Monroe Street Reconstruction

Green Infrastructure World Café

September 1, 2016

CITY OF MADISON ENGINEERING

UrbanAssets

Tonight's Agenda

Thank you to HotelRED!

1. Orientation & Project Scope
2. Group Discussion: Definitions & Values
3. Presentation: Green Infrastructure & Sustainable Design on Monroe Street
4. Group Discussion: Preferred Enhancements and Opportunities for Community Participation

Introductions

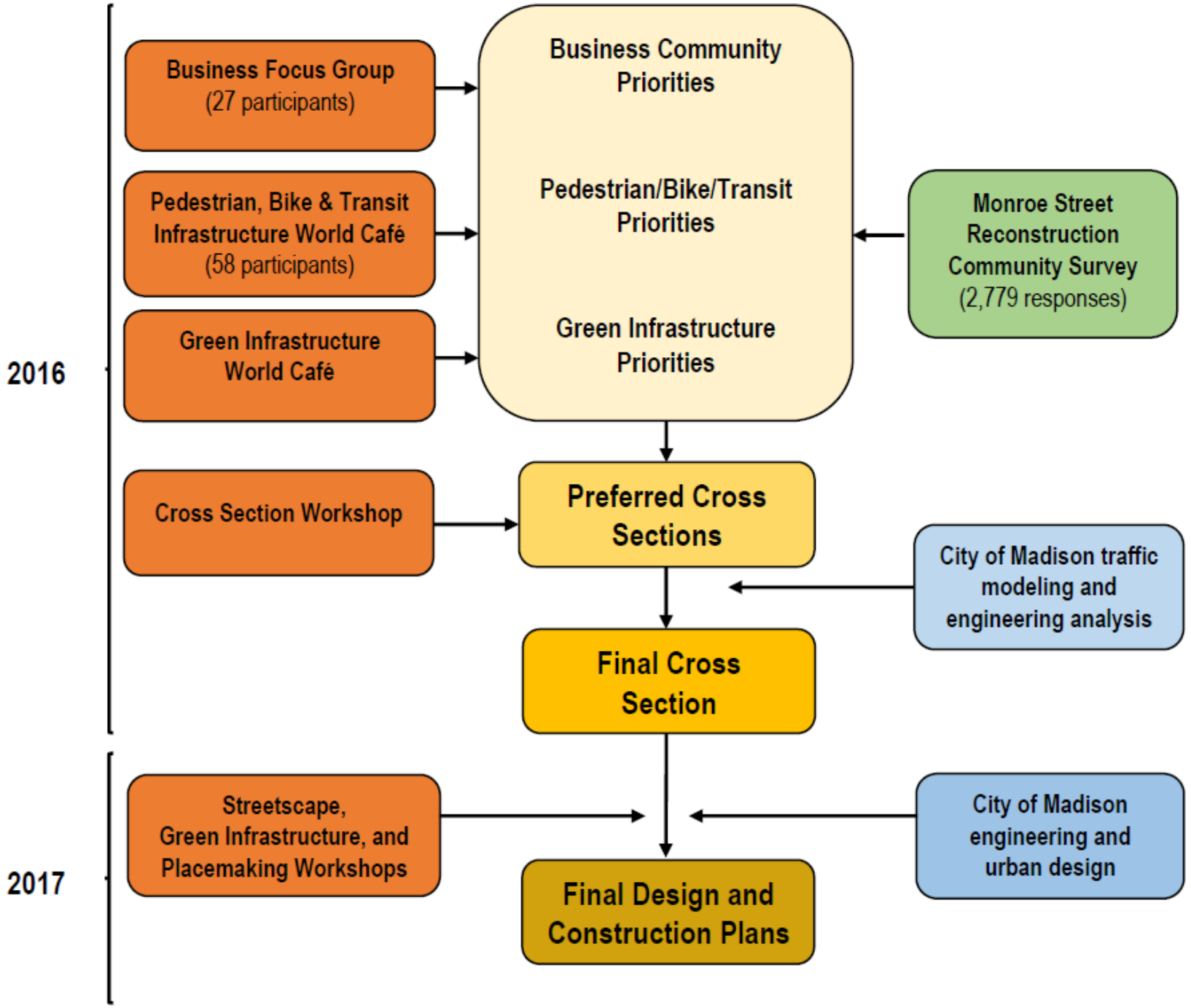
- City Staff
  - Engineering
  - Planning
  - Metro
  - Traffic Engineering
  - Economic Development
- Urban Assets, LLC
- Engagement Resource Team
  - Alder Eskrich
  - DMNA and VNA
  - Madison Bikes
  - Monroe Street Merchants Assoc.
  - UW-Madison
  - Friends of Lake Wingra
  - Wingra School
  - Edgewood College

Meeting Objectives

1. Discuss the opportunities, challenges and tradeoffs involved in green infrastructure design.
2. Uncover new ways of thinking about green and sustainable infrastructure on and adjacent to Monroe Street.
3. Identify participant preferences for green and sustainable infrastructure opportunities and tradeoffs.

Project Planning Process

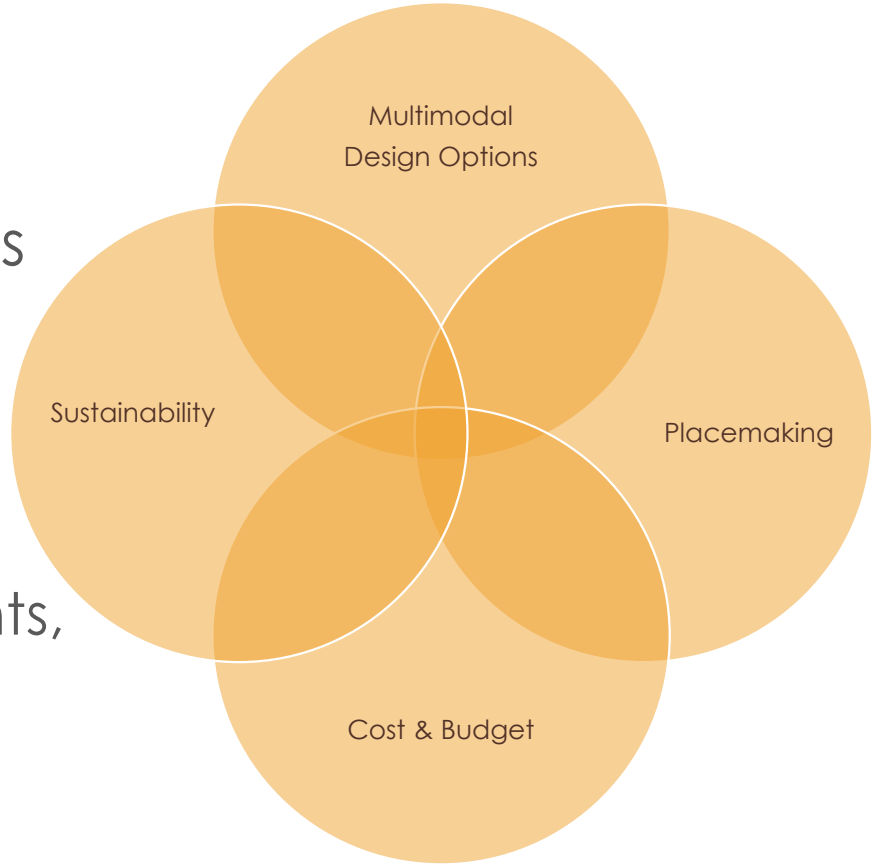
Monroe Street Planning Process



Kickoff Meeting Feedback

What do you want to learn more about?

- Relative effectiveness of different treatments
- Design options with visuals
- Budget factors such as costs and trade-offs
  - Placemaking, undergrounding, pedestrian improvements, etc.
- Balance of multi-modal considerations



Project Overview

Chris Petykowski, P.E.
Principal Engineer, City of Madison

Project Scope & Timeline

- Reconstruction will occur within eight months:
  - April – November 2018

- Utilities
- Street

2018 Project Budget

- Current budgeted amounts (as of 6/9/16)
- Total project budget: approx. $17 million
- Street: $9.8 million
  - Infrastructure replacement (pavement, curb, sidewalk)
  - Lighting and signal replacement
  - Pavement markings
  - Other pedestrian improvements
  - Some storm sewer (inlets & leads)
  - Costs of any placemaking (including Crazy Legs Triangle)
  - Includes some funds for undergrounding in business areas

Budget Sources Breakdown

Project Budgeting for 2018:

- Sanitary Sewer: $4 million
  - Replacement of sewer main & laterals
- Water Main: $2.2 million
  - Replacement of main & reconnection of services
- Storm Sewer: $750,000
  - Replacement & installation of new main
- Water Quality: $200,000
  - Catch basins & treatment structure
- Rain Gardens: $20,000

Important Planning Considerations for Monroe Street

- Improving safety for all users
- Effectiveness as a vibrant urban place for people
- Effectiveness as a city-wide transportation route
  - Jobs, education, entertainment
- Effectiveness as a business district
- Institutional needs and events
  - UW-Madison, Edgewood College
- Neighborhood needs
- Transit accessibility and performance
  - Equity and sustainability
- Sustainable design
- Cost
  - City budget and level of need in other neighborhoods

Community Survey Results

Green Infrastructure

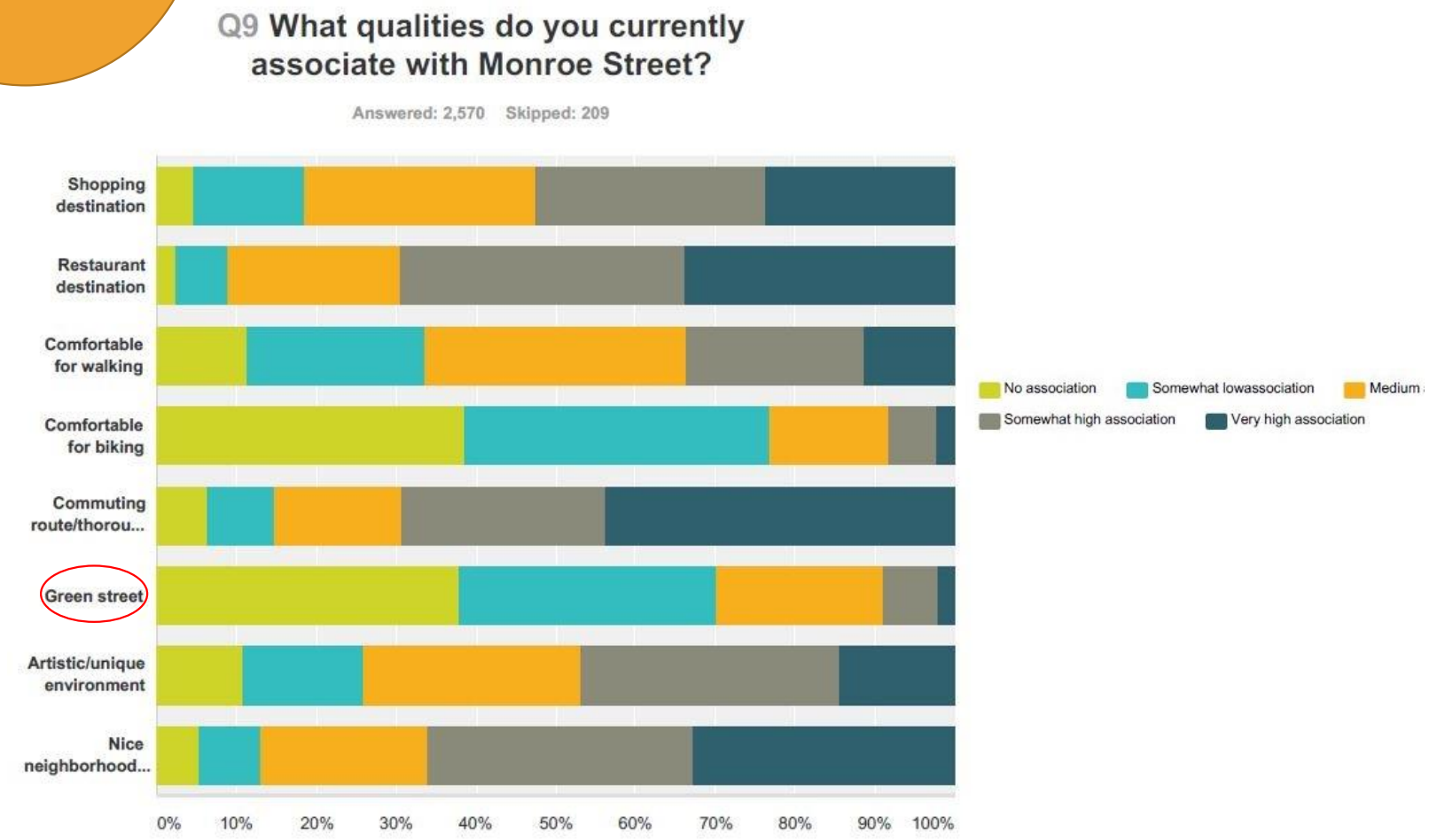
Community Survey Results

- 2,779 responses
- 63% aged 31-60
- 47% live in a neighborhood other than Vilas or Dudgeon-Monroe
- 33% live within three blocks of Monroe Street
- Respondents include high school and college students, neighborhood residents, visitors, commuters, business owners, parents, etc.

Community Survey Results

70%

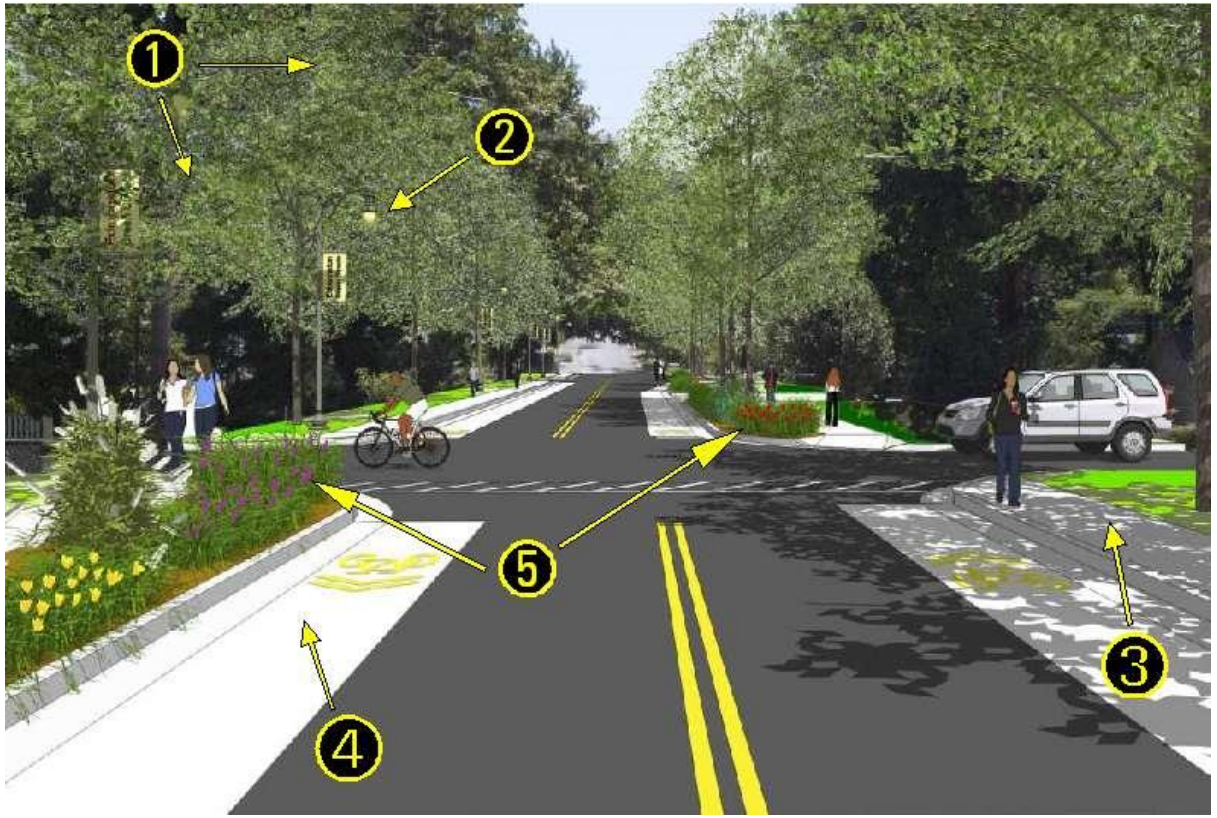
Identified little or no current association between Monroe Street and "Green Street"



Community Survey Results

46%

Creating a Green Street is the **#2** quality that respondents would like to see improved.



http://edmonstonmd.gov/GoingGreen.html

Community Survey Results

Top 5 priorities for the 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

Community Survey Results

Top Placemaking Projects

55%

Sidewalk enhancements: Increase the width of the sidewalk from Wingra Park to Edgewood College Drive.

47%

Business District Enhancements: Install seating, planters, banners, decorative lamp posts, etc.

38%

TIE

Wingra Park Orchard Garden: Enhance the orchard garden and pedestrian/bike path entrance.

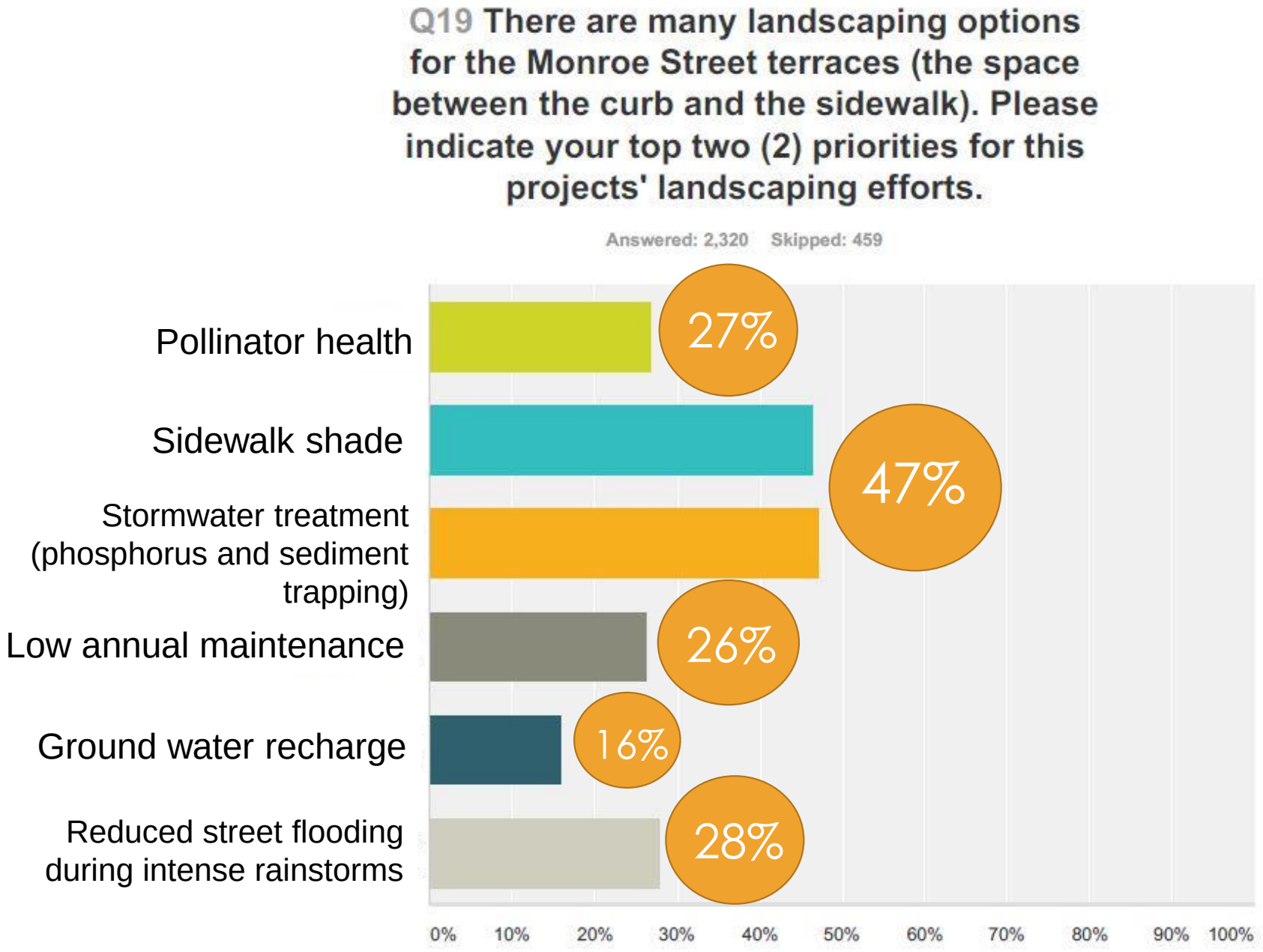
37%

Crazylegs Triangle: Close Crazylegs Lane and provide additional enhancements such as landscaping, seating and community space.

31%

"Green" bus stops: at various locations along Monroe Street that demonstrate sustainable features such as solar panels, recycled materials, native plantings, a green roof, etc.

Community Survey Results



Group Discussion

Ground Rules & Etiquette

- One person at each table will record notes and summarize for the large group.
- Passing time will be marked.
- As you discuss each question,
  - Give each person an opportunity to share.
  - CONTRIBUTE your thinking and experience.
  - LISTEN to understand. Do not judge or criticize others' ideas.
  - CONNECT ideas.
  - LISTEN TOGETHER for patterns, insights, and deeper questions.

Small Group Discussion

1. In your opinion, what are the defining characteristics of a “green street”?

Small Group Discussion

1. In your opinion, what are the defining characteristics of a "green street"?

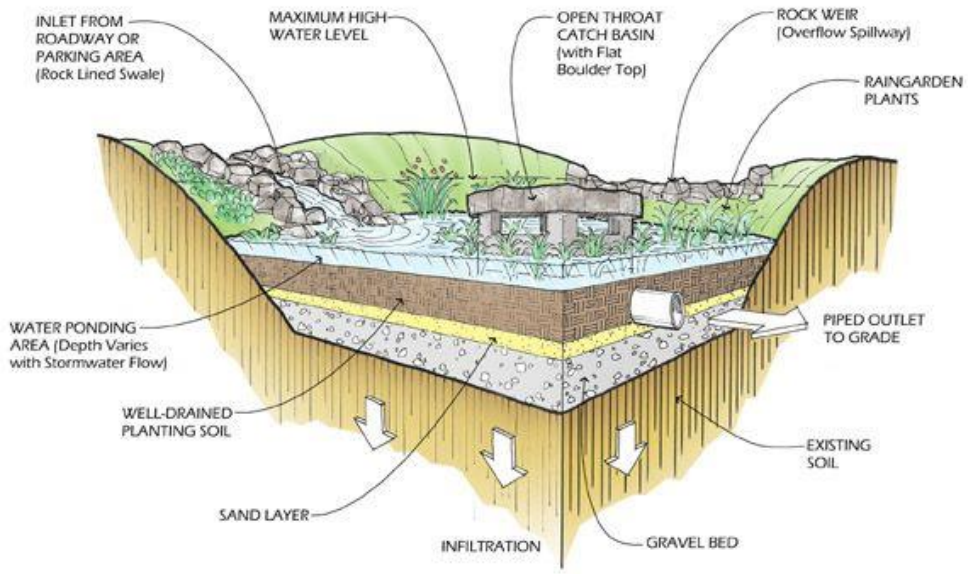
2. What are the most important potential benefits of green and sustainable infrastructure on or near Monroe Street?

    - Be ready to share your group's top 3-4 with the large group.

Green Infrastructure & Sustainable Design on Monroe Street

Phil Gaebler, Water Resources Specialist

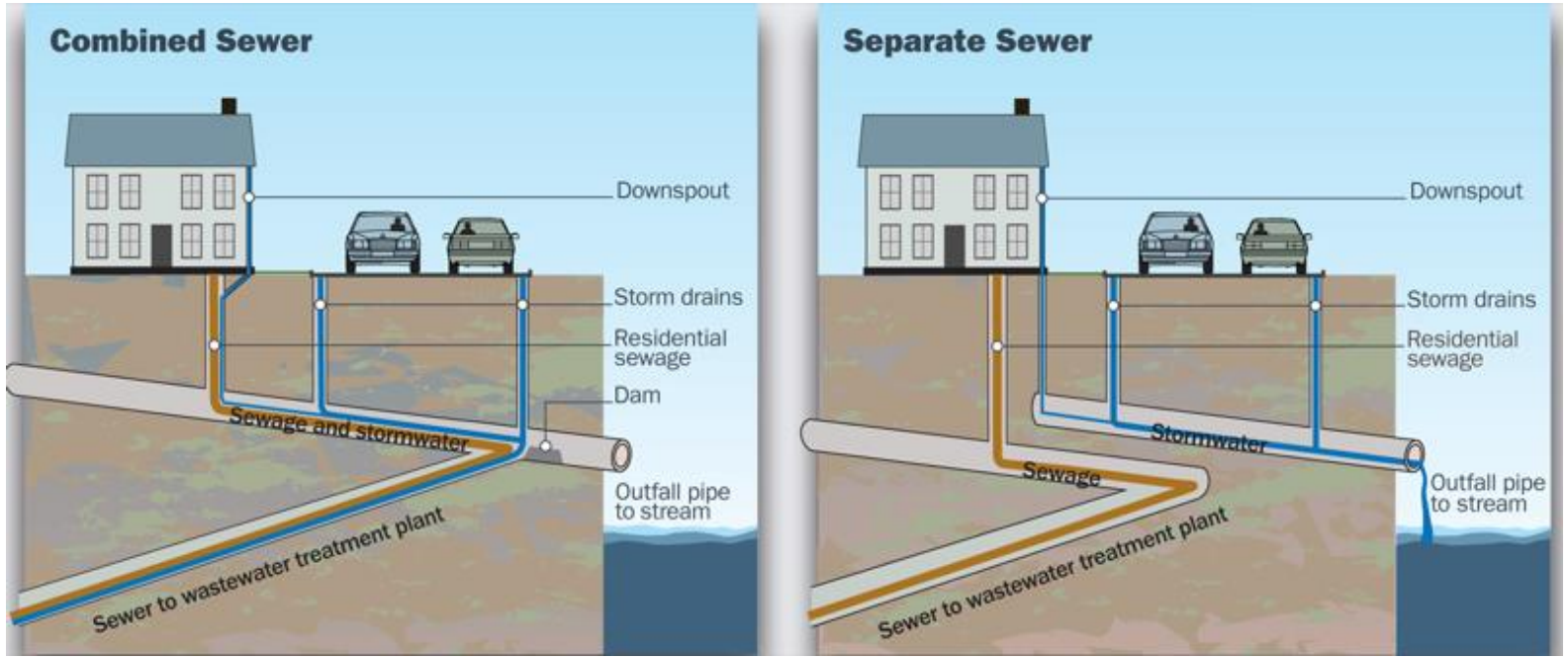
What are Complete streets, Green streets, Green Infrastructure



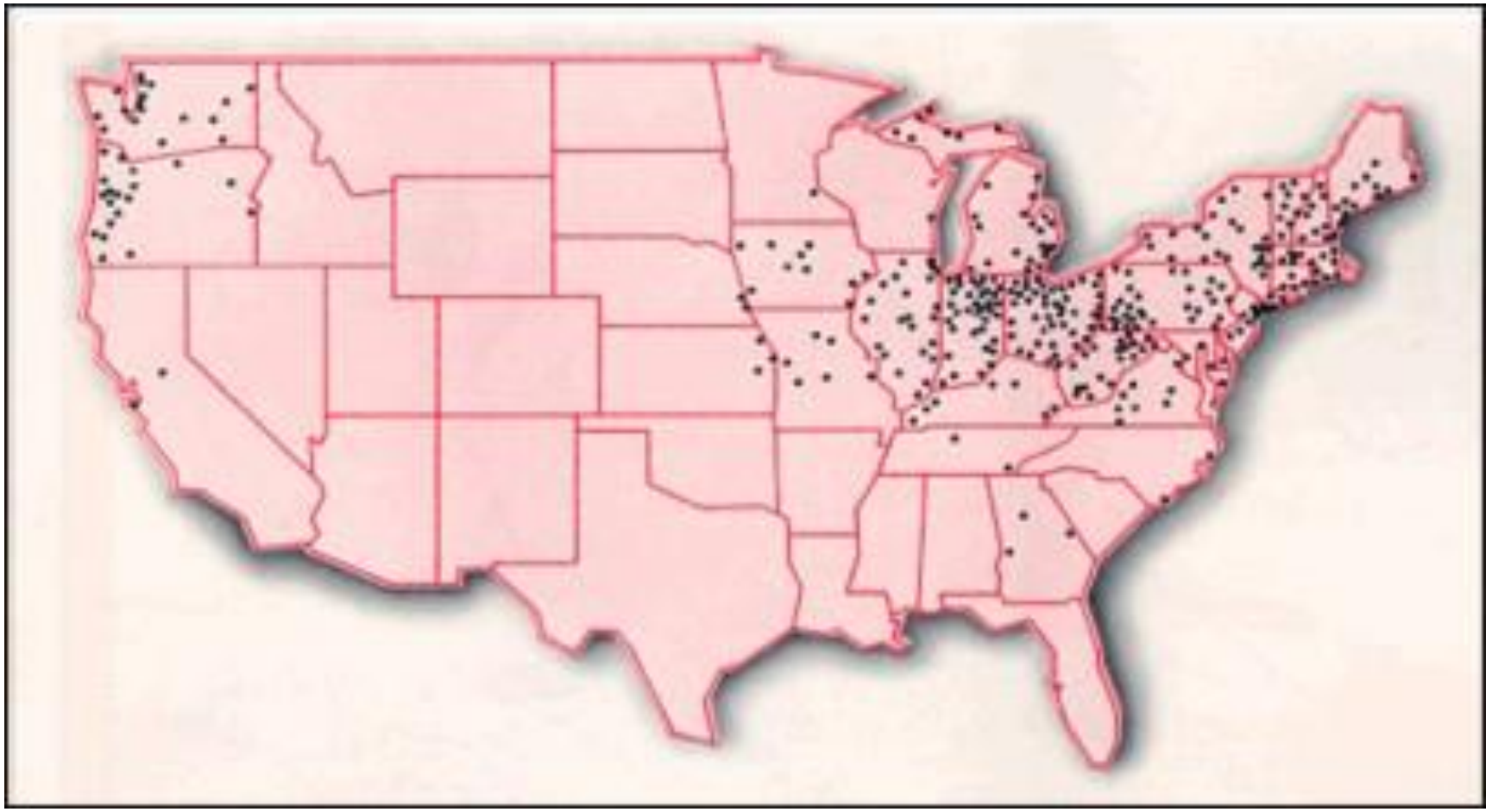
Who is putting in green streets and green infrastructure

- There are many municipalities that have green infrastructure programs
  - Philadelphia, Seattle, Milwaukee, NYC to name a few.
- Many Communities with extensive green infrastructure plans have Combined Sewers and are forced by the EPA to reduce overflow via:
    - Detention
    - Deep tunnels
    - Green Infrastructure
  - The beauty of Green Infrastructure is that it treats the clean water **before** it mixes with the sewage.

Combined Sewer System



Combined Sewer Systems



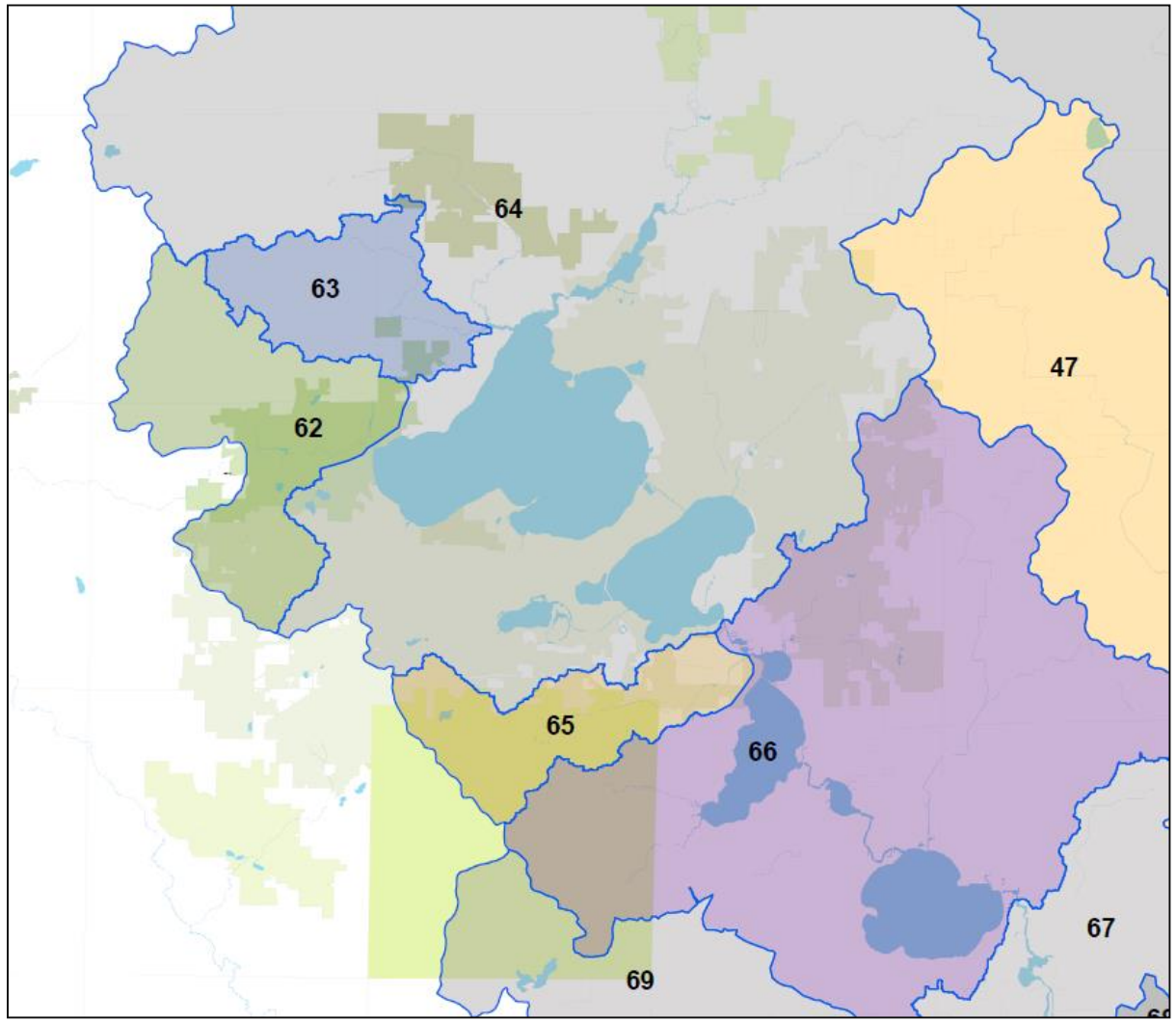
Green infrastructure for Water Quality and Volume Control

- Green infrastructure is also used in separate stormwater systems
- The EPA and state regulations are significantly different for separate systems
- This makes sense, as the risk of sewage is much greater than street run-off.

Madison's Drivers

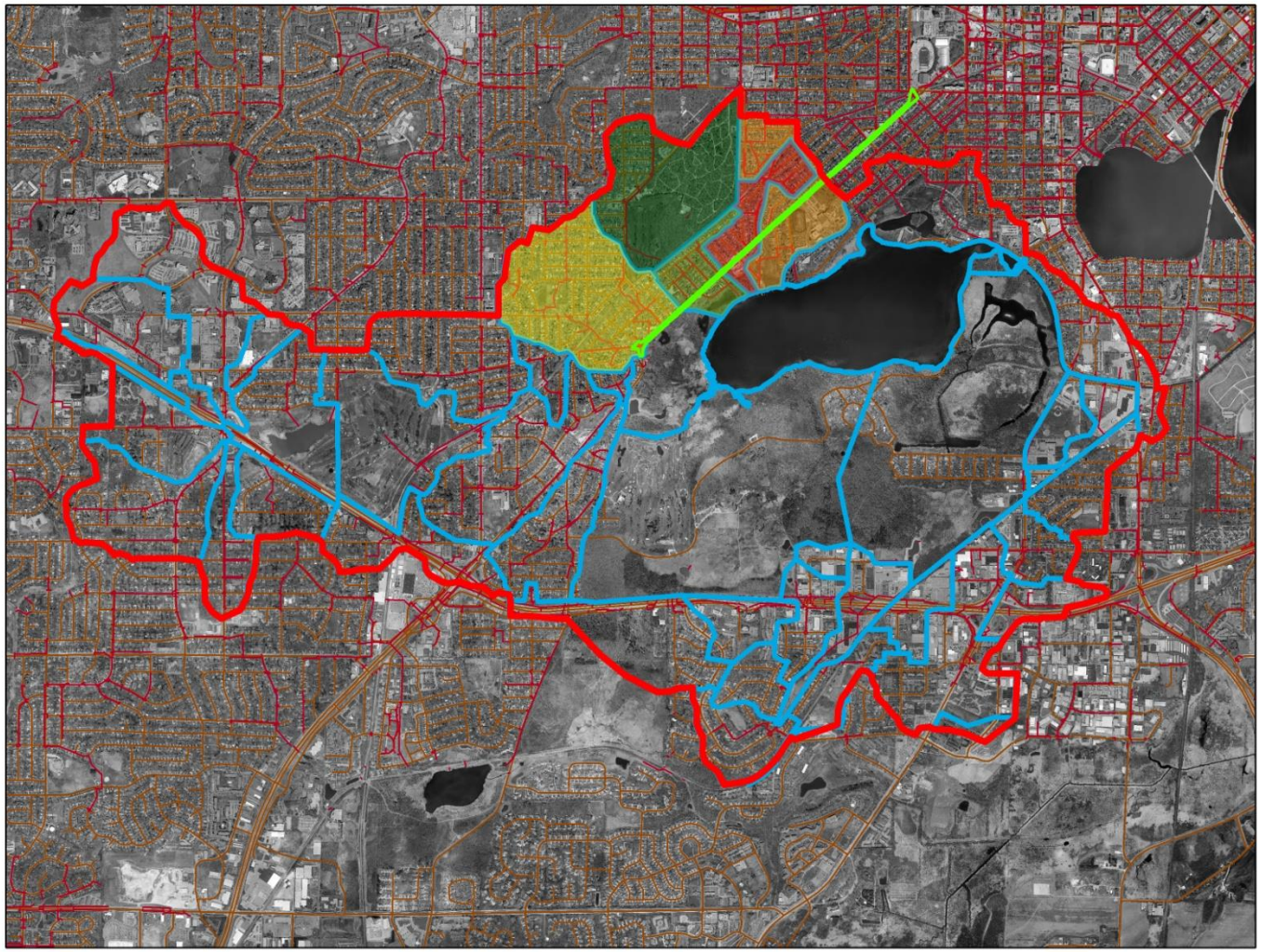
- ☑ Separate Storm Sewer – No CSOs
- ☑ Adequately Sized WWTP- Very infrequent Untreated release
- ☑ MS4 Requirement achieved – 40% Sediment Reduction City Wide
- ❑ Rock River Total Maximum Daily Load Goals
  - ❑ Phosphorus- Additional 61%
  - ❑ Total Suspended Sediment- Additional 73%
- ❑ Wingra Watershed Plan Goals (Watershed Wide)
  - ❑ Infiltration – 10% restored
  - ❑ Phosphorous – 50 to 80% reduction
  - ❑ Chlorides – 60% percent reduction Municipal and Commercial

TMDL Reaches

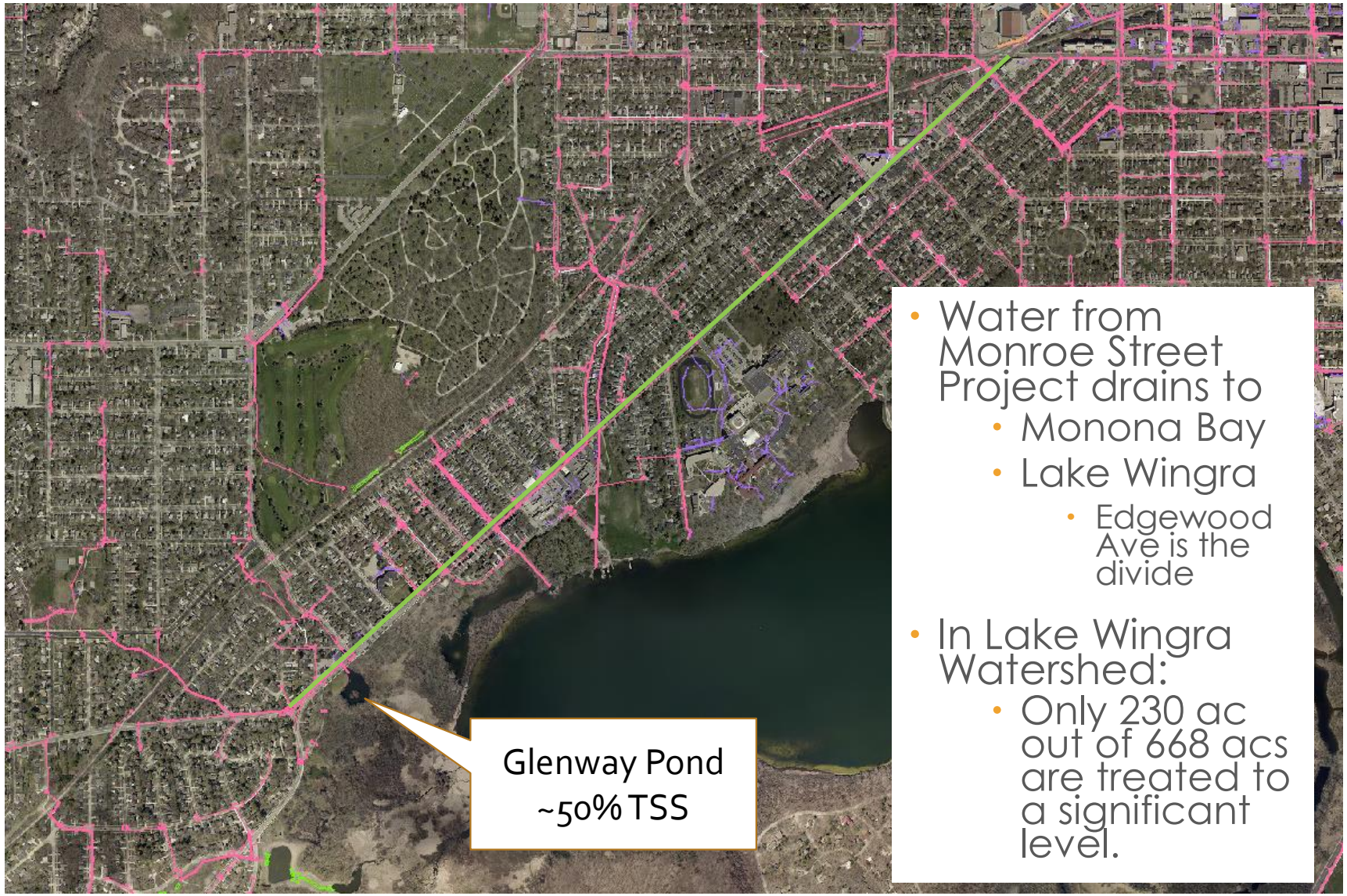


Monroe St and Lake Wingra in TMDL Reach 64
The TMDL sets the goal for adaptive management

Wingra Watershed Map



Stormwater Management



- Water from Monroe Street Project drains to
  - Monona Bay
  - Lake Wingra
    - Edgewood Ave is the divide
- In Lake Wingra Watershed:
  - Only 230 ac out of 668 acs are treated to a significant level.

Existing conditions of Monroe Street

- Currently the Monroe Street corridor is 14.6 acres, produces 8,200 lb of sediment and 18.26 lb of phosphorus on an annual average. Only treatment is Street Sweeping, Catchbasins, and the pond on Glenway.
- The TMDL for Madison requires 13,000 lb of P per year.

What and Where can We Treat Stormwater?

1. Use adaptive management
2. Treat in the corridor
3. Treat in the watershed but outside the corridor

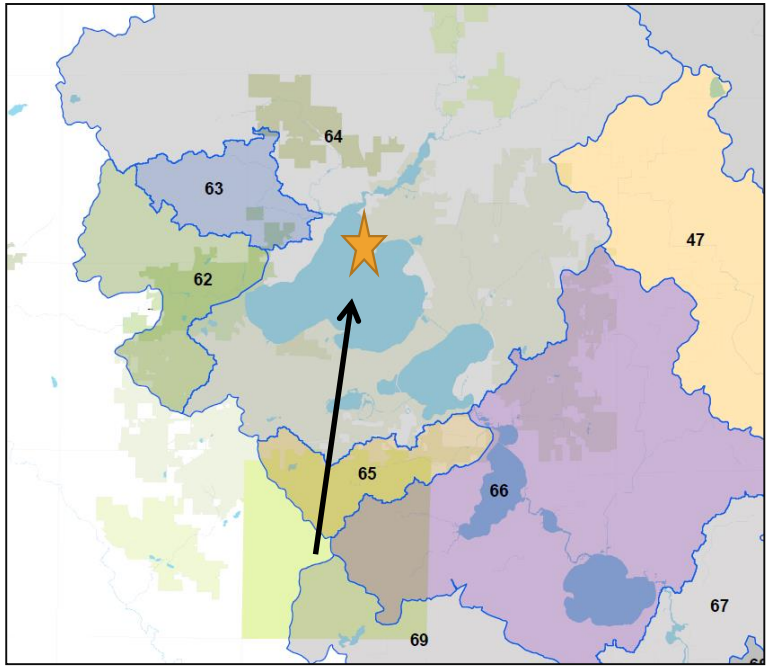
Alt 1: Meet TMDL Goal for Min $

- Use adaptive management to implement agricultural stormwater and nutrient management practices to achieve the TSS and TP reductions.

18.26 lb P * 100 $/lb P = $1,826

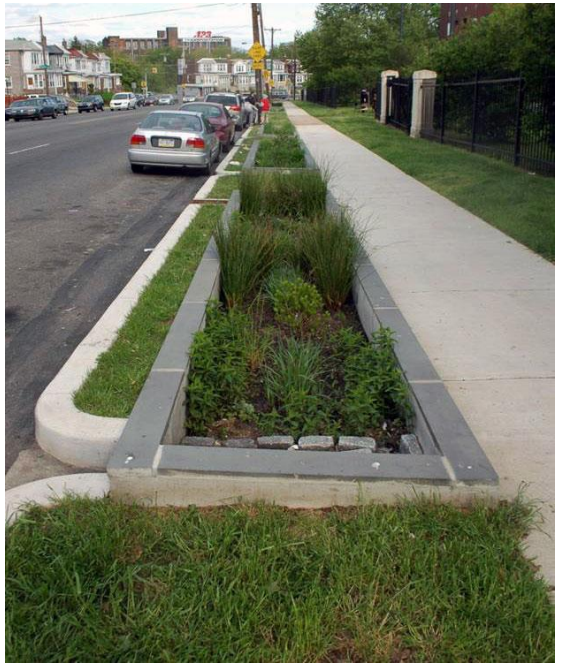
Advantages : Cheap

Disadvantage: No benefit to Lake Wingra, no progress towards reaching Wingra watershed plan goals.



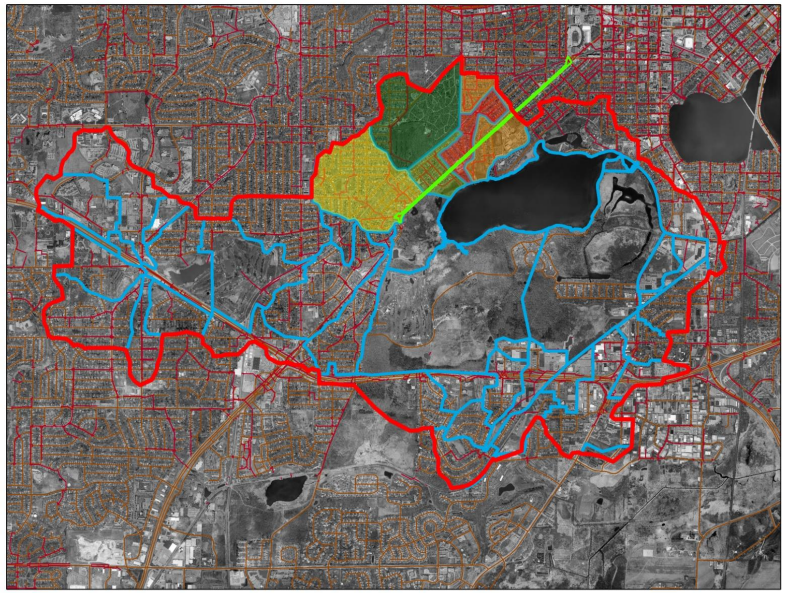
Alt 2: Treat in the Corridor

- 8,000 sf of Bioretention would effectively treat the runoff from Monroe Street to Wingra Plan 53%.
  - This would require about 50 parking spots.
- 5,000 sf would treat to 40%
- 160,000 sf of pervious pavement would provide a 4:1 run-on and would treat at a very high level



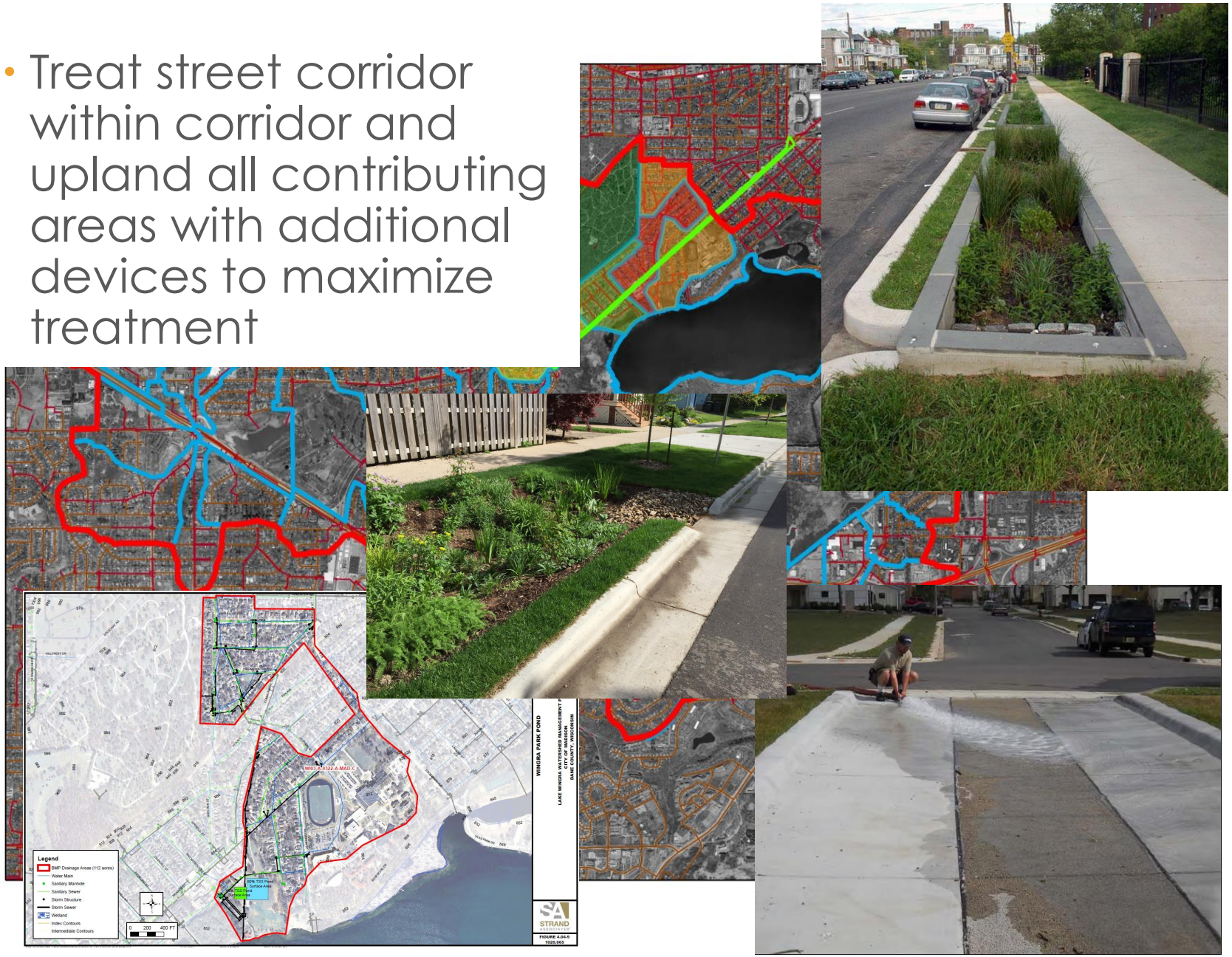
Alt 3: Treat outside to corridor

- Use stormwater treatment within the Monroe Street Drainage area achieve the TSS goals for the whole drainage area.



Maximize Treatment of all Stormwater in Watersheds Draining

- Treat street corridor within corridor and upland all contributing areas with additional devices to maximize treatment



Treatment Details

Vertical Wall Bioretention

- Advantages
  - Fit in tight spaces
  - Treat TSS well
  - Aesthetically pleasing
- Considerations
  - Pedestrian Safety
  - Poor at treating TP
  - Snow Storage
  - $300,000 = ~ $787/lb
  - Leaf Collection

Parking Lane Bioretention

- Advantages
  - Treat TSS well
  - Aesthetically pleasing

- Considerations
  - Poor at treating TP
  - Snow storage
  - Moderate cost $200,000 ~560 $/b
  - Leaf collection
  - **Express Lane flexibility lost**

Discussion

Treatment of stormwater in parking lane vs Treatment in terrace

Parking Lane

- 50 out of 350 (15%) parking stalls needed to meet Wingra plan
- Placement would be determined by City

Considerations:

- No transportation flexibility
  - Can't go back to two lanes.
- Snow Storage
- Plowing
- Leaves
- Plant Maintenance

Terrace Treatment

- 2700 linear feet of treatment area

Considerations:

- Safety
- Snow Storage
- Plowing
- Leaves
- Plant Maintenance
- Tree conflicts

Pervious Pavement

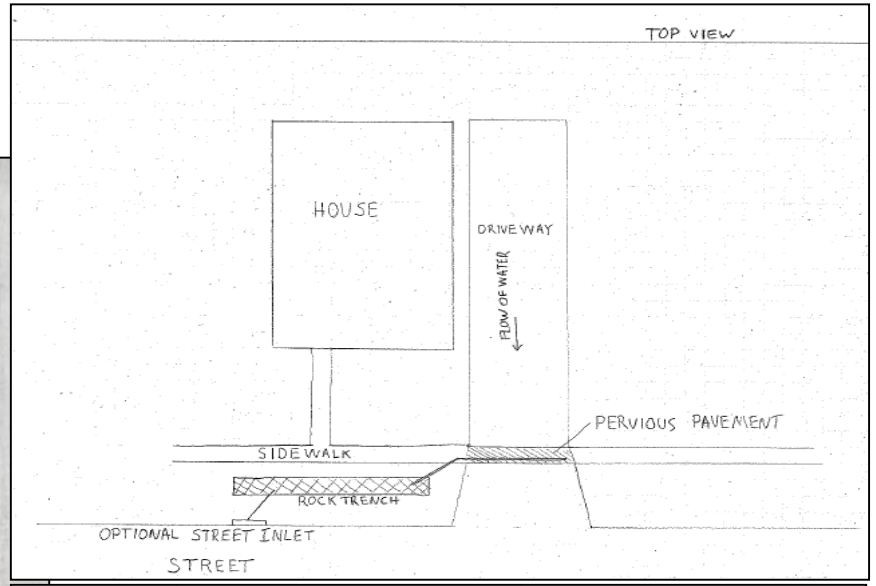
*Possible to use in Crazy Legs Triangle

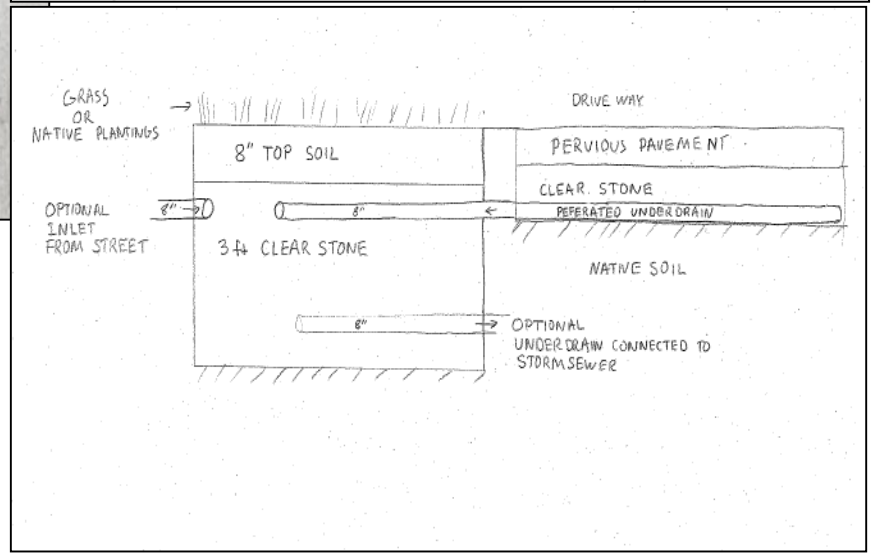
- Advantages
  - TSS and TP reductions
  - Infiltration
  - Multiuse space
- Considerations
  - Wisconsin Concrete association does not advise using in truck lanes
  - Durability issues
    - Salt and trucks
  - Effectiveness depends on native soils
  - Cost=double for a standard road

Pervious Concrete

- The product is not suitable for an Arterial Street?
- There are options in the watershed for projects but Monroe is a:
  - Truck Route
  - Emergency Route
  - Arterial Road

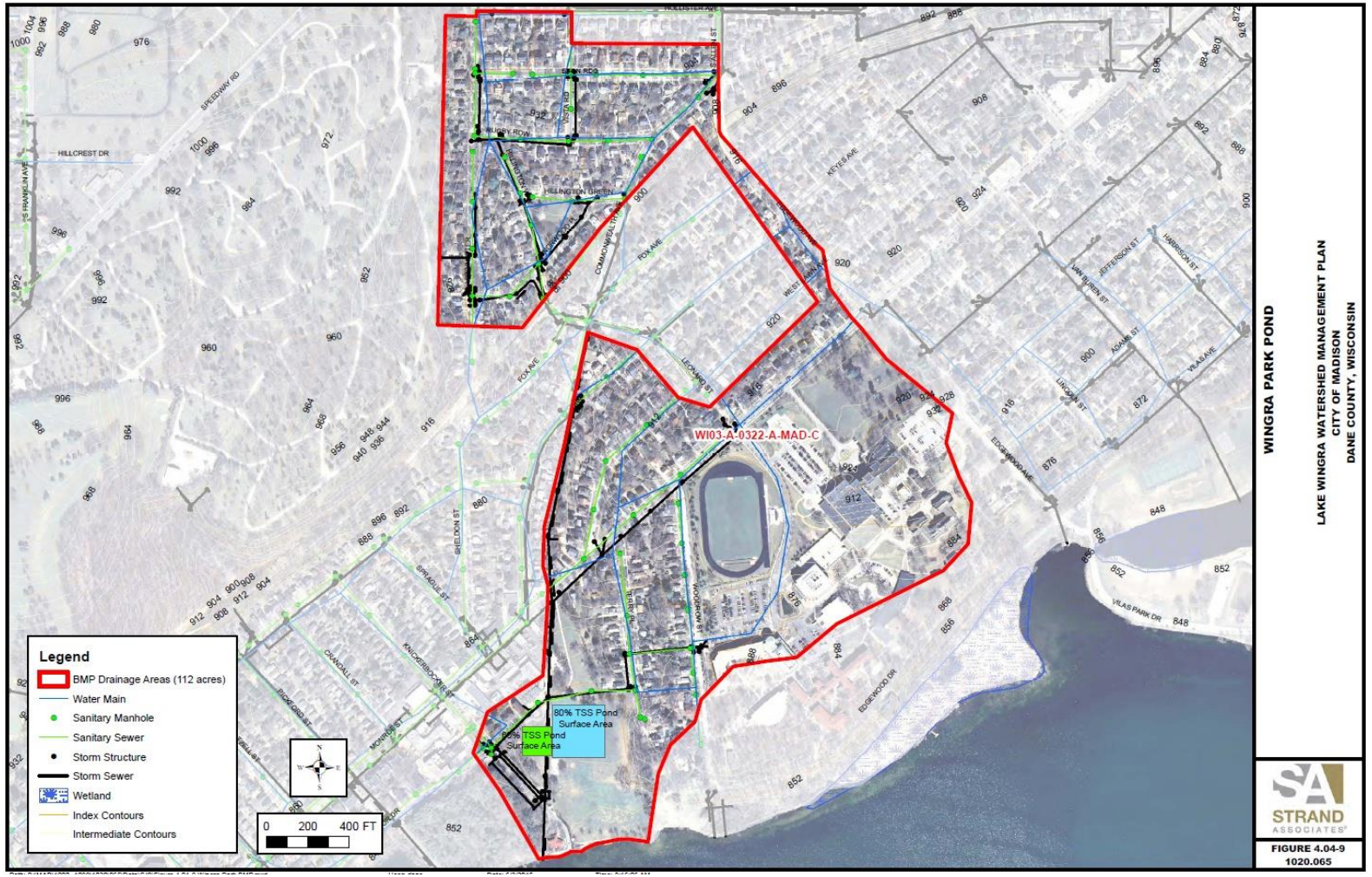
Rock Crib for Driveway Treatment





- Pilot project to infiltrate stormwater from driveways in areas where terraces are too narrow

Underground Storage



End of Pipe Options: Underground Detention

Underground Stormwater Treatment or screen structure

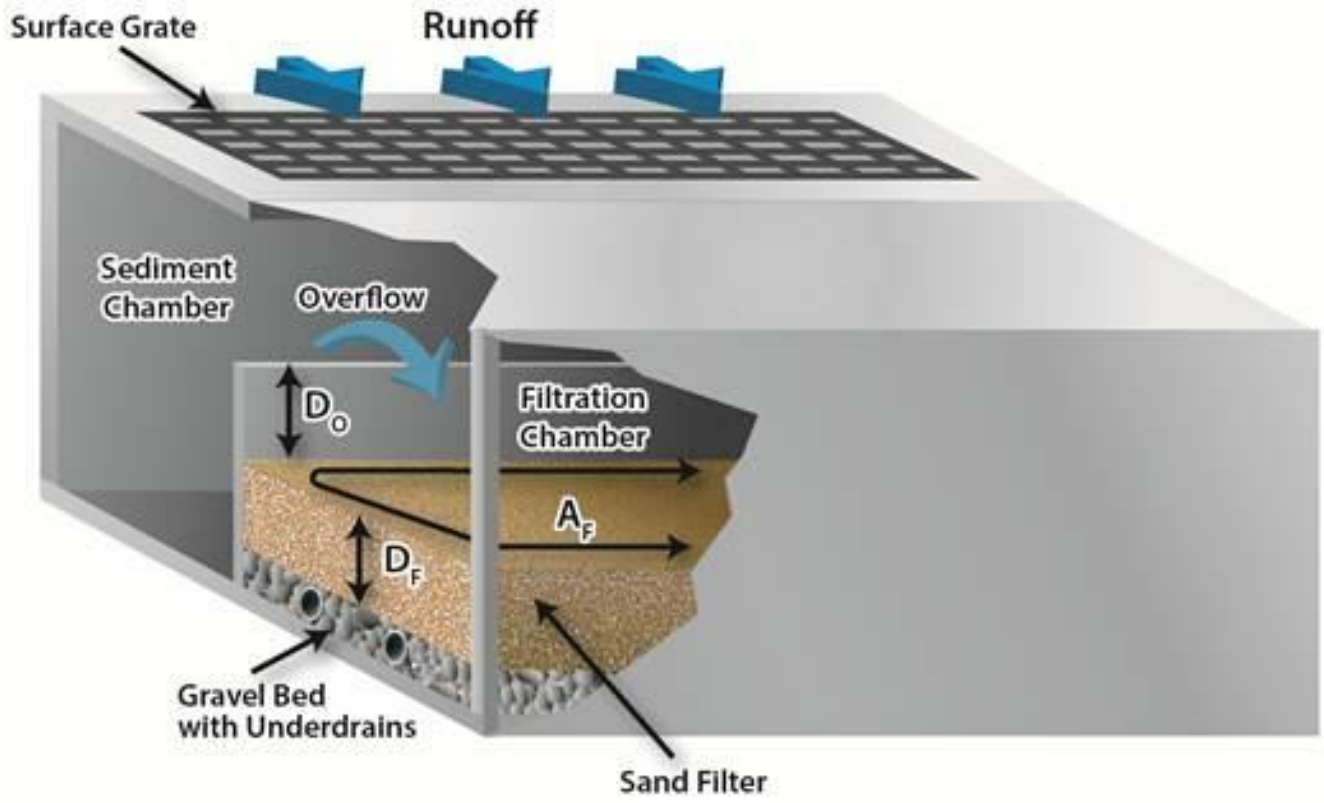
Advantages

- High level of treatment 60%
- Minimal impact on park
- Street flexibilty maintained

Considerations

- Expensive
  - 1.5 million =$1,250 / lb of P
  - 54 lb of TP reduction
- No Green Features
- Maintenance

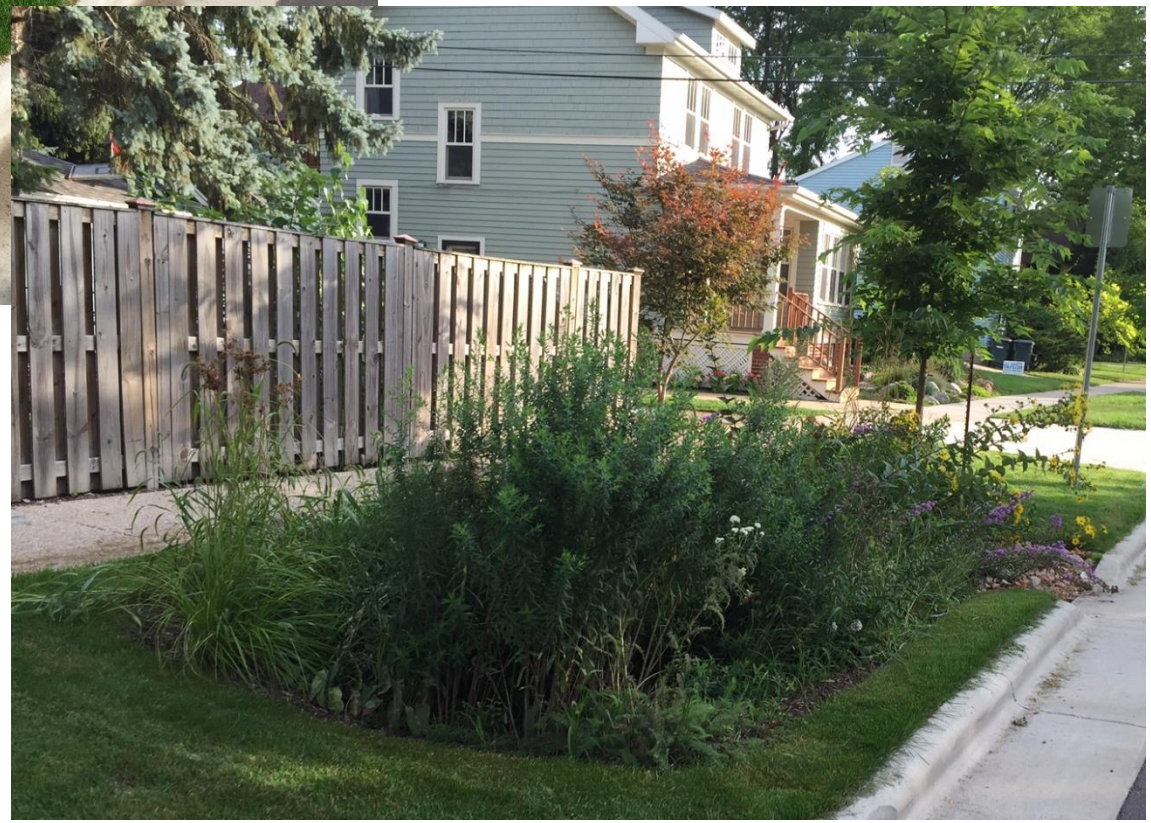
Underground Options: Sand Filters



Underground Sand Filter

City Rain Garden Program

- Rain gardens and all green infrastructure grow and change with time.



- This rain garden on Jenifer Street shows the change from May to August.

Yard Rain Gardens

The Wingra Watershed Plan calls for 1,000 Rain Gardens in the watershed. This garden cost $74.

Street Trees

- Great for shade but at a cost
- 50% of phosphorus comes from leaves on the street

Street Trees

Item	Low Volume Residential	Medium Volume Residential	Non-Residential	Front-loading Residential	Rear-loading Residential (no driveways)	Non-Residential	Minor Arterial	Major Arterial
Daily Volume (ADT)	0 - 750	750 - 1,500	up to 5,000	1,500 - 5,000	1,500 - 5,000	13,000 or less	20,000 or less	30,000 or less
Street Characteristics								
No. of Travel Lanes	2	2	2	2	2	2	4	6
Width (curb-to-curb) (feet)	30	32	34 to 36	41 to 43	27 to 30	55 to 58	64 to 71	87 to 96
On-Street Parking (Y,N)	Y	Y	Y	Y	N	Y	N	N
Parking Lane Width (feet)	7	7	7	7	N/A	8	N/A	N/A
Travel Lane Width (feet)	8	9	10 to 11	10	10	11	11 to 14	11 to 14
Left-Turn Lane Width (feet)	N/A	N/A	N/A	N/A	N/A	10	10 to 12	10 to 12
Raised Median (Y,N)	N	N	N	N	N	N	Y	Y
Maximum Block length (ft)	600	800	800	1,000	1,000	1,000	1,300	1,300
Mimimum Sidewalk Width (feet)	5 (attached) 4.5 (detached)	5 (attached) 4.5 (detached)	5 (attached) 4.5 (detached)	6 to 8	6 to 8	6 to 8	6 to 8	6 to 8
Bicycle Lanes (Y, N)	N	N	N	Y	Y	Y	Y	Y
Transit Accomodation	None	None	Possibly bus stops	Possibly bus stops	Possibly bus stops	Bus Stops	Bus Stops	Enhanced Bus Stops
Landscape strip (Y, N)	Y	Y	Optional	Y	Y	Y	Y	Y
Minimum Landscape Strip Width (feet)	6	6	6	8	15 including sidewalk	15 including sidewalk	15 including sidewalk	15 including sidewalk

- Monroe Street doesn't fit neatly into any of these categories. Monroe's curb-to-curb width ranges from 42-46 feet, with an average daily traffic (ADT) volume of 16,000-20,000 cars.

Questions?

Stay Tuned!

1. **September 29**: Summer Input Summary and Cross Section Workshop
    - Wingra School, 6-8PM
2. **October 27**: Final Cross Section Open House
    - Edgewood College, 6-7:30PM

For More Information:

- Survey results are posted online.
- City of Madison Engineering: www.cityofmadison.com/engineering/projects/monroe-street
  - Subscribe to email updates
  - View presentations and notes
- Alder Eskrich, District 13: www.cityofmadison.com/council/district13/
  - Subscribe to email updates.
  - Share additional comments.

Thank You!

Source: http://www.monroestreetmadison.com/