STORMWATER

UTILITY

REPORT

SEPTEMBER, 2010

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2010 STORMWATER UTILITY REPORT

This report is intended to be a basis for understanding the mission and goals of the stormwater utility and provides a baseline understanding for the current activities within the purview of the City of Madison Stormwater Utility. This summary provides information on new projects and issues as well as updates to existing projects. Future quarterly reports will update these issues rather than provide full details on them.

BACKGROUND - WATER QUALITY REGULATIONS

STORMWATER REGULATIONS

The City of Madison is subject to several stormwater regulations.

NR-216/NR-151/WPDES

The WDNR is the enforcement agency for the EPA Clean Water Act with regard to stormwater discharge for the State of Wisconsin. In this capacity, the WDNR operates the WPDES (Wisconsin Pollutant Discharge and Elimination System) which is congruent to the EPA's NPDES (National Pollutant Discharge and Elimination System). The WDNR has codified its authority for these programs under NR-216 and NR-151, Wisconsin Administrative Code.

Those two (2) regulations form the foundation for the WDNR's statewide stormwater quality regulations. In addition to placing stormwater requirements on new and redevelopment of private lands, they place requirements on municipalities to reduce discharge of Total Suspended Solids (TSS) to the Waters of the State by 40%, compared to no controls, by October 1, 2013. This level of control exceeds what is required by EPA Clean Water Act provisions and has been enacted by the WDNR through State Administrative code.

ROCK RIVER TOTAL MAXIMUM DAILY LOAD (TMDL)

A Total Maximum Daily Load (TMDL) is a plan that is created to estimate the total load of a specific pollutant to a particular, impaired water resource. The Rock River TMDL is focused on the loading of both Phosphorus and Total Suspended Solids (TSS) to the Rock River. The point is to estimate the amount of pollutant loading that the river can withstand, calculated the necessary reductions to reach that point, and then to distribute the requirement for pollutant reductions to various areas (urban and rural) throughout the watershed.

In general, the required reductions are broken up into agricultural, nonpoint, and point sources, as well as a small margin of safety. As a holder of a stormwater discharge permit from the EPA/WDNR, the City of Madison is considered a point source for discharge of stormwater and the pollutants contained in that stormwater by State Administrative Code.

The DNR has developed a TMDL for the Rock River Watershed. The Yahara Chain of Lakes discharges to the Rock River. A consultant has been hired by the EPA to prepare a TMDL report under DNR's management. A final

version of the TMDL is anticipated by October 1, 2010. The reductions required by that report will be enforced against the City of Madison and other permitted municipalities, as a condition of their WPDES stormwater permits.

It is anticipated that for the majority of the City, the same 40% reduction in TSS required by the current WPDES permit will be sufficient to meet the standards of the TMDL. However, there are some watersheds where a much higher standard (anticipated to be 80% TSS reduction) will likely be required. These watersheds will probably include Pheasant Branch and Nine Springs Creek.

In the Pheasant Branch watershed, the City is reasonably well-positioned to meet this requirement as most of the development was completed after modern stormwater treatment was implemented by ordinance. Retrofits will be required, but land is available for this work.

In the Nine Springs Creek watershed, the ability of the City to easily meet this requirement will likely be more difficult and costly, but this will be investigated more fully once the final TMDL is available for review.

STORMWATER QUALITY INITIATIVES

To comply with the requirements of the above regulations the City of Madison has implemented a sweeping set of stormwater practices and policies including the following:

STREET SWEEPING

Funded by the Stormwater Utility, the Streets Department sweeps all streets a minimum of once a month. In several downtown areas the level of effort has been expanded to include weekly sweeping with parking restrictions in order to better access to the curb-line, which is the dirtiest part of the street. The program to sweep these areas is known as the Clean Streets/Clean Lakes program and a map of these areas is shown here.

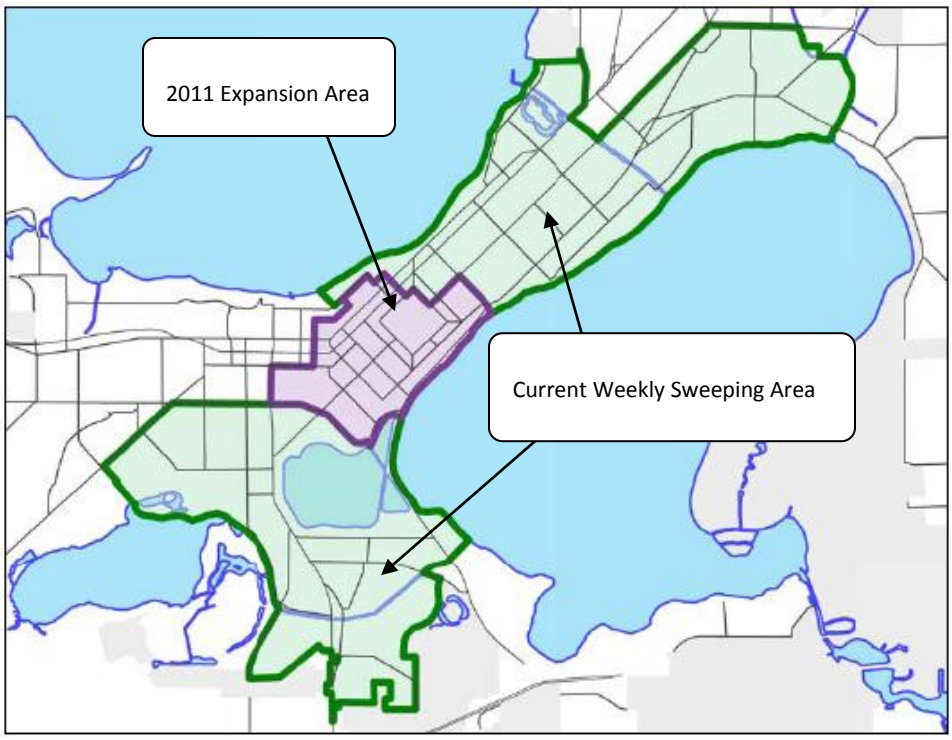

Figure 1: Map of Weekly Sweeping Areas

As part of winter operations, the Streets Department routinely places over 4000 tons of sand on streets. This sand must be collected before it migrates into the storm sewer system and lakes with spring rains.

To minimize the amount of sand that reaches the storm system, the Streets Department does a massive clean-up right after spring snow melt. This consists of sweeping all streets in the City twice. Sweeping is also coordinated with the Water Utility's spring flushing operations to make sure that areas are swept prior to flushing, and is also coordinated with Engineering's catchbasin (CB) cleaning operations. This operation cleans/vactors the CBs prior to flushing to insure that any remaining sand left on the street has an opportunity to be trapped and collected prior to discharge to our lakes.

A brief summary of the effectiveness of the sweeping effectiveness is given below:

	2004	2005	2006	2007	2008	2009
Sweeping Debris (Tons)	5,538	5,472	5,728	5,012	11,114	8,787

CATCHBASIN CLEANING

The stormwater utility operates approximately 2000 catchbasins (CB) and treatment devices that need to be maintained with vactor equipment. The maintenance schedule for these devices varies from once per year up to four times per year. The vast majority (approximately 1900) are cleaned once per year in conjunction with the Streets Department spring clean-up efforts that are also coordinated with the Water Utility's spring hydrant flushing. In 2009, Engineering Operations staff collected 1,415 TONS of debris out of our CB sumps.

LEAF COLLECTION

The stormwater utility funds 50% of the Street Department's annual operation to collect leaves. This operation directly keeps material out of the storm sewer system and the lakes. A summary of the material collected annually is provided below.

	2004	2005	2006	2007	2008	2009
Leaves (Tons)	15,636	14,426	17,769	11,155	17,191	18,979

DRY WEATHER TESTING AND ILLICIT DISCHARGE DETECTION PROGRAM

City Engineering conducts dry weather testing of approximately 125 outfalls annually. This program involves inspecting an outfall (which is defined as a 36" diameter outfall which could be a pipe to pipe connection – ie a 36 discharging to a 60") at least 48 hours after the most recent rain. If flow or stagnant water is noticed, the Health Department is contacted. Health staff respond and take a sample of the water, which is then tested for a number of parameters (conductivity, fecal coliform, E. coli, Ammonia, pH, temperature, Hardness, Total Chlorine, Fluoride, Potassium, Optical Brighteners, Dissolved Oxygen, and Phosphorus) . If the results of this testing indicate that there is a non-storm discharge to the system, both Health and Engineering staff follow-up by tracking the flow upstream to determine the source. An annual report is created to document these efforts to the WDNR.

ILLICIT DISCHARGE INVESTIGATION

City Engineering works with the Health Department to investigate reports of illicit discharge to the storm sewer system. During a normal year the number of investigations will be approximately 35 reports. These investigations can last over a year, in order to determine sources of discharges by placing several automated flow sampling devices in storm structures to determine the timing of the discharges, and many reports. Many investigations result in an immediate action such as finding a customer discharging grease traps to the storm or finding floor drains connected to the storm (this was legal once). An annual report is created to document the results of these investigations.

RAIN GARDENS

TERRACE RAIN GARDENS

Since 2008, with each street resurfacing and reconstruction project, and where the terrace meets certain physical criteria, City Engineering offers to install terrace rain gardens for homeowners. As part of the budget process, Engineering staff review all projects to determine if terrace rain gardens are eligible, based on the following:

1. Terraces must be at least 10 feet wide;
2. There must be at least 15 feet of open space along the terrace (no trees, driveways, utility poles, etc. in the way)
3. Terraces cannot be too steep (in any direction);
4. There cannot be issues with high groundwater;
5. The priority for citing terrace rain gardens is in areas of the city that do not already have stormwater treatment ponds;
6. The street cannot be an arterial

Once the possible streets are identified homeowners affected by a street reconstruction/ resurfacing project receive a letter in the mail that outlines the opportunity for rain gardens, along with other information on the street project. A second post card is also mailed out to remind them of any deadlines to decide whether they would like to move forward with having a terrace rain garden. Currently, the City will pay 75% of the cost of installation and planting of a rain garden in the terrace.

PUBLIC RAIN GARDENS/ BIO-RETENTION

Where construction of public rain gardens/ bio-retention systems is possible as part of public projects, City Engineering is an advocate and has designed (and constructed with our staff) multiple projects. The locations have included systems at Warner, Olin, Vilas and Brittingham Parks, Bernie's Beach, and in the street right of way on Barton Road and Lake Mendota Drive as well as other locations throughout the City. Typically these are all designed by Engineering staff and at least one per year is constructed by Engineering Service Construction crews.

RAIN GARDEN MAINTENANCE CONTRACT

In 2008, City Engineering created two maintenance contracts in order to care for rain gardens. One contract includes replanting and watering new rain gardens, while the other is mostly weeding and picking up trash to keep established rain gardens looking tidy.

USGS RAIN GARDEN STUDY

The City was the primary funding partner in a recently completed study by the USGS on the effectiveness of rain gardens. The primary objective of the study was to evaluate the infiltration rates of four rain gardens at two distinct locations. Each location has a different soil type (one was relatively undisturbed with silty soil, and the other was compacted, clayey soil with construction debris). The rain gardens at each site were planted with different vegetation (turf grass and native plants).

The final USGS study is available online here:
http://www.cityofmadison.com/engineering/stormwater/raingardens/raingardenstudy.cfm

CONSTRUCTION SITE INSPECTION

PRIVATE EROSION CONTROL PERMITS

City Engineering is the authorized inspector for all commercial properties, for utility installation, and for grading areas not associated with a building permit. A permit is generally required when a project disturbs at least 4,000 square feet. Although the 4,000 square feet disturbance threshold is the most common reason for needing a permit, there are additional criteria such as excavating/ filling 400 cubic yards of material on a site or conducting utility work over 300 lineal feet. These and the other activities subject to erosion control permitting can be found in Chapter 37 of the Madison General Ordinances. In addition, a DNR Water Resource Application Permit Packet (WRAPP) is required when greater than one acre (43,560 square feet) is disturbed.

In 2007, City Engineering initiated a new way of tracking erosion control permits and inspections for construction sites. When a new city erosion control permit is taken out, including by the city itself, it is logged into an online database, and a map is generated with points showing where the permitted projects are located. The public can access the map through the City of Madison Engineering website.

The map is a Google Maps interface, and each point can be clicked, which brings up information pertinent to that project. Information may include project plans, a copy of the permit, inspection reports, and photos. There is also a link to email Engineering staff if there is a complaint or comment regarding a specific site.

Developers who take out a permit gain access to the database portion of the website, which allows them to record site inspections. As part of their permit, they are required to do weekly inspections and after every half-inch of rain.

PUBLIC EROSION CONTROL PERMITS

City Engineering is also responsible for inspecting many public works projects for which we are also responsible for the construction of. The same Ordinance changes that affected private developments increasing the erosion control standards affected our projects. These include a certification of installation for the erosion control measures at the beginning of projects by a registered engineer, weekly inspections posted to our website. Two (2) City Engineering employees are dedicated approximately ½ time to inspection of construction sites.

ROAD SALT MANAGEMENT

City Engineering actively works with the Streets Department and the Health Department to try to find new ways to minimize the use of salt for winter road maintenance while keeping the roads safe for the traveling public. This can be a difficult balance and often the results and feedback are mixed. However, as chloride levels continue to increase in Lake Wingra (they are now approaching 100 mg/l), salt control will become a more critical and widespread requirement. Currently, City Engineering is a partner in holding annual salt use workshops for applicators in Madison and surrounding communities in an effort to educate the public and private applicators on methods that can be used to minimize the use of salt while experiencing no reduction in public safety.

Previously a salt use report completed by the Commission on the Environment recommended the following:

1. Consider a demonstration of anti-icing techniques with salt brine in the Odana Golf Course Pond watershed
2. Continue snow plow driver training
3. Strive to reduce salt content of sand mix from 10% to 5% (was 20%)
4. Proactively work with other Dane County municipalities to systematically decrease the amount of salt used each year
5. Consider installing temperature pavement sensors in supervisors' trucks (or other comparable system)
6. Develop ordinances for regulating private commercial application, operating equipment, and require annual compliance reporting
7. Expand monitoring of sodium and chloride levels in stormwater/groundwater
8. Develop an alert program for informing roadway users to winter weather and road conditions

Request that the Dane County Lakes and Watershed Commission: survey other salt applicators (private and public) to determine their road salt policies, establish benchmarks for chloride content in lake water, recommend policies to all salt users in order to achieve the benchmarks.

PAST AND CURRENT PROJECTS

HIGH POINT RAYMOND PONDS – 2005

The pond system includes four distinct stormwater cells – including a wetland system. Each of the cells functions with one control structure, and together this system provides 100 acre-feet of storage. Additionally, two large bio-retention systems were constructed to pre-treat the runoff water from the road prior to discharge to the adjacent greenway system. The constructed bio-retention systems are over 2,000 square feet each and are planted with native vegetation.

WESTMORLAND PARK GREENWAY – 2007

Westmorland Greenway, Oct. 2005

Westmorland Park, Oct. 2008

The Westmorland Park Greenway is located in the southwest corner of Westmorland Park, at the intersection of Tokay Blvd and Gately Terrace. This project was completed in fall 2007, and consisted of drainage improvements to alleviate erosion issues while providing added stormwater quality benefits for the drainage area. The project included installing a storm sewer pipe to replace the existing open ditch section, eliminating the erosion situation. To improve water quality in the drainage basin, a bio-retention system was installed adjacent to the existing outfall structure to treat the normal low-flow storm events that contribute the majority of pollutants from stormwater runoff.

KETTLE POND – 2007

Kettle Pond (May 2006)

Kettle Pond (Sept 2008)

The project consisted of scraping and removing three to four feet of sediment that had accumulated in the pond basin. The pond is fed by surface water runoff from two streets (Dale Ave and Dahlen St). At the end of Dale Ave (an unimproved street), a rain garden was installed to pre-treat the runoff prior to discharge to the pond/wetland complex. At Dahlen Street, the street end was improved (curb and gutter was added; previously the pavement just ended at the entrance to the park), and runoff will be piped through a drop structure to the pond where it is pre-treated in a settling area prior to discharge to the wetland basin.

SEMINOLE STORMWATER REROUTE/DUNN'S MARSH POND – 2007

Previously, storm water flowed south on Seminole Hwy to the north side of the Union Pacific Railroad tracks, then east behind the UW Arboretum through Green Prairie. The new storm sewer rerouted storm to a new stormwater treatment pond before discharging into Dunn's Marsh.

The storm relocation and pond construction reduced undesirable sediment deposition to both Dunn's Marsh and Green Prairie and reduced the erosive velocities and peak flows to downstream waterways. City of Madison received both a Dane County grant and a DNR grant for this project.

OWEN CONSERVATION PARK PONDS – 2007

Part of the Owen Park greenway system, a site identified as a critical area for erosion was reconstructed in fall 2007. Three stormwater retention ponds were constructed northeast of the intersection of Jetty Drive and Inner Drive. The ponds reduce sediment deposition to Spring Harbor by over 65%. One of the ponds is designed exclusively for habitat restoration, and is directly managed by Parks staff.

STARKWEATHER CREEK SHORELINE AND BIKE PATH – 2008

Previously steel sheeting lined approximately 1,500 feet of Starkweather Creek, between Milwaukee Street and Darbo Drive. More desirable stream bank treatments were installed, including glacial boulder revetments and limestone steps. The stream banks were planted with native vegetation. The project included reconstruction of

Clyde Gallagher Avenue along the creek, installation of curb and gutter, and construction of a multi-use pedestrian path and bridge over the creek.

Starkweather Creek, 2008

Starkweather Creek, 2009

WINGRA PARK DREDGING – 2007

Approximately 1,800 cubic yards of material were dredged from Lake Wingra near the marina and boat launch at Wingra Park. A large storm sewer outfall had deposited sediment in the lake, causing the water to be at times too shallow for the boat rental operation. The dredged material was used to fill a depression in the park.

WINGRA CREEK STREAM BANK – 2006 TO 2009

Thus far, two of four phases of the Wingra Creek restoration project have been completed, between Fish Hatchery Road and Beld Street. Bank stabilization techniques used included: vegetated geogrid, which uses native vegetation in geotextile-encapsulated soil lifts to stabilize steep slopes; vegetated boulder revetment, which is native vegetation growing out from between boulders; sack gabions were added in some places to stabilize the toe of the slope; and live stakes of red-osier dogwood and buttonbush shrubs to provide soil stabilization with their roots.

GLENWAY FOREST HILLS GREENWAY – 2009

This project consists of repair of an eroded greenway located between the Southwest Bike Path to the south and Glenway Golf Course and Forest Hills Cemetery to the north (from approximately opposite Gilmore St to opposite Pickford St). The project will involve replacing the ditch with a pipe in one short stretch, and installing a riprap-lined channel in other areas to curtail the erosion currently occurring in the ditch. In order to capture some sediment from the stormwater flowing through the greenway, a gabion sediment trap is proposed at the upstream end of the channel, and two catch basins are proposed along the pipe. Access roads will be constructed off the bike path for maintenance access to the gabion and catch basins.

OLBRICH PARK SHORELINE – 2007

The shoreline at Olbrich Park was damaged during periods of extended high lake levels during recent years. This project consisted of repair of the existing eroded shoreline using vegetated riprap, with a few access points constructed of stone steps.

BARTON ROAD RAIN GARDEN – 2008

This project was to retrofit a bio-retention system into an existing street median in order to treat storm water from the public storm sewer system. Resulting area of bio-retention is approximately 4,200 square feet. Work consisted of re-grading, mulching and installation of an outlet structure.

WINGRA DAM – 2009

Construction included removal of the old dam that was constructed in 1908, and replacement with a new dam to bring the structure into compliance with current dam codes. The new dam includes a larger spillway to adequately handle storm flows, while maintaining the previous level of Lake Wingra. The dam design features a semi-circular concrete spillway, an observation deck on the Vilas Park side of the dam, and a limestone retaining wall on the Arboretum side of the dam. The observation deck and limestone wall were designed with a semicircular shape to echo the curved shape of the spillway. Floating piers were also constructed upstream and downstream of the dam to facilitate portage of small watercraft.

Wingra Dam, before

Wingra Dam, after

ARBORETUM PONDS

ARBORETUM POND 2 – 2009

Arboretum Pond #2 was dredged and rehabilitated with new control structures. An approximate 4 acre wetland / infiltration basin takes flows after passing thru a forebay. This pond is located adjacent to Todd Drive, North of the beltline and just West of Johannsen's Greenhouse. It treats an approximate 88-acre watershed. The project was completed in 2009, with a sediment removal efficiency of 28%. The City of Madison is responsible for 52.24% of total cost.

ARBORETUM POND 3 – 2011

Arb Pond 3, 2008

Arb Pond 3, 2010

Phase 1 of the Arboretum Pond 3 project consisted of clearing and grubbing the area of an existing drainage ditch in preparation for survey and design work for stormwater management repairs and improvements. Temporary

repairs and stabilization of the ditch was also completed during this phase. The City of Madison has contracted with Held Engineering for the designs and analysis of stormwater management improvements. The finished project will provide runoff rate control to lessen peak flow impacts while also improving stormwater quality. Final designs are expected to be completed by December 2010. Construction is expected to take place spring 2011, pending permitting and funding approvals.

ARBORETUM POND 4 – 2009

Arboretum Pond #4 was reconstructed as a 6-acre wet detention pond, with effluent dispersed into the SE Marsh. This pond, located North of the County Maintenance Facility at Fish Hatchery Road, treats an average of 225 acre feet of runoff annually. The project was completed in 2009, with a sediment removal efficiency of 66%. The City of Madison is responsible for 41.45% of total cost.

VILAS BEACH – 2010

Vilas Beach erosion, 2009

Vilas Beach prairie sod, 2010

This project involves adding roof gutters to the beach house and directing the runoff to a newly constructed rain garden. Also, prairie sod was installed at the west end of the beach, which was a severely eroded bank with exposed tree roots. The prairie grass will stop erosion, slow runoff, and dissuade geese from exiting the lake in that area.

BERNIE'S BEACH BIO-RETENTION – 2010

A bio-retention system is being constructed near Bernie's Beach to intercept stormwater before it discharges near the swim area. The overflow will discharge into a new pipe, farther away from the beach.

BRITTINGHAM PARK BEACH HOUSE BIO-RETENTION – 2010

A bio-retention system was constructed in conjunction with a parking lot reconstruction in Brittingham Park.

WARNER PARK PARKING LOT – 2011

The Warner Park parking lot will be reconstructed in several phases, with the end result of 50 more spaces but one acre less of impervious area. Two stormwater treatment ponds will be constructed to collect runoff from the lot.

LAKE MENDOTA DRIVE RAIN GARDEN – 2009

A rain garden was constructed along Lake Mendota Drive, an unimproved street. It provides stormwater treatment prior to discharge to Spring Harbor.

ARBOR DRIVE STORM SEWER – 2009

The reconstruction of Arbor Drive in 2009, resolved one (1) long standing issue of discharge of stormwater into the Arboretum's Ho-Nee-Um Pond by rerouting the discharge further west into a new box culvert. This new box culvert replaced a significantly undersized 1930s vintage culvert. The new box culver was sized and designed to be extended across Monroe Street and up Pickford to Gregory Street where it will eventually be connected to an existing railroad arch. The pipe currently connected to this arch is undersized and floods private property during extreme events. The extension of the box in the future will resolve this issue.

WARNER PARK SEDIMENT TRAPS – 2007-2010

Warner Park Gabion

The proposed Warner Park Sediment Trap #3 location is adjacent and within the Warner Park lagoon in the northwest corner of the lagoon near Forster Drive and the Wisconsin & Southern Railroad (see aerial photo below). The treatment area should include the two storm sewer outfalls in this location (see aerial photo below). This proposal will include a survey & concept plan design, storm water quality modeling, permitting, and final plans & specifications including all documents necessary for bidding. The design should consider all physical features of the treatment area including proximity to an existing sanitary sewer main and many large valuable trees in the area (see aerial photo below). The design should also include a proposed maintenance schedule including the access required to do the maintenance.

The two previously constructed sediment traps within Warner Park are located: 1) further east along Forster Drive; and 2) off of the bike path west of the intersection of Trailsway and Monterey Drive. Both of these sediment traps are likely smaller in size than the anticipated required size for sediment trap #3. The two existing sediment traps are constructed of stone gabion weepers within a defined channel. Both are to be cleaned annually.

Construction of the project is anticipated to be in Fall 2010. It is further anticipated that the WDNR is supportive of the project and shall assist in expediting the required permits.

INLINE STORMWATER TREATMENT DEVICES – 2010

There are several options available for stormwater treatment. The removal of pollutants and total suspended solids is difficult and often requires a removal process that is driven by a required detention time, which sometimes not possible. This is often the case in downtown Madison where space is limited so the use of underground stormwater treatment structures is being implemented to remove sediment and pollutants.

DOWNTOWN CATCHBASIN PROJECT

As part of two contracts, five (5) storm water treatment devices were constructed in and around downtown Madison. Four of the treatment devices will be installed near the Capitol Square and one will be constructed on the south side of Monona Bay. The treatment devices are intended to reduce the storm water sediment load, as well as help control floatable debris, from the downtown area.

REIMER SCREEN TREATMENT STRUCTURE

The City of Madison has installed three screen treatment structures to date. The structure consists of a large underground vault and a wedge wire screen. The structure is designed to remove sediment, debris, and other pollutants. Similar to other storm treatment structures, it requires regular maintenance and cleaning periodically each year. This structure is appealing due to its being able to handle larger flows than other similar devices, up to 30 cfs (cubic feet per second).

REIMER HYDRODYNAMIC DEVICE

Another treatment structure installed in several locations is the hydrodynamic device. It has an inverted outlet pipe that provides the means for collecting floatables and is used to remove sediment, trash, and other pollutants. Other materials like sediment and debris that sink are contained in the structure's three (3) foot deep sump. This structure is designed to carry a capacity up to 10 cfs (cubic feet per second).

BEACH DEFLECTORS – 2010

In the Yahara Lakes, water circulation patterns induced by moderate winds cause algal scums to be blown from one site to another until either strong winds break the scums apart or until the algae ultimately decomposes and sinks to the lake bottom. Specifically, long-shore currents (currents in the lake that more or less travel along the shoreline) tend to move the scums along the shore rather than out into the middle of the lake, which is why the scums are so noticeable from the shore. The goal of this pilot study is to see if by installing a floating boom-and-curtain system in the water, algae scums can be kept away from swimming areas, ultimately reducing the number of beach closures. Data was collected throughout the summer of 2010 and will be analyzed so that the effectiveness of the deflectors can be determined and a decision made about continuing or expanding the program.

INLET INSERTS IN MONONA BAY WATERSHED – 2009+

City Engineering has installed over 2 dozen inlet inserts that capture large sediment and have oil and grease absorbers installed within the device to reduce the amount of petrochemicals reaching the waters of the state. City Engineering's plan is to install approximately 20 of these a year on arterial/collector streets within the Monona Bay watershed. This will eventually amount to some 400 inlet filters being installed in this watershed alone.

MARY STREET PERVIOUS SIDEWALK AND BIO-RETENTION – 2010

City Engineering worked with neighbors who were very interested in using innovative environmental practices as part of their street reconstruction. Initially pervious pavement was investigated but steep grades and poor soils did not support this option. As a test City Engineering designed pervious sidewalk as part of the project along with a bio-retention basin at the bottom of the project.

ALLIED DRIVE PERVIOUS ALLEY – 2010

As part of the Allied Drive Redevelopment Project, The City is installing a 3' wide permeable concrete strip down an alley. The alley water is designed to drain to the center, infiltrate through the pavement and act as groundwater recharge system.

Once the alley is constructed, the city shall monitor the effectiveness of the pervious pavement. This shall be done by viewing and sampling water discharges from the under-drain at the most downstream structure s 24 and 48 hours after completion of a rain event. This shall be done a minimum of 3 times during the summers of 2011 and 2012. Sampled water shall be tested for phosphorous, metals and select pesticides.

INTERACTIVE NOWCAST AND FORECAST OPERATION SYSTEM (INFOS)

The Interactive Nowcast and Forecast Operation System (INFOS) provides real-time measured and modeled water information for the Yahara Lakes. Available real-time data includes water level, discharge, temperature, and other meteorological measurements. The integrated models provide lake characteristic information including spatial variation of water levels, velocity, temperature, and fate and transport or sediments and nutrients. The nowcast models give present water information while the forecast models predict future water information. The overall objective is to allow lake managers and researchers to assess water levels and devise nutrient management strategies for the Yahara Lakes system. In addition, INFOS is a community-based structure for sharing data and information with the public. The INFOS site is available here: http://infosyahara.org/.