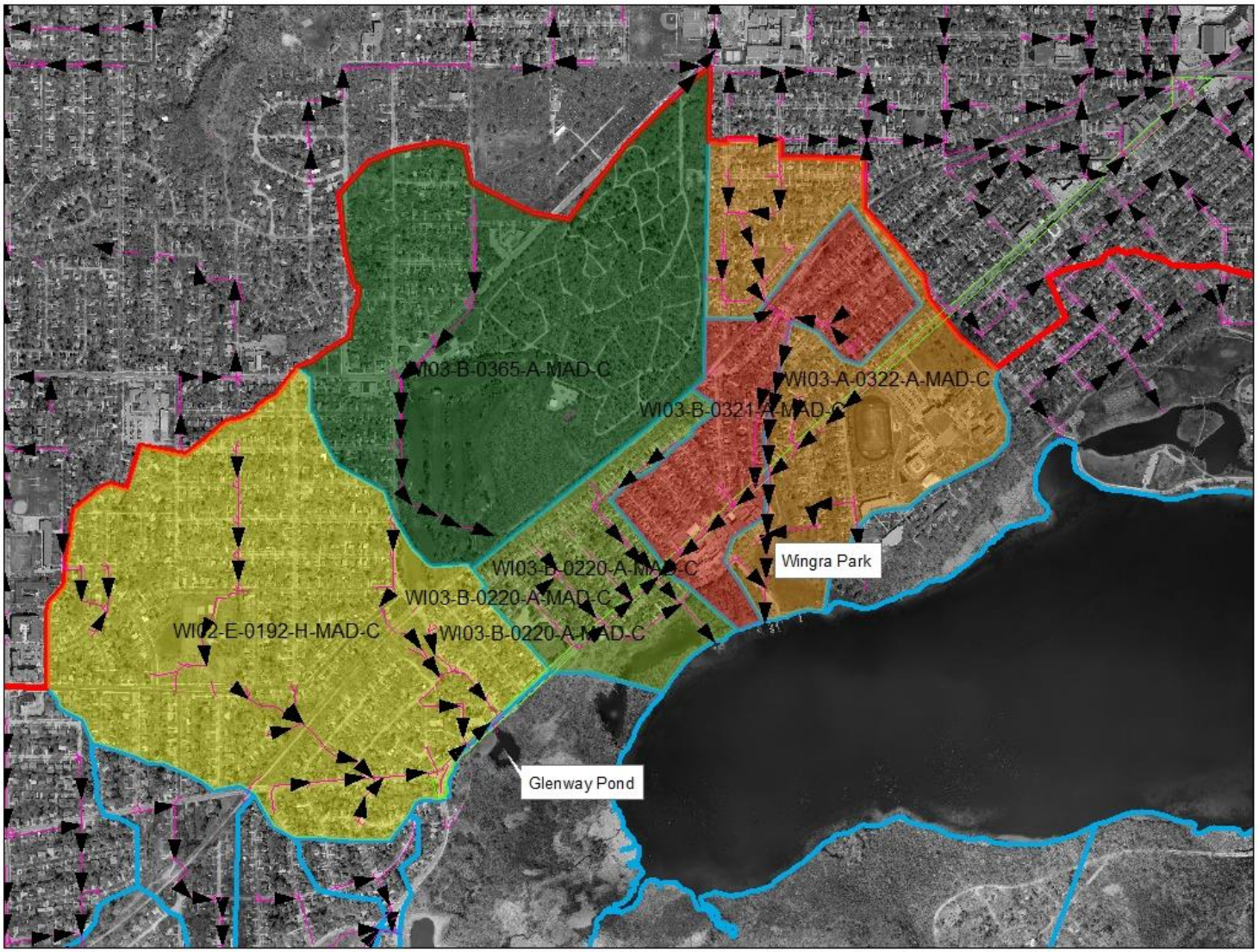
UrbanAssets

Agenda

- Proposed Treatment Changes from last meeting
- Crazy Legs Stormwater showcase
- Tree Survivability Enhancements
- Policy Updates

Questions from Last meeting

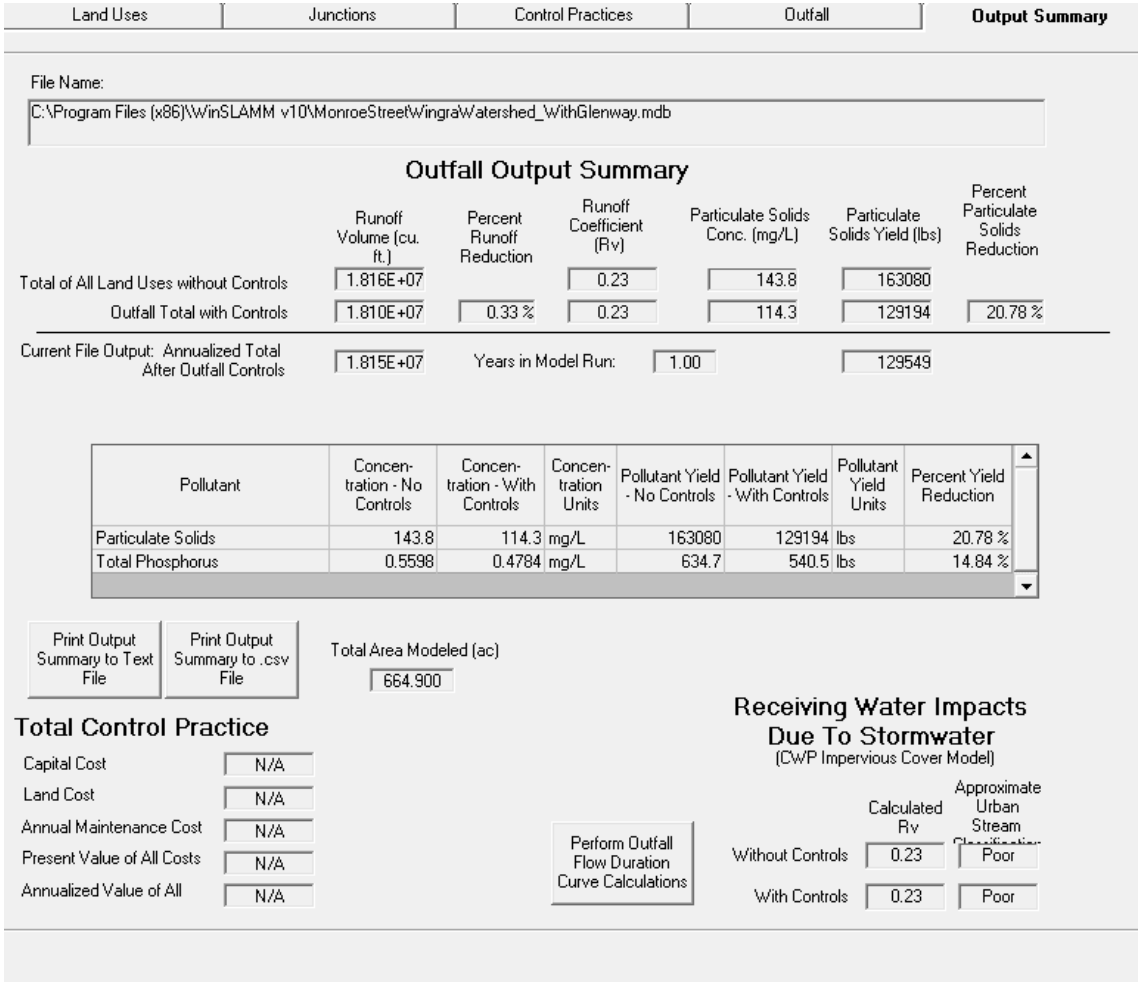
- Tree trench / Rock Trench
  - Phil to do more research and modeling
- Park filter
  - Open channel through Wingra Park down stream of treatment
- Overall treatment
- Crazy legs
- Commonwealth Bioretention



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

Outfall Output Summary

	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

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 %

Print Output Summary to Text File | Print Output Summary to .csv File

Total Area Modeled (ac): 664.900

Total Control Practice

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

Perform Outfall Flow Duration Curve Calculations

Receiving Water Impacts Due To Stormwater
(CWP Impervious Cover Model)

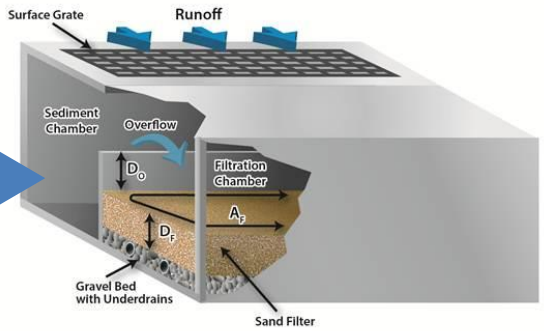
	Calculated Rv	Approximate Urban Stream Classification
Without Controls	0.23	Poor
With Controls	0.23	Poor

Proposed Treatment Options

- Wingra Screen Structure and Sand filter
- Side Street Bioretention/Rain Gardens
- Bed Load Trap
- ~~Glenway Pipe Extension~~
- Rock Trench
  - Between Edgewood and Woodrow both sides of the street.

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

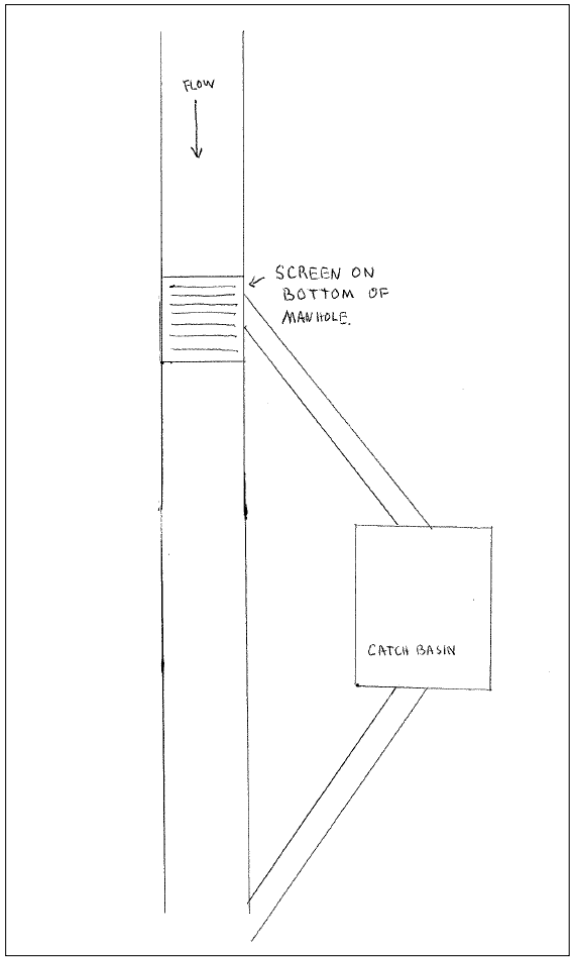
- 20 suitable locations
- Property owner has right of refusal
- Can be maintained by others
- Construction Cost can be absorbed by city
- Potential for 1,600 lb Sediment Capture
- 4.6 lb P capture
- Construction Cost = 90k
  - 300 sf * 15 $/sf
- Annualized TP Capture Cost
  - 981 $/lb

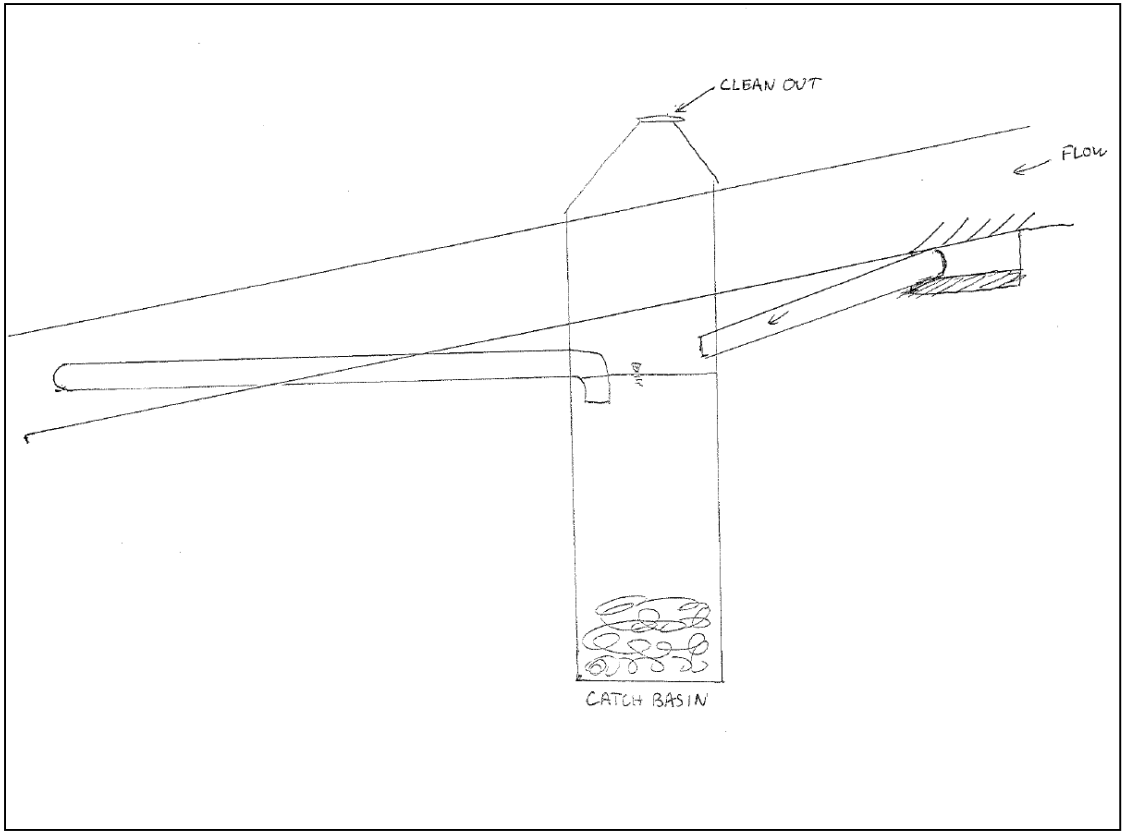
Commonwealth Rain Garden

Meeting with Klinke on Site next Wednesday

Owner is open to the idea but has some access concerns.

Bed Load Trap





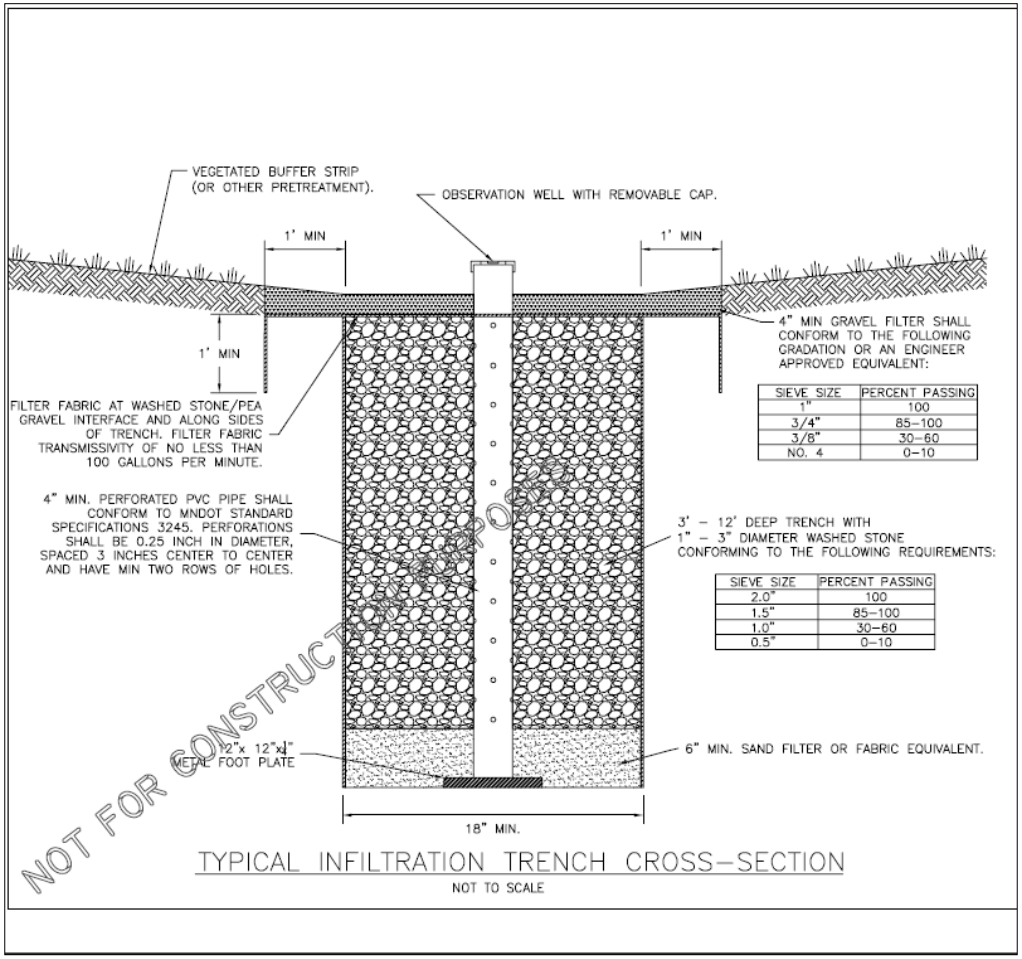
Parallel Catch basin
Requires moderately sloped streets
Assuming Capture % in between screen and standard CB

Monroe and Gilmore

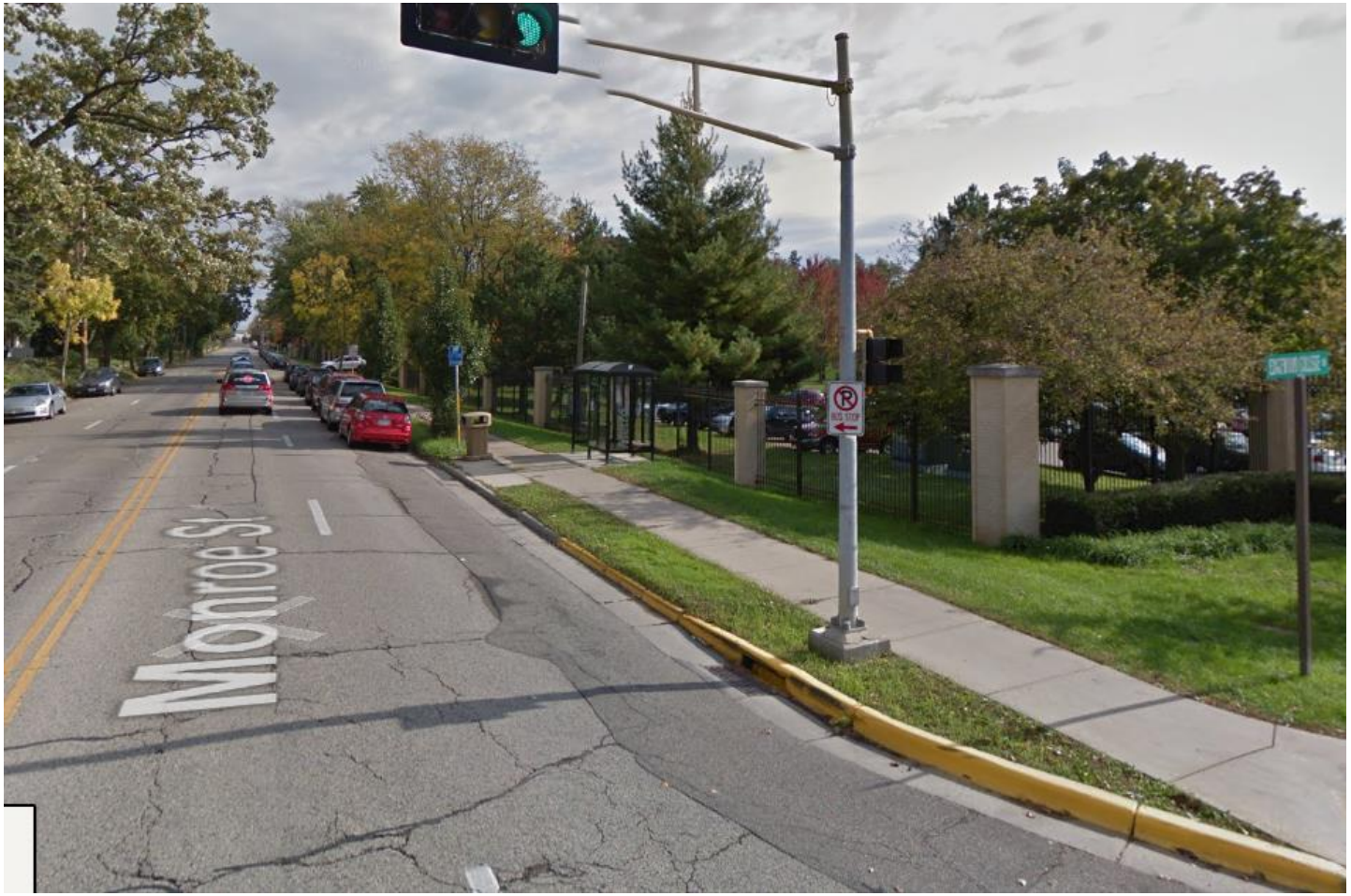
Knickerbocker and Monroe

Rock Trench

Rock Trench Cross Section



Woodrow and Monroe



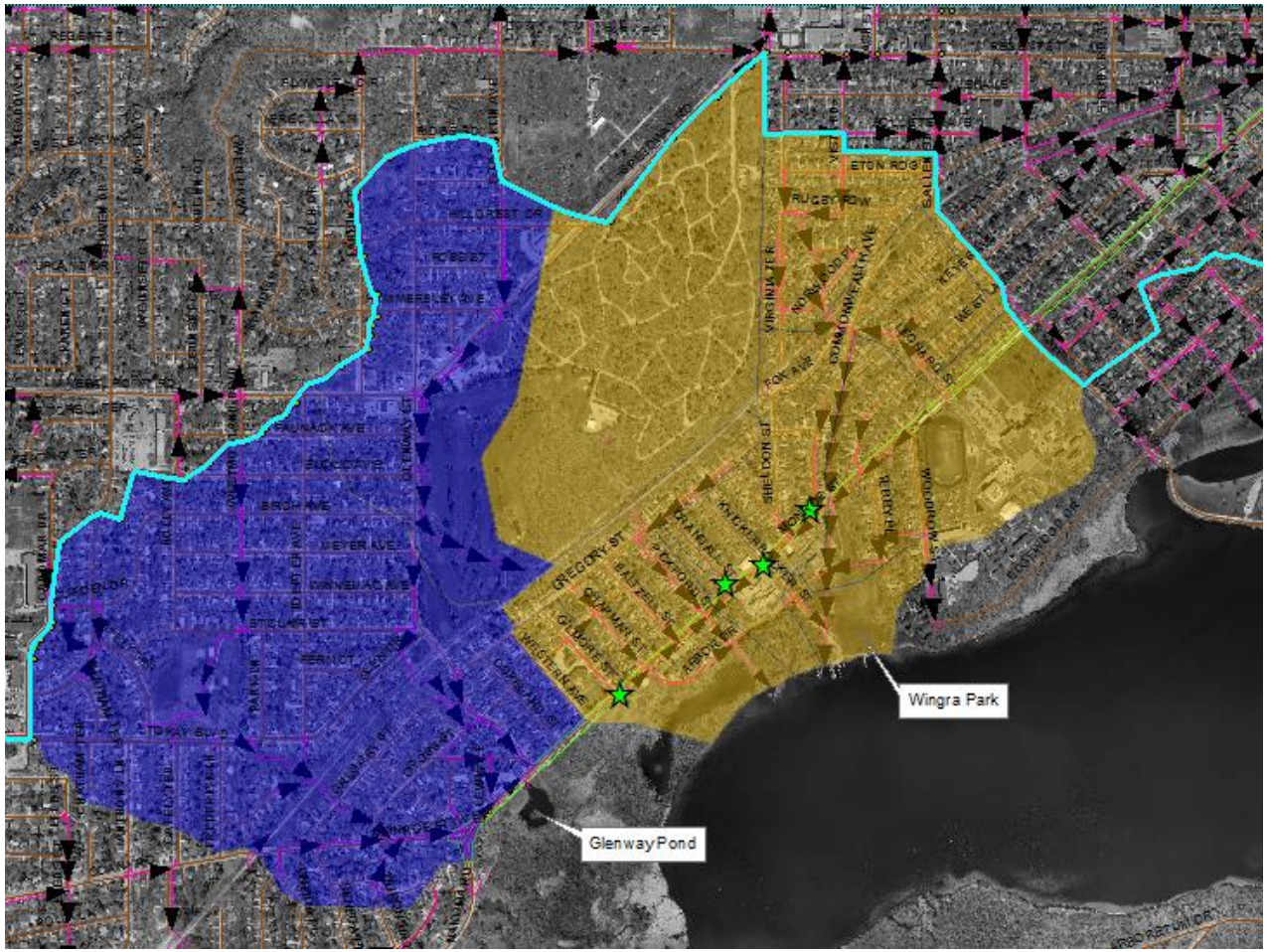
Where does this get us?

- Screen 36 lb / year
- Rain Gardens 4.6 lb/ year
- Bed Load Traps 0.5 lb/ year
- Rock Trenches 1.5 lb/ year

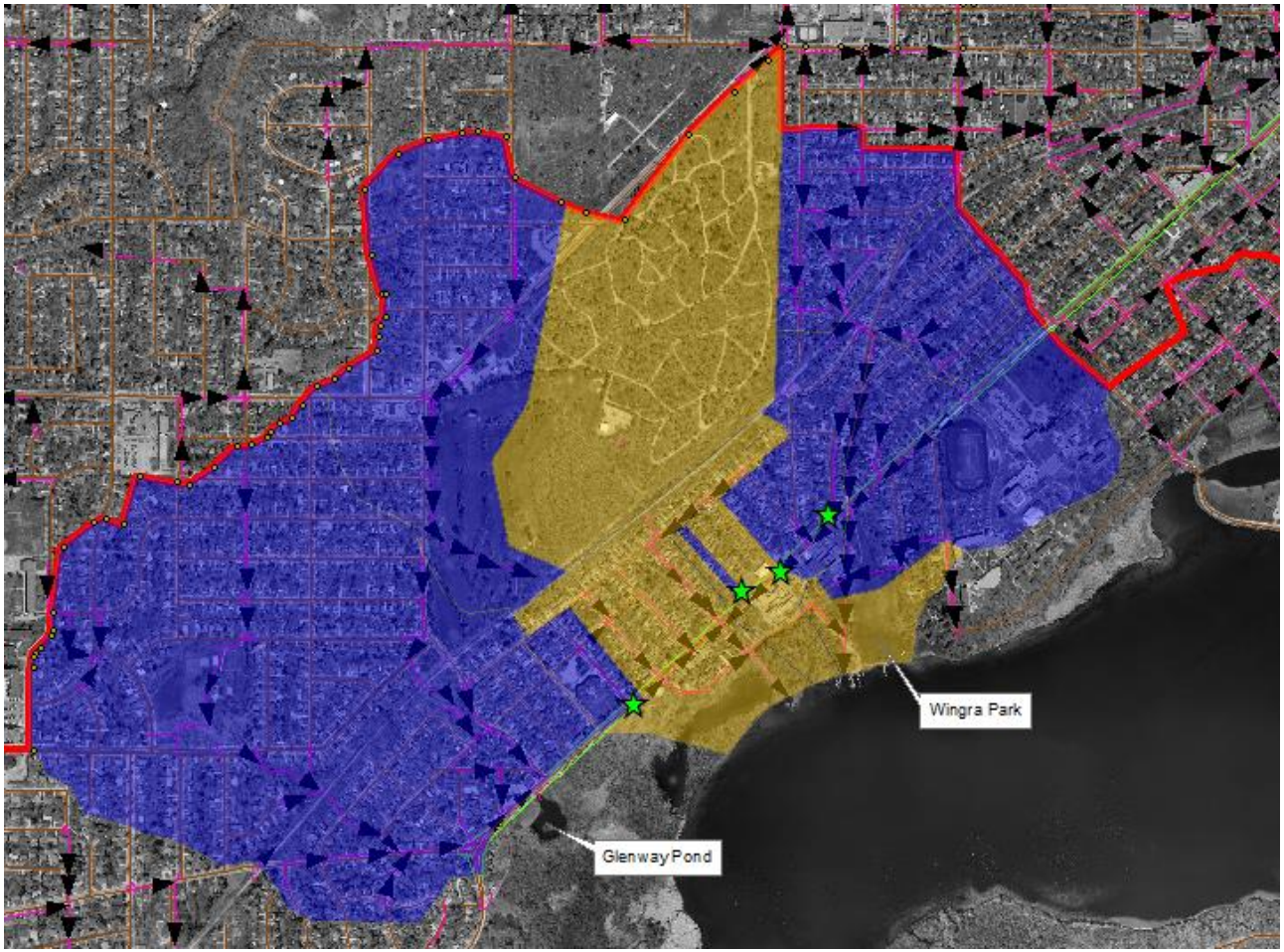
  Total 42.6 lb TP/year

Added to the existing reduction we go from 634 lb TP to 497.4 lb per year 22% reduction

Preconstruction Treatment



Post Construction Treatment



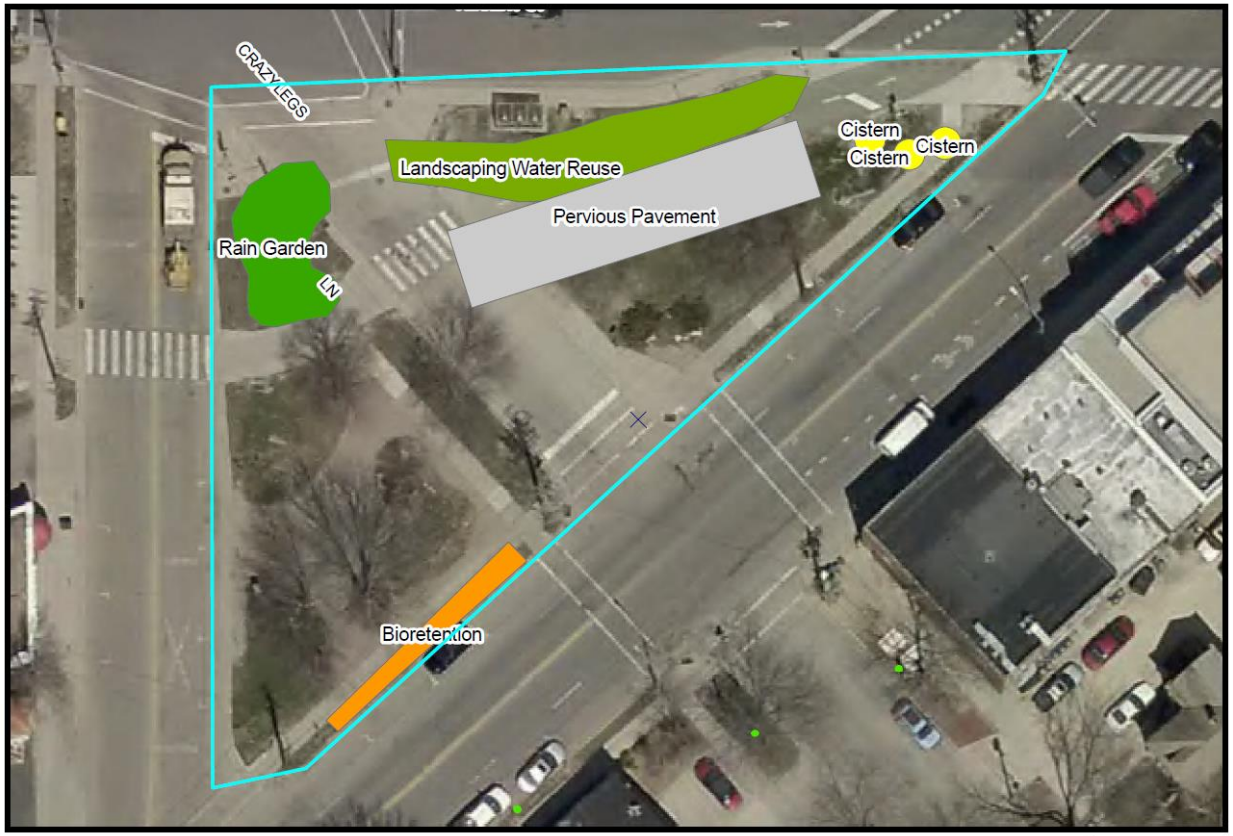
Green Infrastructure Support Policy

- 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 year = $10,000
  - Cap of $25,000 per project
  - Need to work on the time frame as businesses are in survival mode

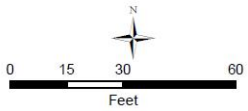
4’ x 12’ Tree Grates and Soil Improvements

- 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

Crazylegs Stormwater Showcase



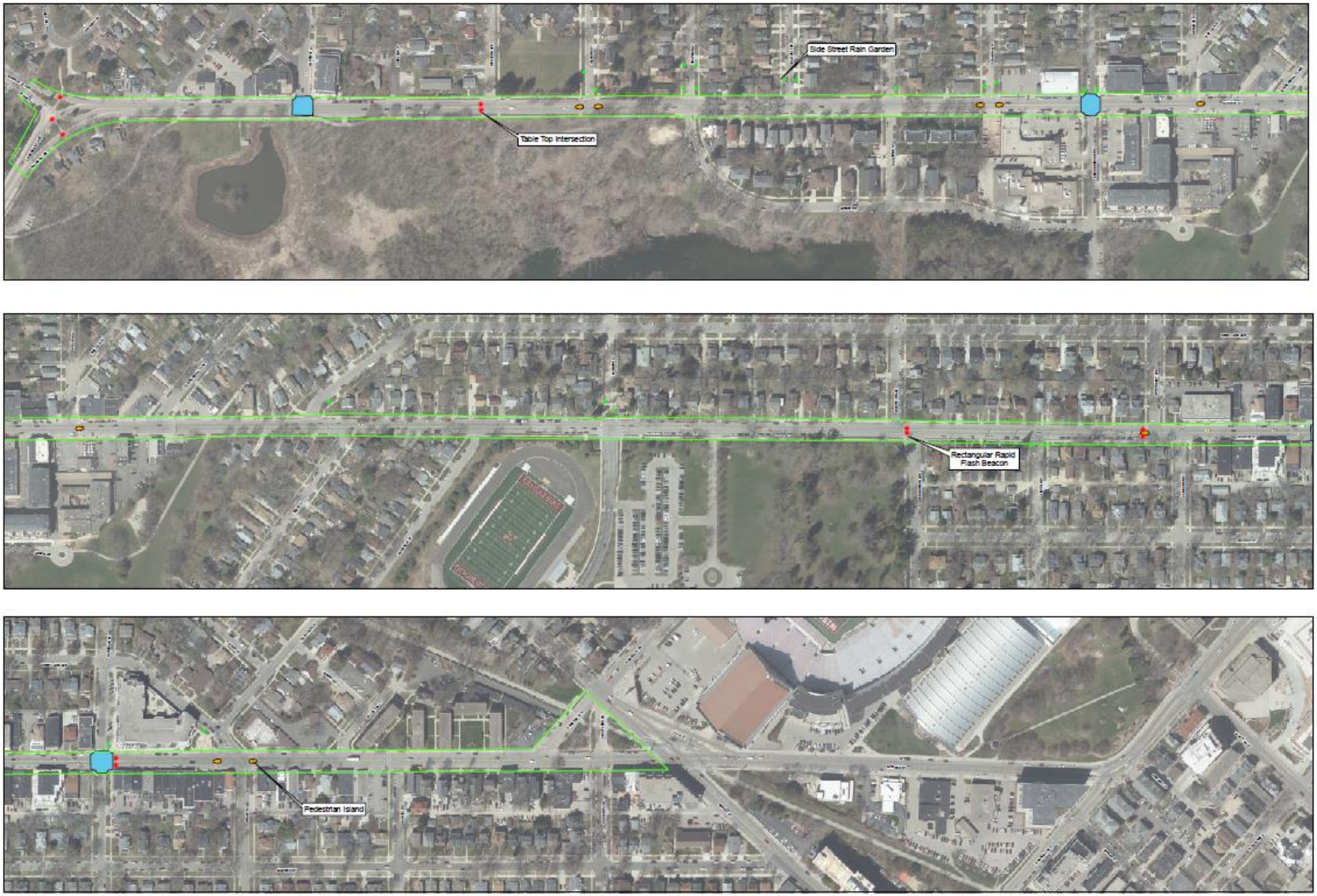
Crazylegs Stormwater Showcase



- 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.

Additional Ideas?



Monroe Street Reconstruction

Rain Gardens

Rectangular Rapid Flash Beacon

Project Boundary

Pedestrian Island

Table Top

0 125 250 500

Feet