

**SECTION 5**  
**ENGAGEMENT AND IMPLEMENTATION**

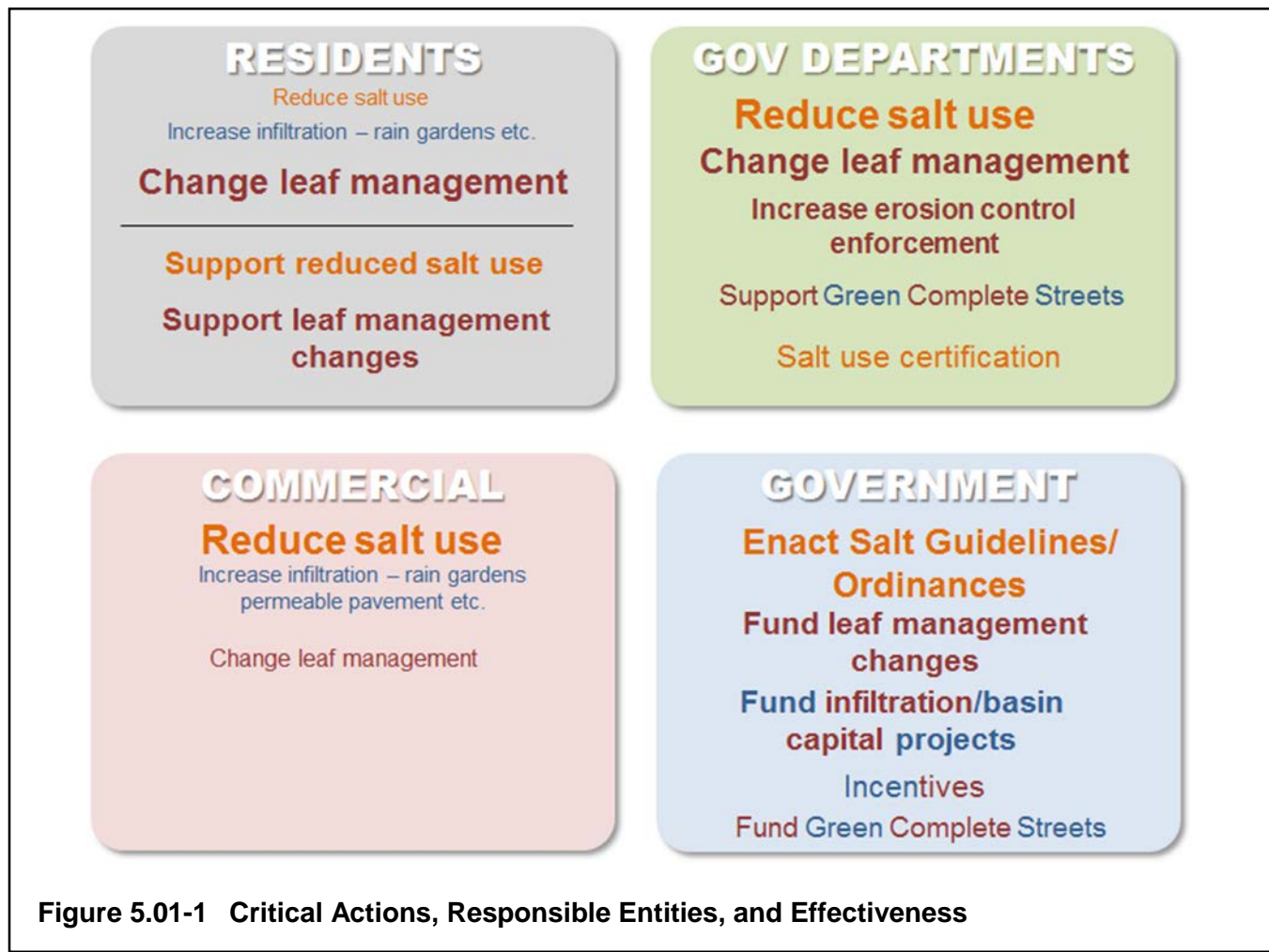
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## 5.01 INTRODUCTION

### A. Introduction and Goals

The Lake Wingra Watershed Management Plan identifies the critical actions seeking to achieve the goals outlined in the 2009 document *Lake Wingra: A Vision for the Future*. These goals include: (1) clean, clear water, (2) restored spring flow, (3) abundant native plants and animals, and (4) stewardship and enjoyment.

The previous sections of this report identify critical actions that work toward achieving these goals. The critical actions have varying effectiveness and different responsible entities. The word cloud shown in Figure 5.01-1 illustrates the entities that influence Lake Wingra water quality, the measures they can influence, and the general effectiveness of the measure (by text size).<sup>1</sup>



<sup>1</sup> The text size is meant to be illustrative and general for discussion purposes only.

Looking at chlorides, one can understand the complexity of the interaction. A resident can take strident measures to reduce salt use in the winter, yet residential properties only contribute about 1 percent of the chlorides reaching Lake Wingra. The concerned resident has limited influence over the two largest contributors, commercial applicators and city/county snow plowing crews. Conversely, commercial applicators and local government plowing crews could use less salt if residents and patrons would accept different winter pavement conditions. This interrelationship highlights how change is needed by all entities on all issues.

A positive dynamic is the numerous advocacy groups and government committees that support similar measures, yet with different objectives. For instance, MMSD currently is promoting reduced winter maintenance salt use within its service area. While benefiting the lakes, MMSD's primary objective in reducing salt use is to prevent chlorides from infiltrating into the sanitary sewer. Similarly, Madison Water Utility's support for reduced salt use is to limit the chloride levels in wells. A single supported measure, reducing salt use, can have many positive outcomes. Table 5.01-1 shows the different organizations and key objectives of the organization.

Organization	Objectives
Dane County Lakes and Watershed Commission	Reduce chlorides and phosphorus in Yahara chain of lakes.
Madison Public Health Dept.	Reduce bacteria levels
MMSD	Reduce chlorides in effluent
MMSD and Yahara WINs	Reduce phosphorus and total suspended solids
Clean Lakes Alliance	Improve water quality in Yahara watershed (reduced phosphorus)
Yahara Lakes Association	Waterfront property issues, Yahara Lakes water quality (reduced phosphorus)
Madison Area Municipal Stormwater Partnership (MAMSWAP)	Permitting, reduce stormwater discharge pollution including phosphorus, total suspended solids, and chlorides
City of Madison Engineering	Reduce phosphorus, chlorides, and increase infiltration.
Friends of Lake Wingra (FOLW)	Phosphorus, infiltration, and chlorides, within Wingra watershed

**Table 5.01-1 Organizations with Similar Objectives**

## 5.02 COLLABORATIVE EFFORTS

The numerous organizations and initiatives throughout the Yahara Lakes and Rock River Basin provide the opportunity for partnerships, capitalizing on joint efforts. The following paragraphs describe types of collaborative efforts proposed for the watershed plan engagement and implementation.

### A. Pilot Projects

Most changes in legislation, policy, or management require a track record of success, both in implementation and effectiveness. Pilot projects are an excellent way to build this track record. The small scale implementation trial allows managers the opportunity to work out bugs/logistics of implementing a measure. Pilot projects oftentimes include an effectiveness evaluation, providing data on the merits of the project. The Lake Wingra watershed could host pilot projects that align with objectives of the above-listed organizations. Advantages of using the Lake Wingra Watershed for pilot projects include the following:

1. The watershed is made up of well-organized neighborhoods.
2. Many residents already have an environmental stewardship ethos.
3. The watershed has a dedicated advocacy organization focused on Lake Wingra watershed water quality.
4. The watershed provides a smaller water-body for evaluation.

**B. Governmental Advocacy**

There are numerous water quality issues being discussed within the City and Dane County government committee structure. For example, Dane County's Lakes and Watershed Commission has been discussing the use of chlorides in winter maintenance and Madison's Committee on the Environment is scheduled to review chloride use. As these regional water quality and management issues are discussed in the government setting, the benefits could be experienced within the Lake Wingra Watershed. Therefore Lake Wingra residents and advocates could support initiatives within the government committee structure. Table 5.02-1 lists possible critical actions, the government department responsible for management of that action, and the corresponding government committee associated with that government department. Some government departments, such as Madison Streets, report directly to the mayor and do not have an associated government committee. Interacting with these departments may require interacting with appropriate council members and the mayor's office.

Responsibility	Associated Government Committee	Government Department	Critical Action
Madison Mayor/ Common Council	None	Madison Streets	Madison street salt usage Madison leaf management Madison street sweeping
	None	Planning and Community and Economic Development, Building Inspection	Private development erosion control
	Board of Public Works	Madison Engineering	Stormwater basin construction Alum treatment Stream bank stabilization Street construction erosion control Green street construction Terrace rain garden construction Infiltration facilities Wildlife management (carp and geese)
County Executive (Board of Supervisors)	Board of Public Works (Lakes and Watershed Commission)	Dane County Public Works	Highway salt usage Wetland harvesting
County Board of Supervisors	Lakes and Watershed Commission		Fertilizer Phosphorus Ordinance TSS
Madison Common Council or Dane County Board of Supervisors			Salt ordinances

**Table 5.02-1 Governmental Advocacy Structure**

C. Interdepartmental Partnerships

Table 5.02-1 illustrates the importance of interdepartmental partnerships. The Madison Engineering department is largely responsible for water quality (MS4 permit and TMDL compliance) and the corresponding measures needed to reduce water pollutants. Yet Madison Engineering is not directly responsible for measures that influence water quality, such as street sweeping and leaf management. Similarly, some critical actions being proposed by this watershed management plan, such as commercial applicator certification for winter snow maintenance or maximum salt use guidelines, do not necessarily fall under any government department. Because of this organizational structure, it is difficult for a city department to unilaterally act on a specific measure. Partnerships between departments are needed to move on these water quality measures. These collaborative efforts are already occurring, such as in the leaf management pilot project. Even greater collaboration will be needed to achieve the goals of the watershed plan.

D. Neighborhood Organizations

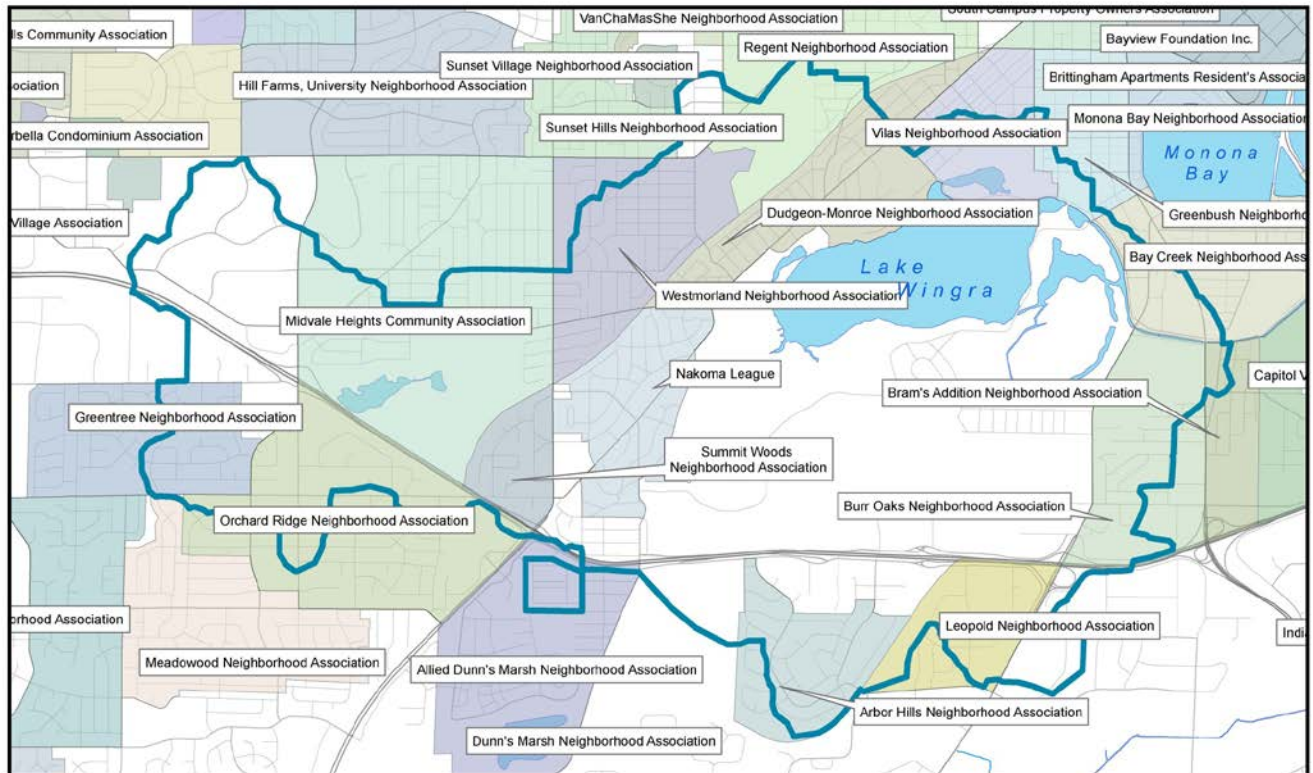
There are many neighborhood organizations within the Wingra Watershed. Their role is important because they influence the priorities of their representative alderpersons. The Wingra Watershed plan requires changes in budget priorities, management practices, and the behavior of watershed residents. Neighborhood support is essential for movement on these initiatives. City budget, policy, and management are influenced by elected representatives. An alderperson's/supervisor's priorities reflect those of their constituents, which most often are voiced by neighborhood associations. As these critical actions become priorities to residents, often voiced through the neighborhood organizations, they become priorities to the elected officials and momentum builds toward implementing the measures.

Additionally, some critical actions require behavior and management changes by residents within the watershed. Members within neighborhood organizations are leaders within their community and are best-suited to communicating information and changing norms. Implementation of the full watershed plan can only occur by having neighborhood organizations fully engaged in the process.

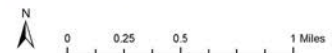
The Watershed Plan process has and will have several meetings with neighborhood organizations. Neighborhood organization interaction will need to continue to achieve the watershed plan goals. The following is a list neighborhood organizations within the watershed as illustrated in Figure 5.02-1.

1. Arbor Hills
2. Burr Oaks
3. Dudgeon-Monroe
4. Faircrest
5. Greenbush
6. Greentree
7. Hill Farms University
8. Midvale Heights Community Association
9. Nakoma League
10. Orchard Ridge Community Club
11. Regent
12. Summit Woods

13. Sunset Hills
14. Sunset Village
15. Vilas
16. Westmorland
17. South Metropolitan Business Association
18. Bay Creek Neighborhood
19. Friends of Lake Wingra



Neighborhood Associations Near Wingra Watershed



Source: City of Madison

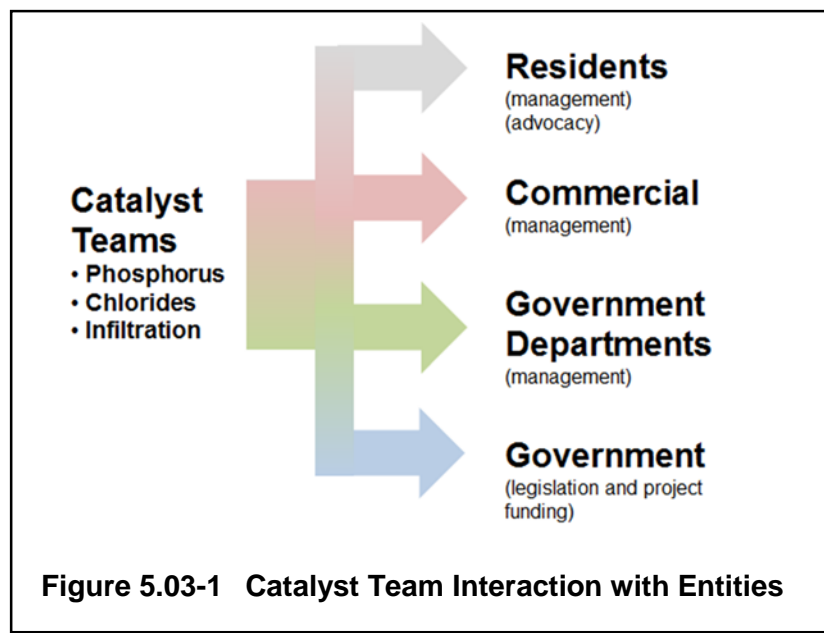
**Table 5.02-1 Neighborhood Associations in the Lake Wingra Watershed**

### E. General Public

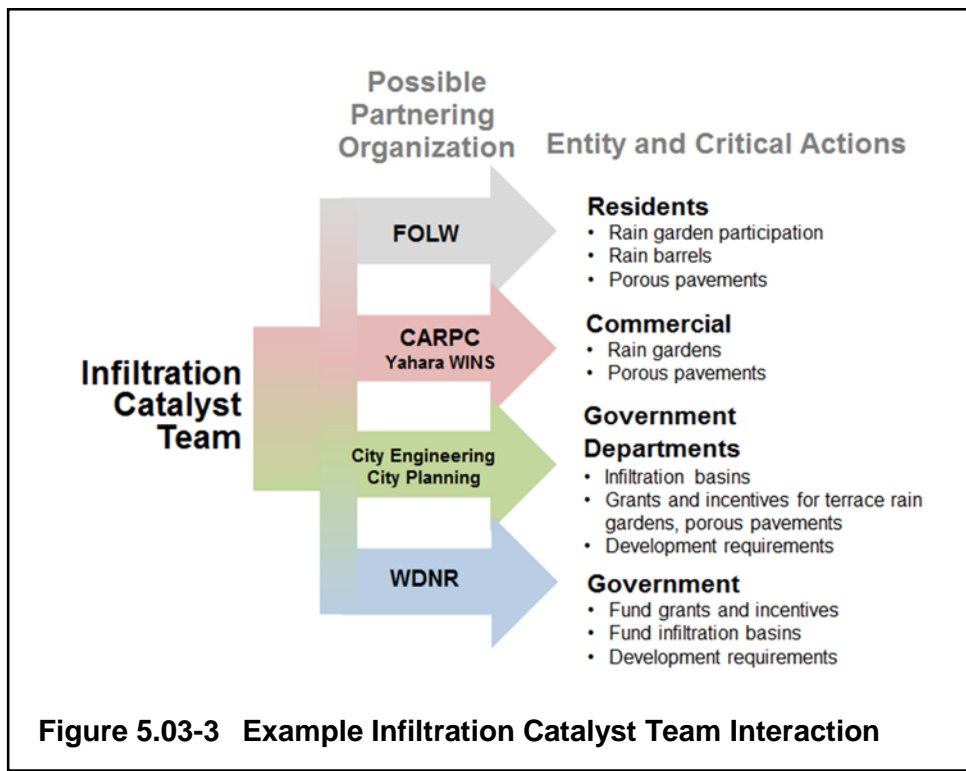
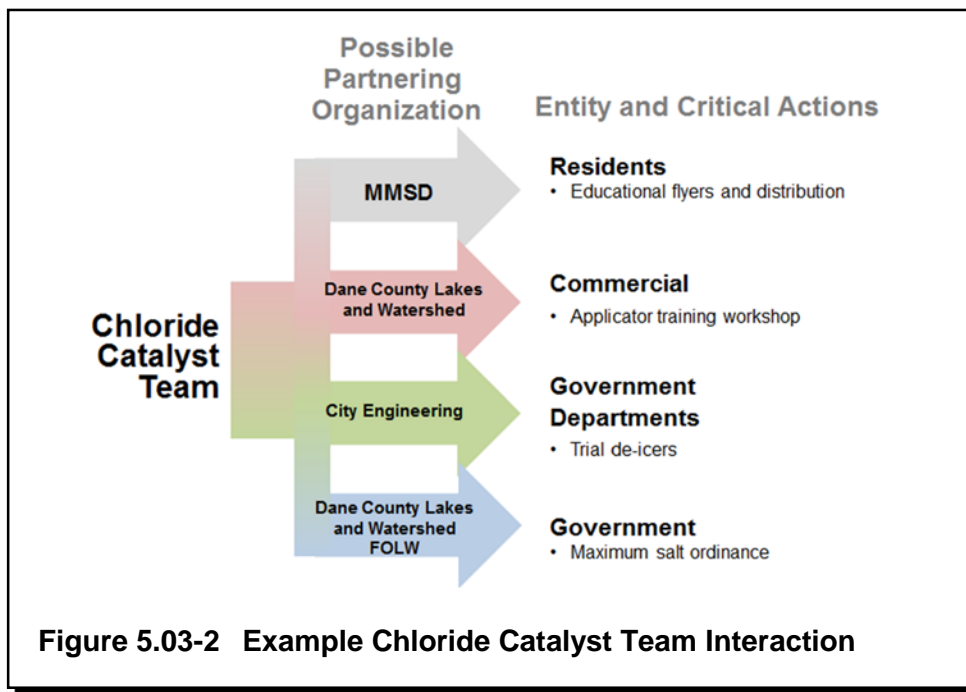
As mentioned, many watershed critical actions require either behavior change by residents or acceptance/support of management changes by government entities. General public information and engagement are generally parts of government-sponsored programs and need to be part of implementing the Wingra Watershed Plan. Two public involvement meetings were held in September 2014 and March 2015 and there are plans for two more. Public meetings should accompany the implementation of critical actions associated with the plan.

### 5.03 IMPLEMENTATION AND ENGAGEMENT

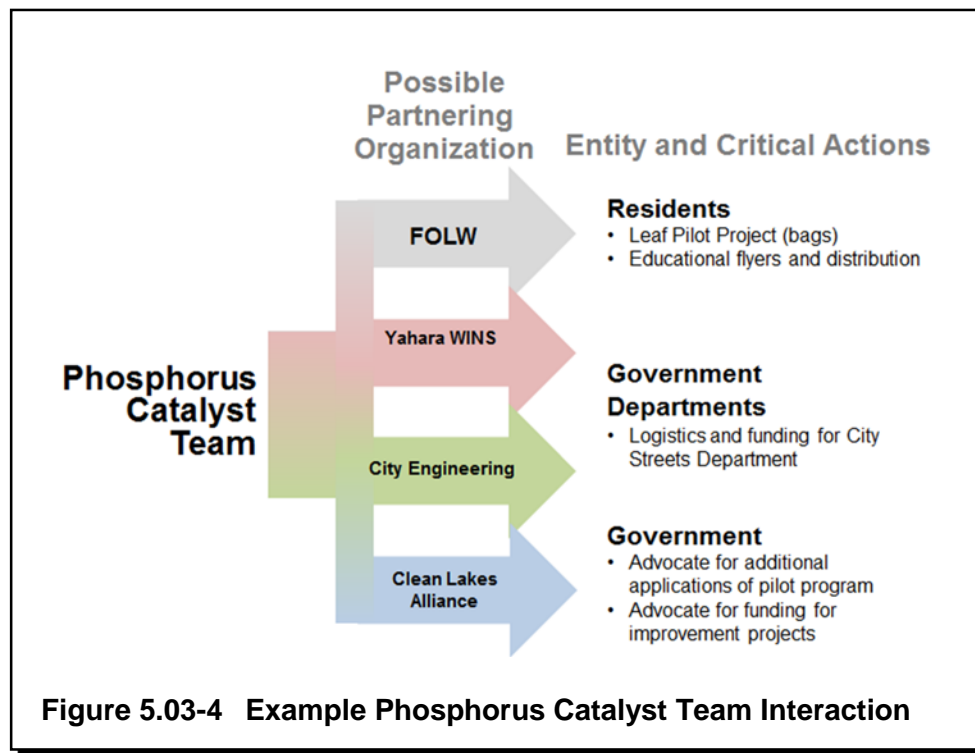
The Lake Wingra Watershed Management Plan recommends the use of catalyst teams for implementing the recommendations of the watershed plan and engaging the appropriate entities for the recommended critical actions. There would be three catalyst teams, each with a specific focus of the watershed plan: phosphorus, chlorides, and infiltration. These catalyst teams would be headed by a champion from/advocating for the Lake Wingra Watershed. The catalyst teams would then have the liberty to engage the appropriate entities, and partner with other organizations, to achieve the goals of the watershed plan. Figure 5.03-1 schematically illustrates how a catalyst team would engage different entities. Because of significant overlap between infiltration and phosphorus management measures, consideration should be given to coordination between infiltration and phosphorus catalyst teams.



Figures 5.03-2, 5.03-3, and 5.03-4 illustrate how catalyst teams, partnering with other organizations with similar objectives, could move toward implementing critical actions that improve Lake Wingra Water quality and infiltration.







Catalyst teams have several advantages:

1. They are dynamic, allowing the team to capitalize on opportunities as they arise.
2. They are collaborative, partnering with organizations that have similar objectives.
3. They are focused, consistently advocating for the water quality issue they are tasked with.

#### 5.04 SUGGESTED STEERING COMMITTEE AND CATALYST TEAM ORGANIZATION

The watershed plan recommends that the watershed plan steering committee continue as the Lake Wingra Watershed Management Advisory Committee and meet biyearly. The catalyst teams could function as an extension of the advisory committee. Tables 5.04-1 through 5.04-3 suggest representation in the formation of the catalyst teams. Each catalyst team should have a lead organization and report regularly to the advisory committee on activities and progress each year. Both the Lake Wingra Watershed Management Advisory Committee and the catalyst teams could be formed through the resolution that adopts this watershed plan. Additionally, the resolution could allocate staff support for both the advisory committee and the catalyst teams. The teams may need technical assistance, so the City may want to budget for this assistance to support Catalyst Team activities. Because of overlap between infiltration and phosphorus management measures, consideration should be given to coordination between infiltration and phosphorus catalyst teams.

Friends of Lake Wingra
Madison Metropolitan Sewerage District
Dane County Lakes & Watershed Commission
Madison Engineering Division
Madison Streets and Recycling Division
Dane County Highway and Transportation Division
Edgewood College
Madison and Dane County Public Health
Commercial applicators
Madison Metropolitan School District

**Table 5.04-1 Suggested Chloride Catalyst Team Representation**

Friends of Lake Wingra
Madison City Parks
Madison Engineering Division
Madison City Planning
Madison Streets and Recycling Division
Dudgeon Monroe Neighborhood Association and/or other neighborhood organizations.

**Table 5.04-2 Suggested Infiltration Catalyst Team Representation**

Friends of Lake Wingra
Clean Lakes Alliance
Madison City Parks
Madison Engineering Division
Madison Streets and Recycling Division
Dudgeon Monroe Neighborhood Association and/or other neighborhood organizations.

**Table 5.04-3 Suggested Phosphorus Catalyst Team Representation**

## 5.05 CRITICAL ACTIONS

Sections 2 through 4 of this report discuss critical actions that address water quality and infiltration in the Lake Wingra Watershed. Many of the critical actions, such as the Westmorland Park Bioretention Basin, are project-based requiring a government department to be the lead agency, with funding approval by the government legislative body. Others require a collaboration of government and community actions that require both behavior change by residents and management change by a government. An example would be bagging leaves, which requires residents to change the way they rake/collect leaves and government to change how they collect and dispose of leaves. This section focuses on the implementation plan for the critical actions. Table 5.05-1 summarizes some of the critical actions and whether the action is management-based (government department lead), project-based (government lead), legislative-based (government body lead) or residential-/commercial-based. The table also indicates which water quality improvement goal the action targets: chloride reduction, phosphorus reduction, or infiltration.

Table 5.05-1 Possible Critical Actions

Lake Wingra Watershed Plan	Gov Legis Based Critical Action	Gov Project Based Critical Action	Gov Dept Management Based Critical Action	Resident/ Commercial Based Critical Action	Addressed in Engagement and Implementation Plan?
Measure		Chloride Focused	Phosphorus Focused	Infiltration Focused	
Westmorland Park Bioretention Basin			X	X	No
Monroe Street Reconstruction With Green Features			X	X	No
Downspout Disconnection Program (35% watershed participation)			x	X	Yes
Terrace Rain Gardens			x	X	Yes
Private Residential Rain Gardens (serving roofs only)			x	X	Yes
Private Commercial Rain Gardens (serving roofs only)			x	X	Yes
Rain Barrel Program (25% watershed participation)			x	X	Yes
Arbor Hills Infiltration Facility (1.63 in/hr)			X	X	No
Devolis Park Bioretention (Axel Avenue)			X	X	No
4 Acres Porous Pavement (serving 12 acres)			x	X	Yes
Wingra Park Wet Pond			X	X	No
Wetland Harvesting			X		No
Modified Street Sweeping Methods/Schedule			X		No
Pet Waste Enforcement			X		No
Grandview Boulevard Bioswales			X	X	No
Glenway Golf Course Wet Pond and Infiltration			X	X	No
Modified City Leaf Collection Methods			X		Yes
Property Owner Leaf Storage Modification			X		Yes
Water Fowl Management (50 geese/yr)			X		No
Construction Site Erosion Control Enforcement (enhanced)			X		Yes
Alum Addition at Manitou Pond			X		No
Alum Addition at Marion Dunn Pond			X		No
Streambank Restoration at Henry David Thoreau School			X		No
Diversion of Basin W102-D-0193-H-MAD-C to Manitou Pond			X		No
Streambank Restoration on Cherokee Drive (Yuma Drive to Chippewa Drive)			X		No
Establish Certification Program and Require Certification for Government Snow Removal Contractors		X			Yes
Implement Certification Program for Commercial Salt Applicators		X			Yes
Establish Maximum Salt Guidelines		X			Yes
Establish Maximum Salt Ordinances		X			Yes
Encourage Less Residential Salt Use		X			Yes
Reduce Municipal Salt Use		X			Yes
Expand Practice of Anti-icing–Municipal					
Reduce Salt Route Mileage					
Investigate Alternate Deicers					
Reduce Number of Applications per Event–Municipal					

## 5.06 COMMUNITY-BASED SOCIAL MARKETING PRINCIPLES GUIDING CATALYST TEAMS

Many of the measures will require changing behaviors within the community. Behavior change initiatives can be largely ineffective if not designed properly. Guiding principles that should be used in engagement programs to increase the likelihood of success include the following:

1. Interpersonal communication is most effective at changing attitudes and behaviors.
2. Opinion leaders within affinity circles can have a large influence on individual actions. People look to others to guide their behavior.
3. Modifying a social norm can have a large effect on day-to-day behaviors.
4. Convenience (eliminating barriers) can make a substantial difference in participation.
5. Expressed commitment (particularly written) increases compliance.
6. Public recognition can help initiate and sustain behavior change.

The goals of the community engagement and implementation plan include the following:

1. Identify critical actions where community behavior change is essential to achieve water quality goals.
2. Identify perceived barriers and benefits of current and preferred behaviors.
3. Provide an outline of behavior change tools that could address the target behavior.
4. Suggest a program outline to initiate and maintain behavior change.

## 5.07 GOVERNMENT INTERACTION PRINCIPLES GUIDING CATALYST TEAMS

### A. Project-Based Measures

Many critical actions of the Watershed Management Plan are project-based, meaning a government entity would be the lead agency or primary responsible party. Project-based critical actions must obtain funding and typically compete against other potential capital projects. In order to implement many of the Lake Wingra Watershed Plan critical actions, proponents including catalyst teams will need to advocate strongly for project funding.

The following list is the current City's New Capital Budget Request Procedure for discretionary projects. Discretionary projects include shorelines, pond/greenway construction/repair, and dredging. Nondiscretionary projects include street reconstruction, projects associated with the UW-Arboretum agreement, and WDNR-mandated improvements.

1. Projects can be proposed by staff, citizens, or representatives.
2. If project has merit, proposed project is put into a 6-year budget timeline (current year + 5 years). Budgetary restraints are addressed by staff.
3. Proposed budget is submitted to the mayor.
  - a. List of proposed projects includes any budget cuts.
  - b. Additional project requests are submitted separately as "exceptions."

4. Mayor reviews budget.
5. Common Council approves budget.
6. If the project is proposed beyond the current year, the process is repeated annually until it is in the current year's approved budget.
7. Staff proposes project to neighborhood and alder(s).
  - a. First public informational meeting is held–Project need is discussed prior to design.
  - b. Project timeline is established.
  - c. Survey, borings, and wetland delineations are requested (as needed).
8. Draft design is completed.
  - a. Second public informational meeting is held.
  - b. Plan may be revised, dropped, or proceed to final design (followed by bid and construction).

**B. Management-Based Measures (Government Department)**

Several of the critical actions are management-based measures where a government department would be the primary acting body. Management changes, such as modified leaf collection methods, are discussed in this report because they are a key component to achieving the watershed plan objectives. Within the government structure, management changes can face challenges even with upper management support. These challenges include the following: (1) priorities within budgets, (2) prioritization of staff resources, (3) varied and multiple stakeholder expectations, (4) coordination between city/county departments with different missions, and (5) entrenched institutional norms.

**1. Operational Budget and Staff Resources**

Much of the City's operational budget is fixed and is based on wages/benefits and payments to other agencies (e.g., MMSD). Often there are budget cuts for various city departments. The operational budget for the City's Engineering Department has been cut by 5 to 10 percent annually in the last three budget cycles (as of 2014). Many of the critical actions associated with this watershed plan, such as street sweeping and leaf collection, are not within the Engineering Department budget but rather are in the Streets Department budget. Storm Water Utility funds pay for much of the sweeping and leaf collection programs, but the operational procedures are controlled by the Streets Department management rather than Engineering Department staff. Therefore, management changes are approached on a cooperative basis between the Engineering and Streets Departments. Changes in resource (both money and staff) allocation follow this process (see Section 5.02).

2. Changes to Operational Budget

- a. A change to the Operational Budget that reduces cost to comply with a mayoral budget reduction mandate can be offered by a Department head. The mayor decides what to accept as part of his/her budget proposal to the Common Council.
- b. A change that would increase costs can be proposed by a Department head as a supplemental request to the mayor. This would likely be due to a regulatory requirement, offset by another Department's budget, or an increase in benefits/service to justify the increase.
- c. If the proposed change is accepted by the mayor, it is then presented to the Common Council. Once approved, it is included in the adopted budget and implemented by the appropriate Department(s).

Resource allocation may be a continuing challenge. However, changes can occur through sequential and consistent efforts. If one compares management practices in 2014 to those in effect in 2000, there are numerous success stories of change in the midst of budget and staff scarcity.

Continued and even greater interdepartmental coordination and cooperation will be needed to obtain the greatest gains. As each Department understands and embraces a broader set of objectives, it is able to effectively apply that expertise toward the broader set of objectives.

## 5.08 CHLORIDE CATALYST TEAM

The chloride catalyst team will need to influence several fronts to achieve measurable chloride reductions within Lake Wingra. The greatest chloride reductions are likely to be achieved through winter maintenance changes of government and commercial applicators. Yet these management changes will not occur without legislative support and public acceptance.

Critical and supporting actions available for the chloride catalyst team include the following:

1. Reduce commercial applicator salt use through:
  - a. Developing a commercial applicator training program.
  - b. Developing a commercial applicator certification program.
  - c. Developing county-wide salt application guidelines.
  - d. Developing county-wide salt application ordinance.
2. Reduce municipal applicator salt use through:
  - a. Expanding the use of anti-icing.
  - b. Exploring the use of alternate deicers through pilot projects.
  - c. Exploring different winter management techniques on salt routes.
  - d. Fostering public acceptance of different winter driving conditions.
3. Reduce residential salt application through educating homeowners on appropriate salt application and the consequences of using salt for winter maintenance.

The following paragraphs describe efforts the chloride catalyst team can consider.

A. Training and Certification Program for Commercial Salt Applicators

Commercial applicators represent the single largest contributor of chlorides to Lake Wingra. This critical action builds on the training workshop efforts that have occurred in 2009 and again in 2014 for salt applicators. This critical action would implement a certification for commercial salt applicators and expand the use of certified salt applicators by commercial and government property owners. This critical action faces difficulties associated with the perception of possible litigation resulting from reduced salt use. There are numerous challenges and opportunities the catalyst team could consider in advocating for this measure. These include the following:

1. Identifying a government body that would be responsible for certification.
2. Advocating for funding and staffing needed to run a certification program.
3. Advocating for incentives to applicators and property owners who participate in the certification program. These incentives could include:
  - a. Favored status when bidding on government winter maintenance contracts
  - b. Providing stormwater utility fee reductions for property owners using certified contractors.
  - c. Creating an “Environmental Winter Maintenance” branding that recognizes contractors and property owners that practice environmentally friendly winter maintenance practices

B. Maximum Salt Use Guidelines and Ordinances

Commercial applicators have a variety of barriers that reduce their willingness to use less salt. These include the following:

1. Winter maintenance contracts that use quantity of salt as a payment item, encouraging abundant application of salt.
2. The absence of maximum salt guidelines or ordinances provides commercial applicators with limited defense against torts.
3. Customer expectations for bare pavement in winter months.
4. The reluctance to treat pavements multiple times (rather than once) during a winter storm.

This critical action addresses the second bullet and would first establish maximum salt use guidelines for either the City or Dane County or both. As public and government norms change further with the guidelines, there may be political support and opportunity to establish maximum salt use ordinances. Providing both the guidelines and the ordinances could help provide an objective application baseline when commercial applicators are faced with legal tort action.

Actions the catalyst team could take to establish the maximum salt use guidelines and ordinances are multifaceted. An approach will probably need to include some or all of the following:

1. Presentations to applicable city/county committees.
2. Briefings with key elected officials.
3. Development of guideline and ordinance text.
4. Interaction with area commercial salt applicators and property managers.
5. Council or board sponsor.
6. Presentation of guidelines/ordinances and justification to referred committees as well as common council/board.

Enforcement of ordinances could prove particularly challenging. When guidelines and/or ordinances are enacted, other efforts to educate applicators on the guidelines/ordinance, as well as methods to enforce an ordinance, will need to be developed.

#### C. Reduction of Municipal Salt Use

Government application of salt represents the second greatest contributor to chlorides in Lake Wingra, contributing about one-third of the chlorides that reach the lake. The salt application by City winter maintenance staff has been growing though the decades. In the 1970s, City forces spread an average of 400 pounds of salt per mile per salt event. In the 2000s, the rate has grown to almost 1,100 pounds of salt per mile per salt event. This critical action would reduce the amount of salt spread by both city and county forces during a salt event.

Since this deals with a change in management by city forces, advocating for change by a catalyst team will be challenging. The City Streets and Recycling Department receives much more public feedback requesting more salt use, rather than less salt use. A change in winter maintenance practices may lead to public comment, both to the Streets Department and to City Alders. The greatest success will probably be achieved by incrementally changing management practices while concurrently changing public expectations.

The following paragraphs describe possible measures the chloride catalyst team could pursue to reduce municipal salt usage. With all these measures, the catalyst team will need to find avenues to influence management practices of City departments. This could be through partnership with certain City departments (for example City Engineering) and/or interacting with elected officials and the mayor's office.

1. Expanding the practice of Anti-Icing. Anti-icing helps provide extra time for winter pavement maintenance and helps reduce overall road salt application. The Streets Department has recently purchased additional equipment to expand the practice of anti-icing. This practice should be encouraged, and data should be collected to see how the additional equipment will affect salt usage.



2. Pilot Projects. The widespread change in management practices is unlikely to occur without supporting experiences and data from a smaller area. Pilot projects that could be explored include:
  - a. Reducing the number of applications per snow event on a section of a salt route. The current application rate per event is several times the recommended application rate per pass. Altering management techniques might allow the City/County to make fewer salt passes, reducing the overall salt usage per event.
  - b. Investigating the feasibility of having a two-tier salt route structure, with one tier receiving more frequent applications and another tier receiving less frequent applications.
  - c. Investigating alternate deicers. Several municipalities are using different deicers, such as agricultural byproducts, as part of their snow removal strategy. The Madison Health Department has cautioned the use of deicers having a biological oxygen demand (BOD), citing it could result in fish kills. Additional research to understand the aquatic effects is necessary. Additionally, other deicers with nominal could be explored.
  - d. Monitoring salt application using GIS technologies. Monitoring the salt application rate on different salt routes within the City could help the Streets Department better manage its winter maintenance activities.
3. Public Norm Changing. The Streets/Engineering Department could continue to educate Madison residents on the effects of winter salt use. Examples of this include the summer 2015 newsletter that was mailed to Madison residents. Other measures that could be considered include:
  - a. Providing an informative e-mail on the effect of salt when responding to winter maintenance complaints.
  - b. Using the Street's Department winter Web site to educate residents on the effects of salt use.
  - c. Engaging the media with feature stories on salt's effects on the lakes. (Similar engagement efforts have occurred with recycling efforts.)

D. Reduction of Residential Salt Use

While residential salt use is not a major chloride contributor to the lake system, changing salt use behavior with residents is essential for changing the overall social norms that are necessary to get guidelines and ordinances enacted. This education also could temper customer expectations for street pavements as well as commercial property pavements. The catalyst team could use residential salt use education as part of the larger effort of chloride reductions. Types of activities the catalyst team could consider include:

1. Educating homeowners of the unwanted effects of winter salt on wildlife and our lakes.
2. Educating homeowners on best winter maintenance practices.
3. Providing greater access to materials (e.g., sand drop-offs).

MMSD is making a concerted effort in this area and could provide a valuable partnership.

## 5.09 INFILTRATION CATALYST TEAM

This report provides critical actions to increase infiltration in an effort to maintain and restore spring flow in the Lake Wingra watershed. As with the phosphorus critical actions, some infiltration measures are project-based while others are community-based. Fewer of the infiltration measures are management-based. The following paragraphs describe potential focus areas for the infiltration catalyst team. As mentioned, the efforts of the catalyst team are not intended to be prescriptive, which constrains the team and effectiveness. But rather they are intended to be responsive and dynamic, capitalizing on opportunities as they develop.

### A. Project-Based Measures (Government)

This report lists some project-based critical actions that could increase infiltration:

1. Westmorland Park Bioretention
2. Devolis Park (Axel Avenue) Bioretention
3. Arbor Hills Greenway Infiltration
4. Glenway Golf Course Wet Pond and Infiltration
5. Grandview Blvd Bioswales
6. Monroe Street Green Reconstruction

Many of these measures also have phosphorus reduction benefits. Some of the listed projects have been presented to residents and have not experienced broad support. As mentioned previously, the infiltration catalyst team may need to partner with government sponsors of these projects to develop a proactive information program that enables community and council/board support. It is difficult to advocate for project funding when there is not broad neighborhood support of an initiative.

The catalyst team could work with the neighborhood alders to introduce projects into the City's Capital Budget. Section 5.07 describes the City's New Capital Budget Request Procedure for discretionary projects.

### B. Community-Based Measures

There are several critical actions that are focused on residential and commercial properties. Governments and advocacy groups sometimes use incentives to increase participation in the critical action. The infiltration catalyst group could work on several fronts to broaden involvement of these programs. This includes:

1. Initiating, maintaining, or increasing funding for incentive programs.
2. Educating watershed residents regarding infiltration measures and the availability of incentive programs.
3. Recruiting residents to participate in the infiltration programs and practice good rain water management.

The following paragraphs describe some of these critical actions in more detail.

1. Rain Gardens, Downspout Redirection, and Rain Barrels

This critical measure seeks to divert roof rainwater destined for the storm sewer to areas where the water can infiltrate. Measures that achieve this can be somewhat simple and very cost-effective. Examples include the following:

- a. Relocating gutter downspout discharges away from pavements and onto pervious areas. Currently the City does not have a downspout disconnection program. The catalyst team could advocate for a downspout disconnection program or partner with other organizations to help homeowners with rainwater management.
- b. Installing rain barrels. Local organizations<sup>2</sup> sold and installed rain barrels. The City Streets and Recycling, with Dane County, provides discounted rain barrels to the public every spring (about \$120 in spring 2015). There is no organization that helps install these rain barrels. The catalyst team could increase the momentum associated with the rain barrel program, providing deeper discounts and/or helping with rain barrel installation.
- c. Disconnecting rainwater discharges that are directly connected to the storm sewer system or flow directly into the gutter pan on the street. Current disconnection permit fees, according to Madison General Ordinance 37.05 (7)(a)3. is \$1,000 with a possible \$900 refund once completed. Additional costs are incurred with contracting for the disconnection. The catalyst team could work with the City to initiate a grant program for property owners wishing to disconnect from the storm sewer system.
- d. Constructing rain gardens to collect roof runoff. Plant Dane (My Fair Lakes) provides a cost-sharing program that helps subsidize rain garden plantings. The City's 1,000 rain garden program seeks to increase rain garden installation through education and recognition.
- e. Installing terrace rain gardens. The City Engineering currently offers cost-sharing for rain gardens in terraces in conjunction with street

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<sup>2</sup> Sustain Dane installed rain barrels until 2011.

reconstructions and resurfacing projects, where they are appropriate.<sup>3</sup> The rain gardens must be installed where the terrace is at least 10 feet wide, relatively flat, and limited trees. The catalyst teams could work with city engineering to recruit homeowners to participate in this program. The catalyst team could also advocate to maintain funding for the cost-sharing program and even increasing the City share of the construction costs.

This discussion is focused on residential rainwater drainage. Rainwater management measures for commercial roofs could also be implemented through the City’s review process for commercial/construction permitting.

## 2. Permeable Pavement

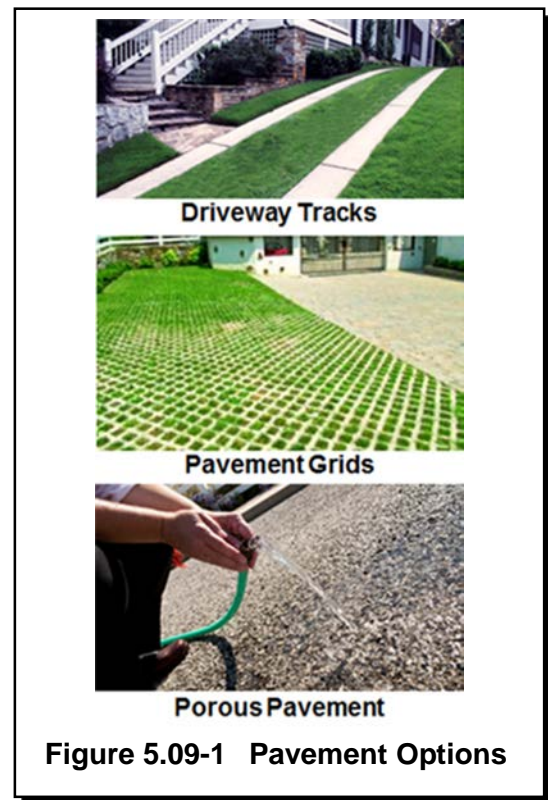
This critical action would have to have property owners, including residential, multifamily residential, commercial, institutional, and government, reduce impermeable pavement installations. This can occur in a variety of ways (Figure 5.09-1), such as the following:

- a. Reducing pavement, such as installing driveway tracks instead of driveways.
- b. Using nonengineered pavement grids (without a subpavement water storage layer) for little-used parking areas.
- c. Installing porous pavements.

For porous pavement, initial efforts could focus on collecting a series of early success pilot projects to serve as examples to others. Eventually porous pavements, pavement grids, and driveway tracks could become a requirement of the design approval process.

There are many directions the catalyst team could seek to start and increase porous pavement installations. The following describes a couple of possible examples.

1. Advocate for a porous pavement pilot project on a City-owned property (government-sponsored discretionary capital project). Parking lot pavements within Vilas Park or the zoo could serve as pilot projects and are within the watershed.



<sup>3</sup> see <http://www.cityofmadison.com/engineering/stormwater/raingardens/terraceraingardens.cfm>

2. Encourage City staff and legislators to consider infiltration, including use of porous pavements, in the plan review process.
3. Advocate for initiating City-sponsored grant program subsidizing a portion of driveway tracks, pavement grids, or permeable pavement installation as an expansion/formalization of the City's stormwater utility credit policy.
4. Advocate for requiring porous pavements for parking lots when commercial properties are redeveloped.

## 5.10 PHOSPHORUS CATALYST TEAM

This report provides critical actions to achieve targeted phosphorus reductions in Lake Wingra. As mentioned, the efforts of the catalyst team are not intended to be prescriptive, which constrains the team and effectiveness. But rather they are intended to be responsive and dynamic, capitalizing on opportunities as they develop.

### A. Advocating for Project-Based Measures

Project-based critical actions are essential for achieving the phosphorus reductions necessary to meet the watershed objectives. The catalyst team can work with elected officials (and city staff) to using the methods described in Section 5.07 to introduce projects that will have a positive effect on Lake Wingra water quality. Critical actions that are project-based include the following:

1. Westmorland Park Bioretention Basin
2. Monroe Street Reconstruction
3. Arbor Hills Infiltration Facility
4. Devolis Park Bioretention
5. Grandview Boulevard Bioswales
6. Glenway Golf Course Wet Pond and Infiltration
7. Alum Treatment in Manitou Pond
8. Alum Treatment at Marion Dunn Pond
9. Streambank Restoration at Henry David Thoreau School
10. Diversion of Basin W102-D-0193-H-MAC-C to Manitou Pond
11. Streambank Restoration on Cherokee Drive
12. Wingra Park Wet Pond

The watershed plan recommends aligning these project-based measures with other city efforts to meet the TSS and TP reductions associated with the Rock River TMDL requirements. This would have the effect of moving the project from discretionary to regulatory, which would increase their chances for implementation. A funding and credit structure may be available through Yahara WINs.

In addition to advocating for project funding, the phosphorus catalyst team should partner with government sponsors to develop a proactive and strategic information program that enables future community and council/board support.

## B. Advocating for Management Changes

Management changes are also necessary to achieve the needed phosphorus reductions. Possible management changes include the following:

1. Modified leaf collection methods.
2. Water fowl management (harvesting).
3. Wetland harvesting.
4. Modified street sweeping methods/schedule.
5. Commercial fertilizer application at Nakoma Golf Course and Odana Hills Golf Course.

Influencing management changes within city and county departments is more difficult. Budgets, staff resources, and known methods hinder the ability/willingness to change management measures. Within this structure, probably the greatest gains can be made by partnering with other city departments. Pilot projects provide an excellent opportunity to test management changes to better understand the actual effect on staffing, resources, and budgets. The catalyst team, in partnership with other city departments could strongly advocate for pilot projects focusing on management change. One example is the pilot project being conducted with the Wingra Watershed Plan that focuses on leaf collection methods (see Section 5.12). This small scale project will help The City Engineering and Streets departments understand the effect of bagging leaves on city crews and pickup schedules.

The departments typically report directly to the mayor or county executive. Continuing to inform these elected officials of benefits of management changes will provide support for these measures.

## C. Enforcement-Based Measures

Some of the possible critical actions focus on the enforcement of regulations. The phosphorus catalyst group can influence enforcement-based measures by advocating for funding of positions responsible for enforcement. In some instances, advocating for and influencing legislation, on both the local and statewide level, will be necessary to achieve the Lake Wingra watershed goals. The following paragraphs describe some of the enforcement-based critical actions.

### 1. Construction Site Erosion

This critical action seeks to increase compliance with construction site erosion control regulations. Three entities monitor erosion control. On July 21, 2014, watershed team members met with City staff to discuss current enforcement efforts. The City Engineering Department monitors erosion control on larger commercial and institutional projects. On the engineering Web page, a link is provided for community members to review larger construction projects erosion control inspections (<http://www.cityofmadison.com/engineering/erosionActive.cfm>).

The City Engineering Department received a Yahara Wins grant from MMSD for an erosion control inspector for the 2013-2014 season. The intent would be to continue having a dedicated erosion control inspector in future years.

The Wisconsin Department of Commerce (Commerce) has authority and the responsibility for construction site erosion control for building sites for public buildings and places of employment and one- and two-family dwellings. All commercial building construction sites disturbing 1 acre or more need to submit a Notice of Intent (NOI) to Commerce. If a one- or two-family dwelling construction site disturbs less than 1 acre, the specific erosion control requirements in the Uniform Dwelling Code, Comm Chapters 20 and 21, must be met. For one- or two-family dwelling sites where 1 acre or more is disturbed, in addition to the requirements in the Uniform Dwelling Code, to WDNR requires the submittal of the NOI to its department. The City Building Inspection Division, part of the Department of Planning and Community and Economic Development, inspects erosion control for residential properties.

This critical action focuses on City-based management change regarding enforcement. As mentioned, two City Departments are responsible for erosion control enforcement. The City Engineering Department is responsible for road construction projects on city streets and commercial projects. The Building Inspection Division is responsible for residential erosion control. There are three specific areas the phosphorus catalyst team could work to improve enforcement efforts.

- a. Proper funding for enforcement—As mentioned, two agencies are responsible for erosion control enforcement. The catalyst team could consistently advocate for appropriately staffing these positions.
  - b. Regulation consistency—Discussions with enforcement personnel indicate that legally they have had difficulty enforcing regulations that are more stringent than the state statutes. Consistency between regulations would aid their enforcement efforts.
  - c. Regulation type—The current regulations are reactive rather than proactive, meaning that contractors will receive a citation after there has been erosion control infraction. Regulations that focus on preventive measures would provide enforcement personnel the authority to issue citations before there is an infraction.
2. Pet Waste Enforcement

For this critical action, the catalyst team could focus on either education or enforcement of Madison’s General Ordinance 7.322. This ordinance requires all dog owners/keepers to have a means of removing pet waste on their person while in public with the fine ranging from \$25 to \$200. Greater gains may be obtained in education of this ordinance.

## 5.11 OTHER MEASURES

In the spring and summer of 2015 community meetings, there were several measures suggested that could be employed by any catalyst team or government agency. The following paragraphs briefly describe these potential measures.

A. Watershed Sustainability Audit

A Watershed Sustainability Audit could be similar to an energy audit once conducted by Focus on Energy. A catalyst team or government agency could send out letters offering volunteers/block leaders to perform watershed sustainability audits at residential or commercial properties. These audits would document measures that currently fall into best practices and additional measures that could be implemented for better stewardship. Similar to the Focus on Energy Audits, the audits could be coupled with incentives to the property owner.

B. County and MLS Listings

The watershed a property lies in could be included as part of a property's tax records. This would help promote an awareness of watershed stewardship. This awareness could be developed further, such as promoting stewardship competitions between watersheds and joint meetings between watersheds.

C. Recognition Certifications

A certification program could recognize commercial applicators, lawn care professionals, business properties, and residential properties. Much like the LEED certification from the US Green Building Council, a certification program could capitalize the environmental ethos of the Madison community. For example, corporate properties could have special signage on their property indicating that they are “Gold Star Environmentally Managed.” Similarly, winter and summer maintenance contractors could claim that they are Gold Star Environmentally certified and use this in their marketing efforts.

## 5.12 PILOT PROJECT

A. Pilot Project Selection

The Lake Wingra Watershed Plan includes a pilot project. A series of potential pilot projects was presented at the March 25, 2014, Wingra Watershed Steering Committee Meeting. The proposed projects included targeting phosphorus reduction, increased infiltration, and reductions in the use of chlorides. Many of the potential pilot projects could address both infiltration and phosphorus reduction. The steering committee decided to pursue leaf management modifications as the pilot project. The pilot project seeks to have property owners keep their leaves out of the street and off of other impervious surfaces. This was done by keeping well-managed piles and then eventually through bagging their leaves. This critical action seeks to prevent leaves leaching phosphorus that runs into the storm sewer system and eventually into the lake. Property owners often pile their leaves on the terrace. These piles, if left for long periods, can be subject to rainfall and also creep into the adjoining gutter. Additionally, street trees often shed their seeds and leaves into the street and may not be collected. These leaves and/or their leaching can be transmitted to the lake through the storm sewer system. The following outline provides a framework to address this problem for these reasons:

1. Leaf management appears to be a highly effective measure to reduce phosphorus within the watershed.



2. The City Streets Department and its contractor are willing to test this in the 2015 leaf collection.
3. There seems to be an opportunity for collaboration between government entities' ability to fund a program and the need for community behavior change.

The pilot project was started with the 2014 fall season as a baseline. During this season, property owners were made aware of the project and on-site leaf management measures were encouraged. With the 2015 fall season, plans are to encourage property owners to bag their leaves and to be collected by the City.

Recruitment of leaders and participants has been done and needs to continue to occur throughout the whole Wingra watershed (and beyond). Yet only a portion of the watershed would use staff resources to canvass households and monitor participation levels in the pilot project area. The extent and location of this canvassed area (Figure 5.12-1) would be the same for 2014 and 2015.

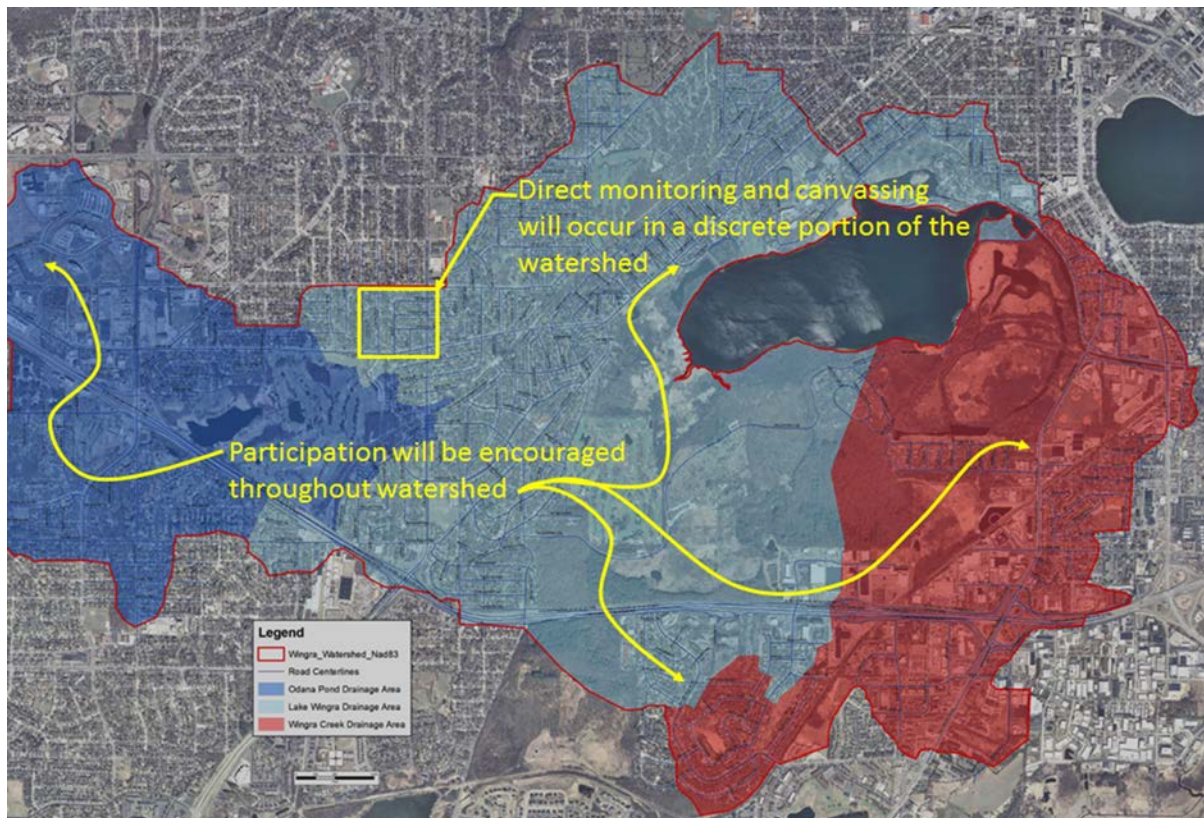
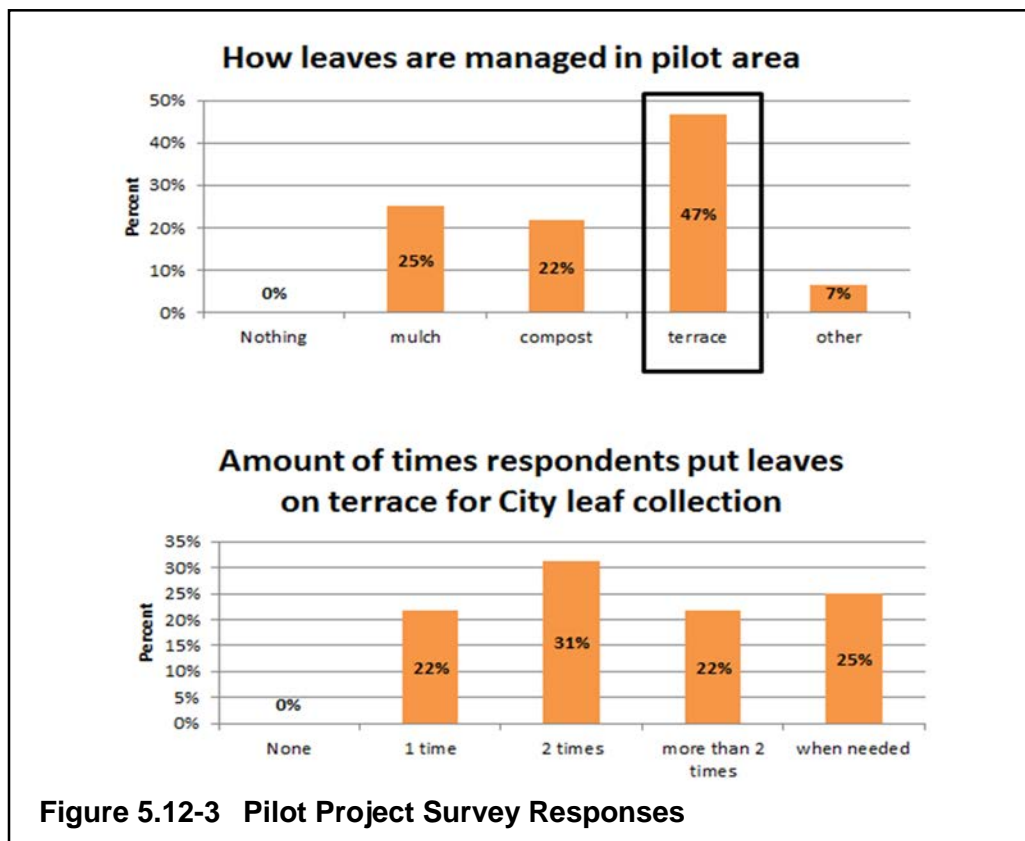
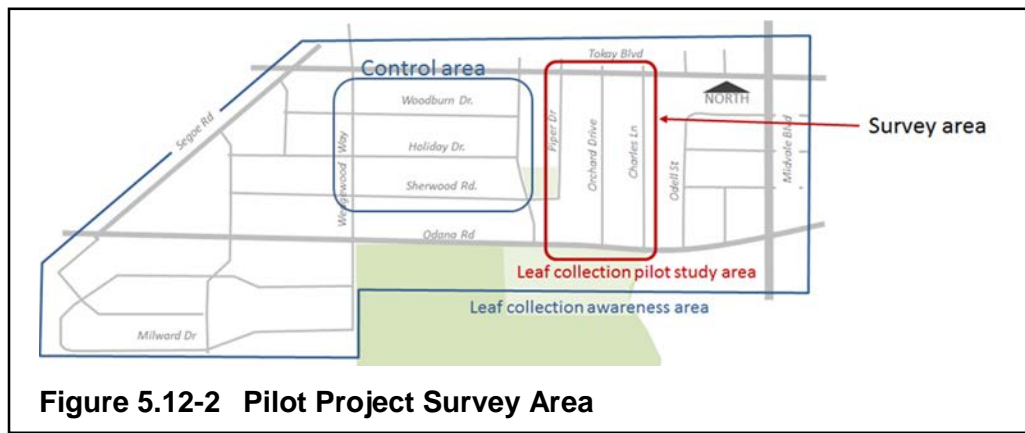
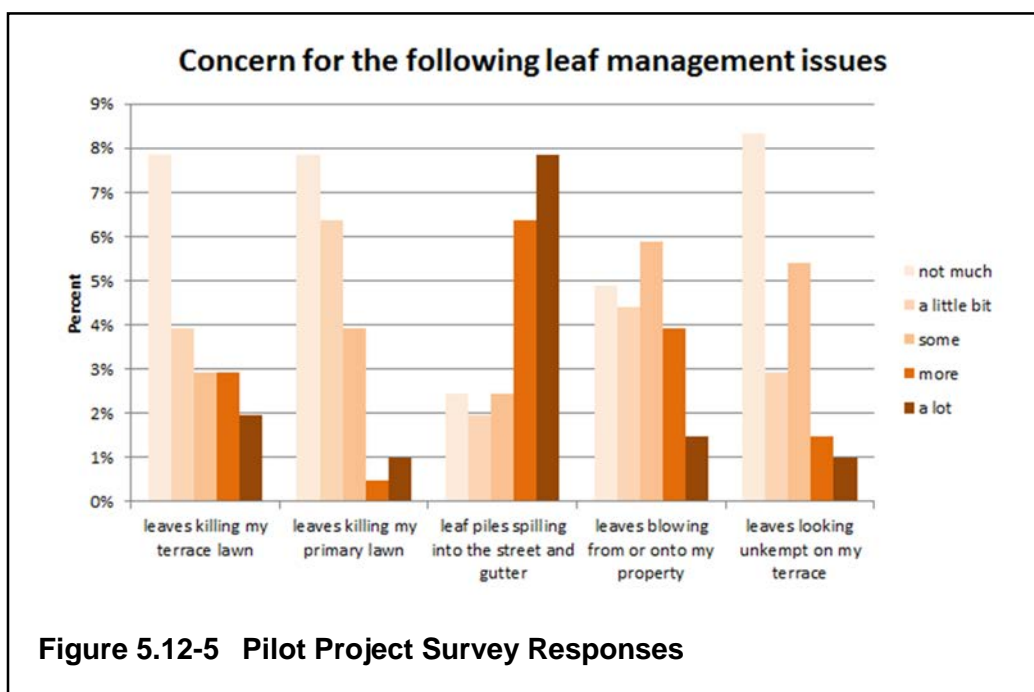
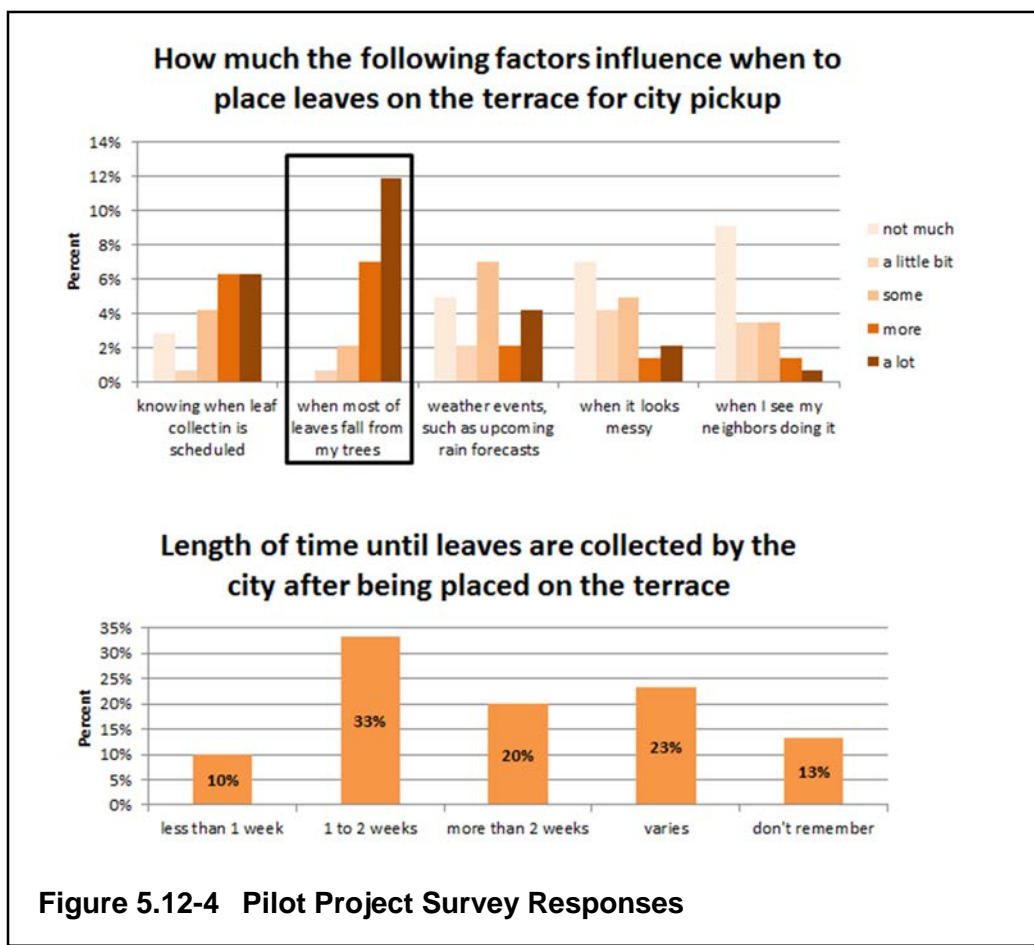


Figure 5.12-1 Pilot Project Focus Area

## B. 2014 Season

During the 2014 season, the goal of the pilot project was to keep “leaves out of the street,” which was the motto of the program. To alert homeowners in the watershed, the City hosted a public informational meeting on September 18, 2014, to introduce the pilot project to property owners. Community members (led by three block leaders) also canvassed the three-block focus area, handing out pilot project information, providing a survey sheet for return, and securing commitment cards to encourage residents to participate. Figure 5.12-2 shows the focus area of the pilot project. The surveys were meant to provide baseline data and were delivered to 84 homes in the area of Piper Drive, Orchard Drive, and Charles Lane; just over one-half were returned. Figures 5.12-3 through 5.12-5 summarize some of the key findings from the pilot project survey responses.





A major factor leading to unkempt leaf piles is the inability for homeowners to predict when City forces are coming to collect leaf piles. To address this concern, the homeowners in the pilot project area were encouraged to sign up for an e-mail notification that sought to provide advance notice of when leaf piles would be collected by City forces. Additionally, lawn signs placed in the terrace were used to alert homeowners of leaf pickup times.

The leaf piles in the pilot project area streets were compared to streets in the nearby control area that did not have the extra education and notification efforts. Generally the pilot project area had better leaf management practices than the adjacent control areas. In observations during the second round of city leaf pickup, 46 of the 84 homes in the pilot project area had put leaves on the terrace, with 30 of the piles having no leaves in the gutter.

#### C. 2015 Season

The 2015 season will build on the program infrastructure developed during the 2014 season. Residents in the pilot project area will be asked to bag their leaves. City forces will collect those bags and use an existing shredder to process the leaf material. Notification and awareness activities similar to those used in 2014 yet with improvements will be performed during the 2015 season. See Appendix G for the pilot project results.

If successful, the program could be expanded to other portions of the city, leading to greater phosphorus reductions.