Looking west at Hazardous Material Storage Buidling

Looking South at Miscellaneous Metals, Fittings, and Conduits Storage Area

Looking West at Wood Chips Piles

Looking Northeast in Cold Storage Building

Looking Northwest at Used Oil Tank and Used Oil Filter Container

Looking South at storm sewer manhole upstream of outfall to Whitewater Creek

Path: S:\MAD\1400-1499\1407\088\Data\GIS\Report Figures\SWPPP\Figure D-1 City Streets Facility 11x17.mxd

User: danc

Date: 9/28/2016

Time: 3:43:13 PM

Legend

- UW Whitewater Boundary
- DNR Wetlands
- Inlet
- Manhole
- Outfall
- Culvert
- Storm Sewer
- Hydrant
- Valve
- Water Main
- Manhole
- Sanitary Sewer

T3K

E2K

Proposed Perimeter Sediment Control Device (Approx. 455 ft)

Proposed Perimeter Sediment Control Device (Approx. 90 ft)

Proposed Perimeter Sediment Control Device (Approx. 30 ft)

Proposed Storm Sewer Inlet Reconstruction

Proposed Hydrodynamic Separator

Whitewater Creek

STARIN RD

Storage Area Summary	
No.	Description
1	Fuel Tanks (2)
2	Administration Building
3	Maintenance Building
4	Used Oil Tank and Used Oil Filters
5	Storage/Operations
6	Sand
7	Salt Storage
8	Dumpsters
9	Topsoil
10	Gravel
11	Rip Rap
12	Scrap Metal
13	Concrete Manholes
14	Concrete Pipe
15	Hazardous Materials Storage
16	Concrete Barrier Walls
17	Miscellaneous Metals, Fittings, Conduits
18	Wood Chips
19	Logs
20	Storage
21	Cold Storage
22	Salt Brine Tanks
23	Field Stone
24	Asphalt

N W E S

0 20 40 80 Feet

STRAND ASSOCIATES®

FIGURE D-1
1407.088

PUBLIC WORKS GARAGE

STORMWATER POLLUTION PREVENTION PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

APPENDIX E
WHITEWATER DRAINAGE EVALUATION FORM

City of Whitewater, Wisconsin

Drainage Evaluation Form

(Applicable to City-Owned Property and ROW Only)

Part A–General (To be completed by resident)

Today's Date:

Location of Drainage Problem (include building name, parking lot number or feature name):

Building Manager / Contact Name:

Phone Number:_____(Office)
_____(Mobile/Pager)

Part B–Description of Problem (To be completed by resident)

Provide detailed description or sketch or photo of the problem in the space below:

City of Whitewater, Wisconsin

Drainage Evaluation Form

(Applicable to City-Owned Property and ROW Only)

How frequently or under what conditions does this problem occur (heavy rain, prolonged wet weather, frozen ground, etc.)?

Provide approximate dates of occurrence:

Describe damages incurred on your property. Note exterior versus interior damage:

Have you attempted to correct this problem? If so, what measures were taken?

Part C–Attachments

1. Photographs Attached?____Yes____No
2. Building or Utility Plans (if available) Attached?____Yes____No
3. Reports/Records (if available) Attached?____Yes____No
4. Other (Describe)

Part D–DPW Inspection

Name of Inspector:

Date of Field Inspection:

Inspector's Notes:

List of properties affected:

Photos: Attached or N/A

Is drainage problem:

1. Located on Village property? _____Yes_____No

2. Associated with a Village-owned or -maintained storm sewer facility or drainage way? Yes_____No

3. Caused by damage to the storm sewer or obstruction of the drainage way?_____Yes____No

Part E–Evaluation/Responsibility (To be completed by DPW)

Recommended Action:

Comments:

City of Whitewater, Wisconsin

Drainage Evaluation Form

ROUTING: (PLACE CHECK MARK BY APPLICABLE REVIEWERS)

DPW (All Submittals)
City Building Inspector (Where Applicable)

REVIEWED BY:

_____
DPW

_____
City Building Inspector

APPENDIX F
FIELD SCREENING FORM

FIELD SCREENING—VISUAL OBSERVATION

NAME		WEATHER	
DATE		TIME	
OUTFALL # (Type this # in GPS Unit)		LOCATION	
WISDOT # (leave blank unless structure plate is present)			

Outfall Type (Circle One)

Swale Pipe Box Culvert Elliptical Buried Sewer Other: _____

If Outfall includes pipe: Pipe Size _____ Material: _____

Major or Minor? **(Major is any outfall which is greater than 36". Use best guess when you can't determine pipe sizes.)**

Describe below how storm water flows to Outfall and where it goes.

IS THERE A FLOW PRESENT? ☐ Yes ☐ No
(If flow is present, then refer to illicit discharge notification procedures.)

IF THERE IS A FLOW, PROVIDE A NARRATIVE DESCRIPITON OF:

COLOR _____

ODOR _____

TURBIDITY _____

OIL SHEEN ☐ Yes ☐ No

SURFACE SCUM ☐ Yes ☐ No

DESCRIBE ANY OTHER RELEVANT OBSERVATIONS REGARDING POTENTIAL PRESENCE OF NON-STORM WATER DISCHARGES OR ILLEGAL DUMPING

GPS Point #: **Photos Taken:**

If screening of a flow (for color, odor, turbidity, oil sheen, and surface scum) gives indication of a suspected illicit discharge, the discharge shall be field analyzed for pH, total chlorine, total copper, total phenol, and detergents as illicit discharge indicator parameters. FIELD ANALYSIS COMPLETED? Yes No

APPENDIX G
STORMWATER FACILITY MAINTENANCE PROGRAM

MAINTENANCE AND INSPECTION OF STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES CITY OF WHITEWATER AND UW-WHITEWATER SEPTEMBER 2016

1. BEST MANAGEMENT PRACTICE (BMP) OWNERSHIP

    a. Municipality-owned/maintained stormwater BMP.
        i. Develop a site specific maintenance plan/program, if necessary
        ii. Follow the maintenance plan/program, herein.
    b. Privately-owned/maintained BMP.
        i. Obtain a maintenance agreement that has an attached maintenance plan as required by the stormwater management ordinance.
        ii. Follow the maintenance plan/program, herein.

2. MAINTENANCE

The cornerstone of a preventive maintenance program is establishment of a routine inspection program. This program must contain routine and non-routine maintenance. The program is defined below. Use the attached Inspection and Maintenance Documentation Form to document the inspections and maintenance performed. Submit the forms by February 1 of each year to the Village of Waunakee Village Engineer/Director of Public Works or Town of Westport Utility Manager documenting the previous year's activities.

    a. Routine Maintenance
        i. Inspections
            1. Inspect wet and dry detention basins, bioretention basins, and grass-lined swales after major storm events (2-year, 24 hour storm event: 2.6 inches) and at a minimum once per year.
            2. Obtain the construction as-built plans for reference during the inspection.

        ii. Mowing
            1. Wet Detention Basins – Mow the side slopes, embankments, and swales on a regular basis to discourage weeds, woody plants, and invasive species.
            2. Dry Detention Basins- Mow the side slopes, embankments, bottom and swales on a regular basis to discourage weeds, woody plants, and invasive species.
            3. Grass-Lined Swales – Mow the side slopes and bottom twice per year to maintain a dense stand of grass.
            4. Bioretention Basins - Mow the side slopes on a regular basis to discourage weeds, woody plants, and invasive species. With a string trimmer, trim the bottom of basin to height of 6 to 9 inches in the fall of each year.
            5. Mow at heights beneficial to the planted and desired vegetation cover.
                a. 3 to 4 inches for grasses.
                b. 6 inches for native plantings.

iii. Debris/Litter Removal

Remove debris and litter on a monthly basis from the basin edges, embankments, bottom (for dry detention basins) and outlet structure including the emergency spillway, as applicable.

iv. Erosion Control/Revegetation

Eroded areas of the basin edges, embankments, bottom (for dry detention basins), emergency spillway, and rip rapped areas shall be repaired in a timely manner. Consider reseeding/replanting with native vegetation with appropriate erosion control mat suited to site condition with possible consultation with an ecological-restoration company. For grass-lined swales, reseed and repair eroded areas with appropriate erosion control mat.

v. Nuisance Control – Provide control of algae and mosquitoes per recommendations from a pond maintenance contractor, as necessary.

b. Non-Routine Maintenance (Dry and Wet Detention Basins)

It is recommended that a more detailed inspection be done every 3 years on wet detention basins (forebay and permanent pool) to determine sediment depth. A forebay is typically located where flows enter the detention basin and has the purpose of settling out sediment in a more convenient location for ease of maintenance. At this time, a sediment depth survey should be performed to determine the approximate average depth of sediment. The survey would normally be done by obtaining the water surface elevation by surveyor's level and then measuring the distance from water surface to top of sediment from a boat using applicable safety standards. The depth is converted to an elevation to determine depth of sediment and to determine the permanent pool depth. The survey can be completed by the Village or Town if the capability exists. Otherwise, this would be consulted out. Sediment survey and sampling would normally be consulted out once a sediment removal project is necessary.

i. Outlet Structure – Provide maintenance, as needed. Replace outlet structure when not performing as originally intended.

ii. Sediment Removal/Excavation from Wet Detention Basins

1. Sediment Forebay

a. Maintain 3 feet of water depth except on safety shelves which will be shallower.
b. When the forebay accumulates sediment and there is 3 feet or less water depth, perform sediment removal /excavation to original depth (typically 5 feet or more). See as-builts for original elevations.
c. Sediment Removal/Excavation Frequency: Every 3 to 5 years, depending on source area loadings. Maintain records of sediment loading.

2. Permanent Pool

    a. Maintain 3 feet of water depth except on safety shelves which will be shallower.
    b. When the forebay accumulates sediment and there is 3 feet or less water depth, perform sediment removal /excavation to original depth (typically 5 feet or more). See record drawings for original elevations.
    c. Sediment Removal/Excavation Frequency: Every 15 to 20 years, depending on source area loadings. Maintain records of sediment removal.

3. Sediment Removal/Excavation/Disposal Regulations-Perform sediment removal/excavation according to applicable state, federal and local regulations.

    a. NR 103.06(4) (a)-Artificial wetland exemptions – Allows maintenance of ponds that revert to wetlands. Contact DNR for confirmation.
    b. Contact DNR for Chapter 30 jurisdictional determination.
    c. NR 216 Stormwater Discharge Permit (NOI) necessary for disturbance of one or more acres of land.
    d. Sediment Sampling-Contact DNR to determine if sediment sampling is necessary.
        i. Sediment and parent material sampling procedures should follow DNR guidance documents and NR 347 and NR 528.
        ii. Resources:
            1. *Guidance for Applying the Sediment Sampling Requirements of NR 347,* Wisconsin Administrative Code, WDNR Publication WT-778, 2003.
            2. *Technical Guidance for Contaminated Sediment Cleanup Decisions in Wisconsin.* WDNR. December 21, 1995
            3. *Consensus-Based Sediment Quality Guidelines (CBSQG), Recommendations for Use and Application, Interim Guidance,* WDNR, December 2003.
            4. Laboratory results to be checked for conformance with NR 204.07(5) pollutant concentration limits. Consult NR 204 land application standards.
            5. NR 528-Management of Accumulated Sediment From Stormwater Management Structures
    e. Sediment Disposal-See NR 528 and the above resources. Contact the WDNR.

iii. Sediment Removal/Excavation from Dry Detention Basins-Remove sediment and dispose of properly to maintain the originally-designed flood-storage capacity of the facility.

c. Non-Routine Maintenance (Bioretention Basins)

Bioretention basins are designed to capture sediment on the surface of the bioretention basin. Plug planting in the bottom of the basins is typically initially protected with a hardwood mulch layer. Over time, a bioretention basin may become clogged causing ponding on the surface of

the bioretention basin. Bioretention basins are typically designed to drawdown within 24 hours of the end of a storm event. If the drawdown time of a bioretention basin is greater than 36 hours, maintenance shall occur consisting of: (1) remove all hardwood mulch material while not disturbing established native vegetation, (2) Gently scarify the engineered soil surface to promote infiltration into the engineered soil while not disturbing established native vegetation, (3) replace bioretention soil mixture per WDNR Bioretention for Infiltration Technical Standard 1004 as necessary, (4) replace hardwood mulch layer per WDNR Bioretention for Infiltration Technical Standard 1004. Maintenance shall occur only during dry conditions while taking measures to minimize compaction of remaining engineered soil.

If bioretention basins are experiencing scour, consider removing mulch and engineered soil in those areas to allow for replacing with geotextile and appropriately sized stone to provide energy dissipation.

If bioretention basins have appreciable bare areas, plant with appropriate native plugs.

If bioretention basins appear to be experiencing compaction due to snow storage in the footprint of the bioretention basin, reinforce with the property owner that snow storage is not allowed within the footprint of the bioretention basin.

If bioretention basins appear to be experiencing clogging due to underdrain failure, underdrains shall be inspected. If necessary, underdrains shall be jetted to remove debris. If needed, the underdrain and all components of the bioretention basin above the underdrain shall be replaced per the WDNR Bioretention for Infiltration Technical Standard 1004.

Inspection and Maintenance Documentation Form
Stormwater Best Management Practices (BMPs)
Wet and Dry Detention Basins, Bioretention Basins, and Grass-Lined Swales
City of Whitewater and UW-Whitewater, Wisconsin

Inspection Date: _____
Maintenance Date: _____

Inspector Name: _____ Maintenance Provided by: _____
Company Name: _____ Phone Number: _____
Company Address: _____
_____
Company Phone Number: _____
Company Fax Number: _____

Stormwater Facility Location: _____
_____

Wet Detention Basin ☐
Dry Detention Basin ☐
Bioretention Basin ☐
Grass-Lined Swale ☐

Items Inspected	Checked		Maintenance Needed		Remarks
	Yes	No	Yes	No	
Wet and Dry Detention Basin (Items below are applicable to both wet and dry basins. Items in italics are applicable to only wet basins)					
A. Berms					
1. Settlement					
2. Breaks					
3. Erosion					
4. Signs of Piping Leakage					
5. Signs of Seepage					
B. Vegetation					
1. Woody growth on berm					
2. Need for cutting/trimming					
3. Need for reseeding					
4. Ruts					
5. *Dead vegetation at water's edge*					
C. Shoreline					
1. Erosion and rip rap failure					
2. Undermining					
3. Damage or deterioration					
4. Rodent or wildlife damage					

Items Inspected	Checked		Maintenance Needed		Remarks
	Yes	No	Yes	No	
Wet and Dry Detention Basin					
D. Outlet Structure and Emergency Outlet					
1. Obstruction blocking outlet pipe, channel, or spillway					
2. Condition of outlet and inlet structure					
a. Seepage					
b. Separation of joints					
c. Cracks, breaks or deterioration					
d. Differential Settlement					
e. Sediment level in relation to crest of inlet structure					
f. Sediment level in relation to crest of inlet structure					
g. Scour and erosion at outlet					
h. Condition of trash racks					
i. Gates or valves (Operate them twice per year)					
j. Damage by debris, ice, or freezing.					
k. Outlet channel condition downstream.					
E. Inlets					
1. Is trash on or inside pipe grate?					
2. Any ice damage to pipe outlet?					
3. Undermining of any of the pipe?					
F. Sediment Forebay					
1. Approximate depth of sediment =_____					
2. Sediment Removal Necessary					
3. Floating debris					
G. Permanent Pool					
1. Approximate depth of sediment =_____					
2. Sediment Removal Necessary					
3. Floating debris					

Items Inspected	Checked		Maintenance Needed		Remarks
	Yes	No	Yes	No	
Wet and Dry Detention Basin					
H. Access for Maintenance Equipment					
1. Obstructions					
2. Soft Areas					
3. Visible pollution					
4. Shoreline problems					
5. Other (specify)					
I. Safety Features					
1. Access Controls to Hazardous Areas					
2. Fences					
a. Loose or damaged posts					
b. Loose or broken wires					
c. Accumulated debris in fences?					
d. Condition of gates					
Bioretention Basins					
A. Sediment buildup					
B. Clogging/ponding of water					
C. Eroded areas					
D. Bare spots					
E. Trash					
F. Overflow Structure					
G. Plant health					
H. Compaction due to snow storage					
I. Adequate mulch layer					
Grass-Lined Swales					
A. Eroded areas					
B. Bare spots					
C. Mowing Necessary					

NOTES:

1. Inspection/Maintenance Comments:

   _____

   _____

   _____

2. Overall Condition of Facility (Check One)

   ___ Acceptable
   ___ Unacceptable
   ____ Maintenance Completed

APPENDIX H
UWW 2015-2016 SNOW PLAN

FACILITIES PLANNING AND MANAGEMENT (FP&M)
SNOW REMOVAL PLAN
2015-2016

GENERAL

The intent of this snow plan is to standardize and document the routine actions normally taken by Facilities Planning and Management (FP&M) to combat a winter snow or ice storm. Every storm is different, with different starting times, temperatures, precipitation rates, accumulations and durations. Each, therefore, requires a slightly different approach to controlling and removing snow and ice accumulations. This plan identifies the general FPM staff resources, equipment resources, areas of responsibility and general strategies for managing any given storm.

Consistent with FP&M's goal to continually improve its work processes, we will routinely review the results of this plan and make revisions to improve the effectiveness of our snow and ice control efforts.

The presence of snow or ice on walk, road, stair and parking surfaces inhibits the movement of students, faculty, staff and visitors and presents a safety hazard. The control and removal of those snow or ice accumulations is the responsibility of FP&M, Residence Life and the auxiliaries' facilities management operations, not just the FP&M grounds operation. With the exception of providing safe, adequate utilities, on the day of a snow or ice storm; the control and removal of that storm's precipitation accumulation is the top priority of FP&M.

GOALS: The goal of the University of WI-Whitewater's FP &M's snow and ice control operation is to maintain adequate traction for pedestrians and vehicles properly equipped for winter conditions. This does not mean bare, dry pavement should be expected after each snowfall or ice storm.

Snow and ice storm control and removal efforts are focused towards making the campus accessible by 7:00am. Accessible means "one pass" by motorized snow and ice removal equipment or hand shovelers in the following areas:

Roadways and service drives
Walks
Commuter lots
Residence Hall lots (entrances and aisles only)
Stairs in academic zones and curb cuts throughout the campus

Due to FP&M's limited human, financial and equipment resources, it is not feasible to maintain 24 hour per day comprehensive motorized snow/ice removal throughout an extended storm. The focus, therefore, of this plan is to concentrate control and removal efforts for the 7:00am-10:00pm academic term weekday. Minimal services are provided after 3:00pm depending upon storm conditions, duration and operating hours already worked by the equipment operators. If staffing is available there may be a two person team dedicated to campus snow removal between 5:00pm and 10:00pm. Service may also be adjusted for weekend, holiday and break periods.

During a storm, while precipitation is falling, motorized snow removal efforts can be geared towards providing accessible paths to, from and between parking lots and buildings. Clearing of building entrances, stairs and ramps will be ongoing as long as custodians for the particular building are present. The full maximum motorized clean-up effort, however, will generally not begin until the storm's precipitation is over.

Salt or Treated Sand may be spread campus wide as necessary to provide additional safety and traction for vehicles and pedestrians.

UW-Whitewater Snow Emergency Policy

To coincide with the declaration of a snow emergency by the city of Whitewater, the UW-Whitewater Facilities Planning and Management Department may declare a UWW snow emergency, to enable safe, timely,

and efficient snow removal from campus parking lots. The University will notify several media sources and provide as much advance notice to students and personnel as possible. UWW snow emergencies will appear on the home page of the UWW website and will be announced on radio stations WCLO-AM 1230, WJVL-FM 99.9, WSLD-FM 104.5, WTMJ-AM 620 and WISN-AM 1130.

During a declared snow emergency, no cars will be allowed to remain in academic and commuter parking lots between the hours of 12:00am (midnight) to 5:00am the following morning. Academic and commuter parking lots are: Lots 1 (CA south,) 2 (CA north,) 4 (Prairie Street east,) 7 (Visitor Center,) 9(Warhawk east),11 (Williams Center,) 12 and 12A (Library,University Center) 13 (Winther/Heide,) 14 (Upham,) 23 (Prairie Street west) and 15 (Health Center). Parking will be available during a declared snow emergency on a "first-come first-served" basis in lots 9, 23, 24 and 22.

There is no parking on either weekdays, weekends or holidays in academic or commuter parking lots between the hours 2;00AM TO 5:00AM from December 1st to April 1st. Any and all violators will be ticketed and possibly towed away at the vehicle owner's expense.

At FP&M's discretion, snow removal operations can be temporarily suspended during severely adverse weather conditions to prevent personal injury and/or property damage to our campus and municipal resources. FP&M,s snow removal staff reserves the right to provide safe operating conditions for parking lot and road plowing personnel. Based on operational needs, lots and roads may be barricaded from access during snow removal operations. During this process lot users must find alternative parking or road access until the barricades are removed. Special note: FP&M snow crews are not responsible for removing snow accumulated in front of, behind or next to parked vehicles. Vehicle owners are responsible for shoveling snow away from their vehicles.

1) MOTORIZED EQUIPMENT DEPLOYMENT

During snow storms (while precipitation is falling): Recognizing that a full campus-wide clean-up may follow, to conserve driver and equipment resources while precipitation is falling, the grounds crew may be called in to insure that the "one pass" on walks, roads and drives can be accomplished. The equipment used during storms will be dependent upon the snow accumulation and will generally be as follows:

Accumulations less than 1" - Motorized brooms for walks and the roadway plow/salter truck may be deployed. The remaining grounds crew members not driving brooms or the salter will be deployed as stair/curb cut shovelers. Note: parking lots are not plowed with accumulations less than one inch.

Accumulations greater than 1" - Plow trucks, tractors and loaders driven by the grounds staff, may be deployed. Stair shoveling will be accomplished by the designated grounds shovelers.

After snow storm (precipitation has stopped): The major primary clean-up effort may begin at this time. The equipment used after each storm will be dependent upon the snow accumulation and will generally be as follows:

Accumulations less than 1" - For accumulations less than 1", major clean-up deployment may be the same as for the accumulations less than 1" during above.

Accumulation greater than 1" - For accumulations greater than 1", the entire grounds crew plus auxiliary drivers may be called in.

Ice storms: The designated grounds ice crew may be called in for sand and salt operations. Due to the difficulty of driving on ice, the ice crew members are generally Whitewater residents. Four members will drive salters: one for roads and lots and three for walks. When out of town crew members arrive, they may hand sand/salt stairs, ramps and curb cuts.

All motorized equipment has assigned routes. A route map is kept in each vehicle. A master route map is also

available in the Grounds Shop.

For all storm conditions, it is the responsibility of all called operators to immediately contact the Grounds Shop if they are running late or find that they cannot make it in.

SALT BRINE OPERATIONS

When a forecast predicts a snow or ice event, it is the grounds snow team's intent to spread salt brine solution over heavily used traffic areas on roads, walks and parking lot lanes. The salt brine will be spread within 24 hours of the predicted snow or ice fall. The addition of brine to our campus will reduce snow and ice bonding and should provide a greater ability to plow heavily packed snow and ice. This added safety measure, we hope, will reduce the amount of salt needed for the bare pavement conditions that we strive for and reduce the negative impacts of sodium chloride to our landscapes and waterways.

2) CALL-IN

The Grounds Supervisor will monitor weather conditions during non-working hours and will call in the motorized equipment operators based upon the requirements of Section 1. Whenever possible, the decision to call in persons for early morning deployment will be made prior to 2:00p.m. the day before or at least by 7:00pm the evening before.

When equipment operators must be called after business hours, the Grounds Supervisor will notify all snow removal operators.

Whenever a decision is made to start snow or ice removal activities in advance of the normal 7:00am shift start time, or on weekends or holidays, University Police (473-0555) may be notified by the Grounds Supervisor of that start time and other relevant deployment details.

On weekends and holidays, the Custodial Shoveling Crew will be triggered by the Grounds Supervisor or a Custodial Supervisor.

3) STAND-BY

Local conditions may at times prompt University Police to request off-hours sanding/salting or plowing to address roadway or walk hazards. The grounds staff will only respond to plowing/sanding/salting calls from the University Police or a ranking campus administrator or supervisor. After normal 7:00am-4:30pm office hours, police officers are instructed to call FP&M at 262-472-1320 for automatic forwarding to the after-hours answering service who will notify appropriate staff.

When forecasts or storm conditions make hazardous pavement conditions likely, several members of the grounds crew may be placed on standby or on call to be available to respond to those calls.

If notified by the answering service that University Police has called regarding evening campus pavement conditions, it is expected that second or third shift personnel will check outdoor conditions and attempt to correct them within their limited available resources. If it is beyond their physical capabilities or requires large equipment, they should notify the Grounds Supervisor or standby grounds member, if one has been designated for the night. It is not the intent that second or third shift zone personnel provide thorough, expert walk and roadway snow/ice removal service throughout the night. Instead, they are to provide a night-time presence, eyes/ears for Grounds, and response to much localized hazardous pavement conditions.

The scheduled overtime seniority list will be used to determine who will be placed on stand-by for a particular 8/24 hour shift or 24/48 hour weekend/holiday period. The normal scheduled overtime contract rules will be followed for the assignment of stand-by. If a person refuses stand-by when offered, it will then be offered to next on the list. The stand-by persons will receive standby units for all hours identified by management.

When the Grounds Supervisor is unavailable due to absence, illness or vacation, a grounds crew member will be

placed on standby to call in crew members for motorized equipment deployment as described in Section 1. The full resources of the on-campus staff are at that person's disposal while serving in this role.

4) HAND SHOVELING

Building custodians are expected to shovel, clear, sweep and/or salt all building entrances, stairs and handicapped ramps out to the motorized equipment route point. This includes the Observatory Deck, south Winther stairs, deck and ramp and the Alumni Center area stairs and ramp. Since the Observatory Deck is used after 6:00pm each day, evening zone employees will be responsible for keeping it clear.

Campus stairs, curb cuts and recycling center approaches and gates in academic zones, which are not serviceable by motorized routes, will be shoveled, cleared, swept or salted by the custodial staff.

All shovelers and zone employees must communicate their equipment maintenance problems to the Equipment Garage and/or Grounds Shop using green work request forms.

After the primary storm clean up is over, grounds will continue to monitor and maintain the exterior stairs in academic zones, curb cuts, etc.

5) SECONDARY CLEAN-UP

Snow and ice control and removal efforts will generally continue throughout the 7:00am-3:00pm work day. The FP&M grounds team will provide coverage if staffing is available after 3:00pm as weather conditions warrant. Prior to parking their equipment after completion of their routes, all operators should check with the Grounds Supervisor to determine if they can provide assistance with other routes. Routes will be regularly inspected to insure satisfactory completion of snow and ice removal activities.

On days following the storm, the pushing back of snow piles to create additional snow storage will be performed using bobcats, tractors, loaders and snow throwers.

6) TIME CONSTRAINTS

Due to time constraints, sections of parking lots 22, 24 and dorm lots have been designated by the parking services director as lower priority lots (need not be cleaned by 7:00am).

7) RESIDENCE HALL PARKING LOTS

Residence hall parking lots will be cleared of snow and ice when maneuvering within them becomes hazardous. This determination will be made by Parking Services and the Residence Life Department in consultation with Grounds. When that decision is made, usually 2-3 days after a major accumulation or series of accumulations, lots will be mass vacated by 10:00am for late morning and early afternoon clean-up. The Parking and Residence Life units will notify occupants of the lots. Typically, east complex lots will be cleared one day and west lots the following day.

8) AUXILIARY OPERATIONS

Residence Life, University Center and Residential Dining maintain small removal crews to maintain the areas adjacent to their buildings.

9) EQUIPMENT CLEAN-UP AND STORAGE

Sand/salt spreaders should be emptied by their operators prior to being put away regardless of the next anticipated use. Trucks carrying sand ballast should also be emptied by their operators. Diesel powered equipment will be stored in a heated facility or be equipped with engine block heaters. Sanders will be stored under cover. All equipment should be washed off after the completion of all snow removal activities. The only exception would be the anticipated use of the equipment within the next 24-48 hours. Equipment clean-up will be assigned to grounds crew members based upon workload.

10) FP&M LOT CLEARING

Upon arrival, all FP&M snow removal personnel should park up against the dock in the General Services lot (Lot 21) to facilitate snow removal. Prior to starting their assigned routes, all necessary equipment will quickly gang clear the lot so personal vehicles can then be properly parked and the lot is clear for early morning maintenance staff arrivals. Final clean-up of the service truck compounds will be completed as part of the secondary campus clean-up after 7:00am.

Motor Pool fleet vehicles will be seasonally relocated to the west side of the east portion of Lot 21 to enable more efficient lot clearing and snow storage. The users of fleet vehicles leaving their personal vehicles overnight should also be instructed to park their vehicles along that west side.

11) ILLEGALLY PARKED VEHICLES

University Parking Regulations prohibit parking on any University street, including metered spaces, between the hours of 2:00am-5:00am from November 1 through March 31. The regulations further state that violation of this parking restriction will result in the issuance of a citation and towing of the vehicle at the owner's expense. It is hoped the University Police will ticket and tow all vehicles found in violation of this restriction prior to any snow/ice removal activities.

If vehicles are found illegally parked and in the way of plow equipment, notify Police Dispatch at (473-0555) to have the vehicles towed immediately.

12) COMPLAINT CALLS

All customer complaints should be directed to the FP&M office at 472-1320 and forwarded to the Grounds Supervisor. Complaints regarding building entrances, entrance stairs and handicapped entrances will be forwarded to Zone Supervisors for academic facilities or auxiliary staff for their facilities.

APPENDIX I
UWW STORMWATER POLLUTION PREVENTION PLAN

Purpose

The University of Wisconsin-Whitewater (UWW) has prepared the following Stormwater Pollution Prevention Plan (SWPPP) to provide the status of the UWW's General Services Building**.** This report is prepared in compliance with the conditions of the NR 216 permit pursuant to Section 2.6 of Wisconsin Pollutant Discharge Elimination System (WPDES) Permit Issuance No. WI-S050075-2. This report provides information related to the daily operations and maintenance activities for the General Services Building. It should be noted that UWW has a Spill Prevention Control and Countermeasure (SPCC) Plan by SCS Engineers dated December 2013.

A. Site Location and Contact Information

Name of Facility:	Facilities Planning and Management General Services Building
Facility Address:	500 N. Fremont St. Whitewater, WI 53190
Facility Contact:	Jeff Klamik
Title:	Campus Facilities Engineer
Telephone:	262-472-6729 (Office)
	262-903-6388 (Cell)
Email:	klamikj@uww.edu
Facility Contact:	Steve Bertagnolli
Title:	Grounds Supervisor
Telephone:	262-472-6721
Email:	bertagns@uww.edu
Facility Contact (Oil Spill Prevention):	Lance Fredrick
Title:	Director of Risk Management and Safety
Telephone:	262-472-5723
Email:	fredricl@uww.edu

B. Air Photo/Map of the Yard

See attached Figure I-1 includes the following:

1. Locations of major activities and storage areas.
2. Identification of drainage patterns and potential stormwater runoff source and discharge areas.
3. Identification of any wetlands and/or waterways on-site or nearby.
4. Identification of Municipal Separate Storm Sewer System (MS4) connections and where this portion of the MS4 system drains.

C. Overview

This SWPPP covers the operations at the UWW's General Services Building. This SWPPP describes the facility and associated operations, identifies potential sources of stormwater pollution, recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in stormwater runoff, and provides for periodic review of this SWPPP with the annual report.

The primary goal of the stormwater permit program is to improve the quality of surface waters in the UWW's MS4 by reducing the amount of pollutants potentially contained in the stormwater runoff. The purpose of this SWPPP is to provide the following:

1. Identification of potential sources of stormwater and non-stormwater contamination to the MS4 system from the facility.
2. Identification of and recommendation of appropriate "source area control" BMPs designed to reduce or prevent stormwater contamination.
3. Identification of and recommendation of "stormwater treatment" BMPs to reduce potential pollutants within contaminated stormwater prior to discharging to the MS4 system and to Waters of the State.

D. Information

1. Inventory of Potential Sources of Contamination

The following have been identified as potential sources of contamination at the General Services Building.

a. Salt storage shed–The University's deicing and snow removal operations are described in Section 3.01 F. 4. and Table 3.01-3. The salt is delivered in bulk to the site and loaded into the salt storage shed. The facility experiences some issues with exposure of salt to the elements.

b. Fuel Tanks-As shown on Figure 2 in the SPCC plan, there is a 9,000 gallon gasoline fuel tank and a 1,000 gallon diesel fuel tank located in the paved area east of the General Services Building.

c. Used Oil Tank-As shown on Figure 2 in the SPCC plan and on Figure I-1, there is a 550 gallon used oil tank located in the paved area south of the General Services Building. The waste oil tank is protected and enclosed within a steel spill containment structure. Waste oil is removed from the tank by a private contractor bi-monthly throughout the year.

d. Miscellaneous Oil-As shown on Figure 2 in the SPCC plan, there are two locations of four 55 gallon oil drums located within the General Services Building.

e. Used oil filter container–Used oil filters are disposed of in a designated covered container. The used oil filters are disposed of by a licensed disposal company.

f. Exterior materials storage area–A number of materials are stored on the site in uncovered areas of the parking lot. These include, wood chips, compost, tree branches, pallets, logs, gravel, bricks, miscellaneous metals, and miscellaneous equipment.

g. Interior materials storage area– Miscellaneous materials used in everyday public works operations are stored in storage areas within covered buildings on the General Services Building site. These materials are properly stored, used, and disposed of and are not a stormwater contamination threat.

At the General Services Building, various materials require a Material Safety Data Sheet (MSDS) such as brake cleaner, solvents, and lubricants. A full list of these items along with their MSDS is available at the General Services Building.

E. Recommendations to Prevent Polluted Runoff From Reaching Nearby Water Resources

Stormwater management controls or BMPs will be implemented to reduce the amount of pollutants associated with the campus facilities from entering the UWW's MS4 from and reaching nearby water resources.

1. Source Area Control

To the maximum extent practicable and where cost-effective, source area control BMPs designed to prevent stormwater from becoming contaminated will be used.

a. Erosion Control Measures

Material storage areas prone to erosion shall be protected and the material prevented from entering the storm sewer and discharging from the site. External storage areas are generally in flat areas that drain overland to large turf grass areas with little observable erosion. Potential improvements are shown on Figure I-1 including perimeter sediment reduction devices (ie: silt sock).

b. Good Housekeeping

Good housekeeping practices are designed to maintain a clean and orderly work environment. This will reduce the potential for significant materials to come in contact with stormwater. The following practices are included in the General Services Building good housekeeping efforts.

1) Routine sweeping is done in the General Services Building and outdoor impervious area.
2) Oil dry is located throughout the General Services Building and disposed of through a licensed disposal company.
3) Used oil rags are collected and stored in a specific container and disposed of through a licensed disposal company.
4) Oil filters are stored in a drum container inside the General Services building and are removed by a licensed contractor on an as-needed basis.
5) Miscellaneous metals are periodically recycled.
6) Vehicle batteries and tires are routinely recycled.

c. Preventive Maintenance

Preventive maintenance involves the inspection, testing, and cleaning of facility equipment and operational systems before use. These inspections will help to uncover conditions that might lead to a release of materials. The following equipment/activities are included in the inspection schedule of each facility outlined in Section H.

1) Vehicles
2) Equipment

d. Spill Prevention and Response Procedures

Spills and leaks together are the largest source of stormwater pollution. Thus, this SWPPP specifies material handling procedures and storage requirements for significant materials. Equipment and procedures necessary for spill cleanup and prevention of spilled materials from being discharged have also been identified. All employees have been made aware of the proper procedures. The following procedures have been developed for spill response for the UWW facilities**.**

1) Emergency–dial 911 (Major spills are defined as an emergency condition and generally include hazardous materials).
2) Nonemergency–Utilize on-site materials to contain the spill and pick up (floor dry or oil sorb napkins). Dispose in an appropriate container and contact licensed contractor to remove from site.

e. Bulk Storage

At the General Services Building facility, dry bulk storage is limited on the site. Salt is stored in a covered storage shed. The State of Wisconsin inspects the storage shed annually.

Liquid bulk storage at the General Services Building site is utilized for fuels and used oil. The used oil tank is inspected annually by The State of Wisconsin. The fuel tanks are inspected regularly by UWW staff.

2. Stormwater Treatment Best Management Practices

Structural control measures may be necessary to control pollutants that are still present in the stormwater after the nonstructural controls have been implemented. These types of controls are physical features that control and prevent stormwater pollution. Structural controls can include a range of application such as preventive measures, collection structures, or stormwater treatment systems. Structural controls may require the construction of a physical feature or barrier.

a. Preventive Measures

Preventive measures are controls that are intended to prevent the exposure of stormwater to contaminants. The following preventive measures have been chosen for the General Services Building facility.

(a) Perimeter sediment reduction devices (ie: silt sock) are recommended on the downhill side of external storage areas as shown on Figure I-1 and Figure I-2.

Figure I-2 Example of perimeter sediment reduction device

b. Diversions

Diversion structures (including grading and paving) are used to divert stormwater runoff away from high risk areas and prevent contaminants from coming in contact with stormwater runoff or to channel contaminated stormwater to a treatment facility or containment area. Diversions are currently not identified as an appropriate control at the General Services Building site.

c. Containment

Containment areas are structures designed to hold pollutants or contaminated stormwater runoff to prevent it from being discharged to nearby surface waters. Currently, the UWW's waste oil tank is protected and enclosed within a steel spill containment structure. Waste oil is removed from the tank by a private contractor as needed throughout the year. It is recommended that a roof be constructed over the exterior used oil tank to keep the spill containment structure from filling with water. Or, the UWW could move the waste oil tank inside one of the future buildings proposed for construction south of the current location of the waste oil tank as shown on Figure I-1.

Vehicle washing operations are completed within buildings that drain to sanitary sewer or are washed at private vehicle washing companies in the City of Whitewater that have drains to sanitary sewer.

F. Suggested Retrofits to Current Stormwater Practices

Existing Salt Storage Shed-The existing salt storage shed experiences some exposure of salt to the elements. The UWW is currently in the planning phase for construction of two 30-

foot by 40-foot storage buildings as shown on Figure I-1 to replace the existing salt storage shed. A future additional 30-foot by 40-foot storage building is proposed west of the proposed salt storage building for future storage of snow plows and other equipment. Figure I-3 shows the existing salt storage building.

Figure I-3 Existing salt storage shed and used oil storage tank.

G. Installation/Implementation of Recommendations Timeline

It is recommended that the UWW implement the BMPs previously described and continue its current practices of preventing stormwater contamination from the site. Table 1 lists possible BMP activities and measurable goals the UWW may consider implementing.

Activity	Installation/Implementation Schedule
Existing General Services Building pollution prevention activities.	Continue to implement.
Install perimeter sediment control devices on downhill side of external storage areas as shown on Figure I-1.	Install by April 15, 2017. Monitor for degradation and replace in the future as necessary.
Construct a roof over the used oil storage tank. Or, move used oil storage tank inside a future storage building proposed for the site.	Construct by March 31, 2018. Or, move upon construction of the new building.
Continue to implement the existing Spill Prevention Control and Countermeasure (SPCC) Plan	Ongoing
Review existing Public Works Department staff training for stormwater pollution prevention at the General Services Building for improvements.	Document potential improvements in the March 31, 2017, MS4 annual report. Provide training annually on stormwater pollution prevention.

Table 1 BMP Activities and Installation/Implementation Schedule

H. Inspection Frequency

Table 2 provides the current inspection schedule implemented by UWW staff. It is recommended that all items are inspected a minimum of two times a year supplemented with a full inspection of the General Services Building yard once a year.

Facility/Potential Source of Contamination	Inspection Frequency
Salt storage shed	Inspected annually by State. Inspect area after delivery and/or removal of salt.
Drain oil and used oil	Inspect regularly.
Used oil filter container	Disposal by licensed contractor.
General Services Building	Not routinely inspected.
Vehicles	Wash vehicles indoors in areas that drain to sanitary sewer.
Equipment	As needed.
Catch basin sumps	No sumps on-site.

Table 2 Inspection Frequency Schedule

I. Employee Training

Per the 2013 SPCC Plan, appropriate UWW staff receive annual training related on spill prevention and response. This typically consists of Veolia Spill Prevention Training. Appropriate UWW staff also attended the 2014 Winer Road Maintenance Workshop for training on anti-ing and de-icing operations. In general, appropriate UWW staff receive annual training related to spill prevention and response procedures, stormwater pollution prevention, good housekeeping procedures, illicit discharge detection, material storage techniques, and related topics.

J. Spills Prevention Plan and Response Procedures

The UWW has a Spills Prevention Control and Countermeasure Plan prepared in December 2013. The existing program provides procedures to prevent, contain, and respond to spills that may discharge into the MS4 and downstream receiving waters.

The University staff currently implement the spills response program.

The General Services Building is equipped with three spills kits at locations shown in Figure 2 of the SPCC plan that include materials and information needed to properly contain and clean up a spill.

General Services Building

Looking Southwest at fuel tanks.

Looking South at General Services Building near winter salt brine equipment.

Looking North at External Storage Area northwest of the General Services Building.

Looking East at wood chip pile.

Looking North at compost site.


Looking North at pallet, log, and tree branch storage

Looking Northwest at gravel storage areas.

Looking West at bricks and miscellaneous metals storage.

Looking West at south side of General Services Building.

Looking west at salt storage shed.

Looking Northwest at used oil storage tank.

Looking Southwest at inside of sand storage shed.

Looking Southeast at inside of cold storage building south of General Services Building.

Path: S:\MAD\1400-1499\1407\088\Data\GIS\Report Figures\SWPPP\Figure 1-1 UWW Facility 11x17.mxd

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Legend

- UW Whitewater Boundary
- DNR Wetlands
- Inlet
- Manhole
- Outfall
- Culvert
- Storm Sewer
- Hydrant
- Valve
- Water Main
- Manhole
- Sanitary Sewer

Storage Area Summary	
No.	Description
1	Fuel Tanks (2)
2	Salt Brine Equipment (Winter Months Only)
3	Wood Chips
4	Compost
5	Tree Branches
6	Pallets
7	Logs
8	Gravel
9	Bricks
10	Miscellaneous Metals
11	Cold Storage Building
12	Storage Building
13	General Services Building
14	Used Oil Tank
15	Salt Storage Shed
16	Sand Storage Shed

Proposed Perimeter Sediment Control Device (Approx. 160 ft)

Proposed Perimeter Sediment Control Device (Approx. 300 ft)

Proposed Perimeter Sediment Control Device (Approx. 50 ft)

Greenhouse

Proposed Roof Over Used Oil Storage Tank

Future 30'x40' Equipment Storage

Future 30'x40' Snowplow Storage

Future 30'x40' Salt Storage Building

N FREMONT ST

E LAUDERDALE DR

N W E S

0 25 50 100 Feet

FIGURE 1-1
1407.088

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FACILITIES PLANNING AND MANAGMENT: GENERAL SERVICES BUILDING

STORMWATER POLLUTION PREVENTION PLAN
UNIVERSITY OF WISCONSIN-WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

APPENDIX J
UWW DRAINAGE EVALUATION FORM

UW-Whitewater, Wisconsin

Drainage Evaluation Form

(Applicable to UWW-Owned Property and ROW Only)

Part A–General (To be completed by resident)

Today's Date:

Location of Drainage Problem (include building name, parking lot number or feature name):

Building Manager / Contact Name:

Phone Number:_____(Office)
_____(Mobile/Pager)

Part B–Description of Problem (To be completed by resident)

Provide detailed description or sketch or photo of the problem in the space below:

UW-Whitewater, Wisconsin

Drainage Evaluation Form

(Applicable to UWW-Owned Property and ROW Only)

How frequently or under what conditions does this problem occur (heavy rain, prolonged wet weather, frozen ground, etc.)?

Provide approximate dates of occurrence:

Describe damages incurred on your property. Note exterior versus interior damage:

Have you attempted to correct this problem? If so, what measures were taken?

Part C–Attachments

1. Photographs Attached?____Yes____No
2. Building or Utility Plans (if available) Attached?____Yes____No
3. Reports/Records (if available) Attached?____Yes____No
4. Other (Describe)

Part D–Facilities Engineer Inspection

Name of Inspector:

Date of Field Inspection:

Inspector's Notes:

List of properties affected:

Photos: Attached or N/A

Is drainage problem:

1. Located on UWW property? _____Yes_____No

2. Associated with a UWW-owned or -maintained storm sewer facility or drainage way? Yes_____No

3. Caused by damage to the storm sewer or obstruction of the drainage way?_____Yes____No

Part E–Evaluation/Responsibility (To be completed by DPW)

Recommended Action:

Comments:

UW-Whitewater, Wisconsin

Drainage Evaluation Form

ROUTING: (PLACE CHECK MARK BY APPLICABLE REVIEWERS)

Facilities Engineer (All Submittals)
UWW Building Inspector (Where Applicable)

REVIEWED BY:

_____
Facilities Engineer

_____
UWW Building Inspector

APPENDIX K
CITY MODELING OUTPUT (ON CD)

APPENDIX L
UWW MODELING OUTPUT (ON CD)

APPENDIX M
CITY ALTERNATIVE BMP FIGURES

Legend

- City Limits
- UW Whitewater Boundary
- Alternative BMPs
- Park/Recreation Area

Parking Lot 18 and 19 Porous Pavement
Parking Lot 20 Underground Wet Detention Pond
Armory Site Wet Detention Pond
HUSCO Wet Detention Pond
Starin Road Underground Wet Detention Pond
Public Works Hydrodynamic Separator
Universsal Boulevard Wet Detention Pond
Carriage Drive Wet Detention Pond
East Cravath Street Wet Detention Pond
Commercial Avenue Wet Detention Pond
DLK/Main Street Wet Detention Pond
McGraw Hall Wet Detention Pond/Basin
North Street Underground Wet Detention Pond
East Chicago Street Wet Detention Pond
East Main Street Wet Detention Pond
Mound Meadows Wet Detention Pond
Downtown Hydrodynamic Separators
East Bluff Road Wet Detention Pond
South Wisconsin Street Hydrodynamic Separator
West South Street Wet Detention Pond
West Caine Street Wet Detention Pond
South Janesville Street Hydrodynamic Separator

0 500 1,000 2,000 Feet

Path: S:\MAD\1400--1499\1407\088\Data\GIS\Report Figures\Figure M BMP Location Overview 11x17.mxd User: davidk Date: 12/22/2017 Time: 10:24:42 AM

ALTERNATIVE BMP OVERVIEW

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES

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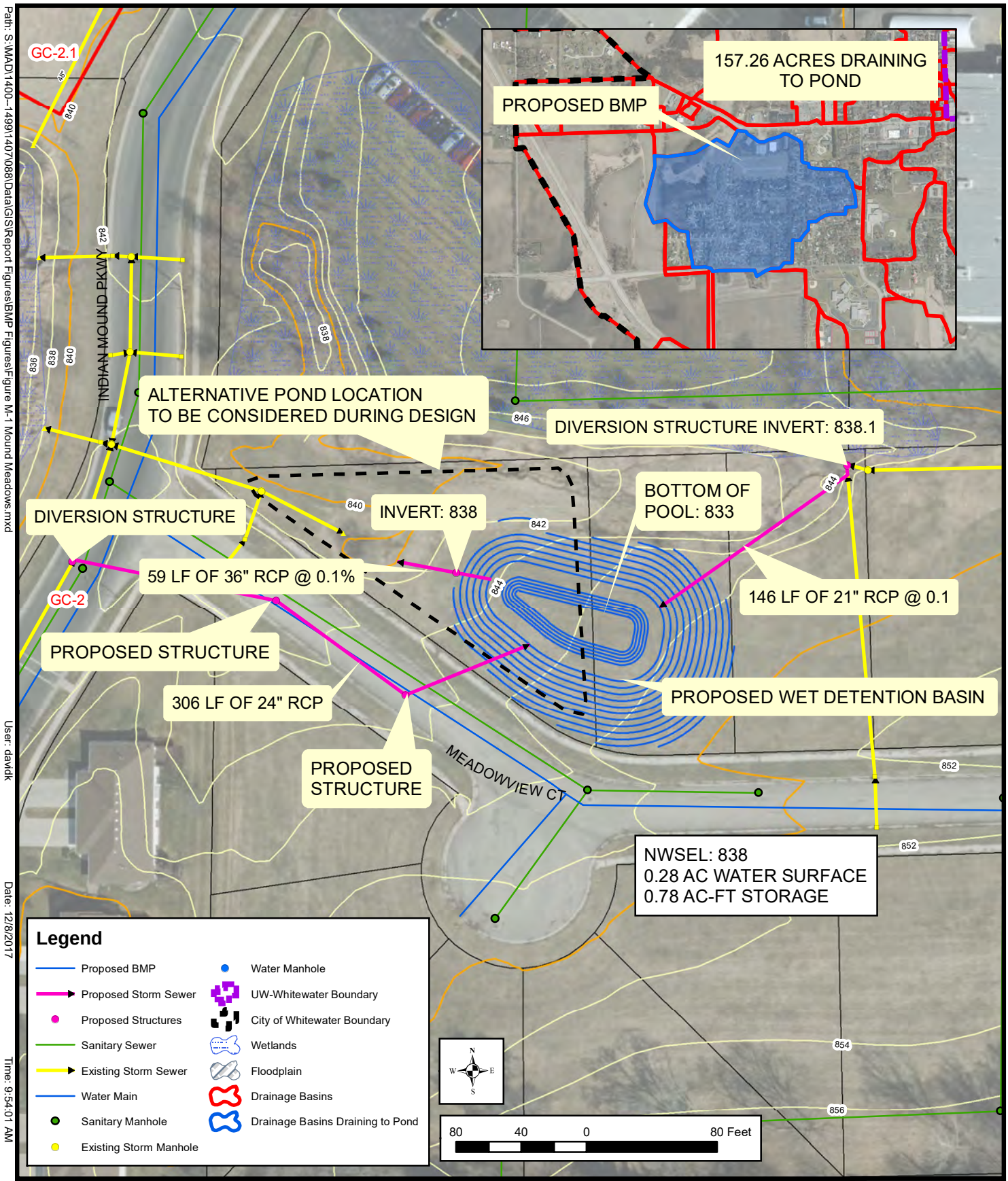
FIGURE M
1407.088



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MOUND MEADOWS WET DETENTION POND (GC-2)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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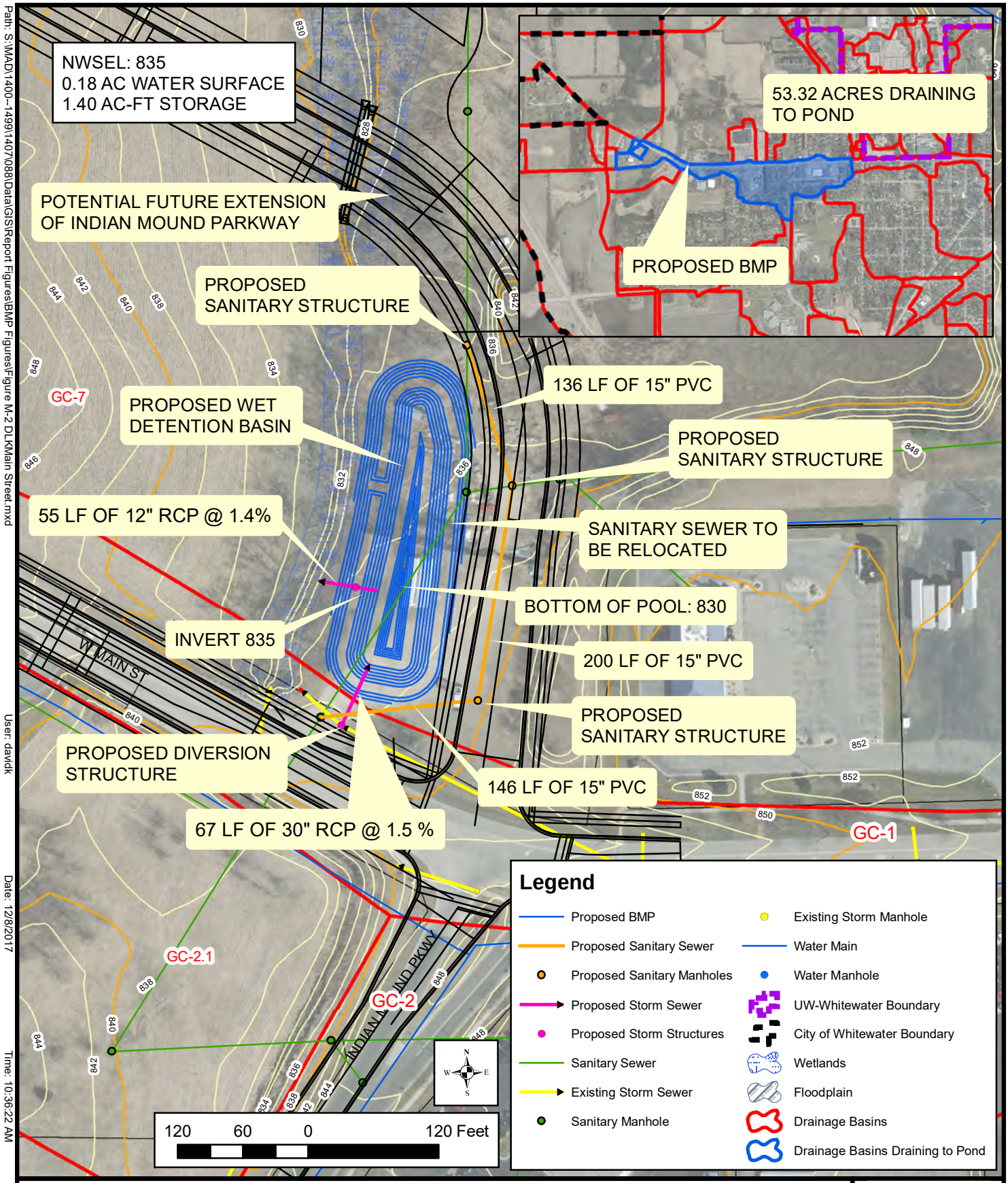
FIGURE M-1
1407.088



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DLK/MAIN STREET WET DETENTION POND (GC-1)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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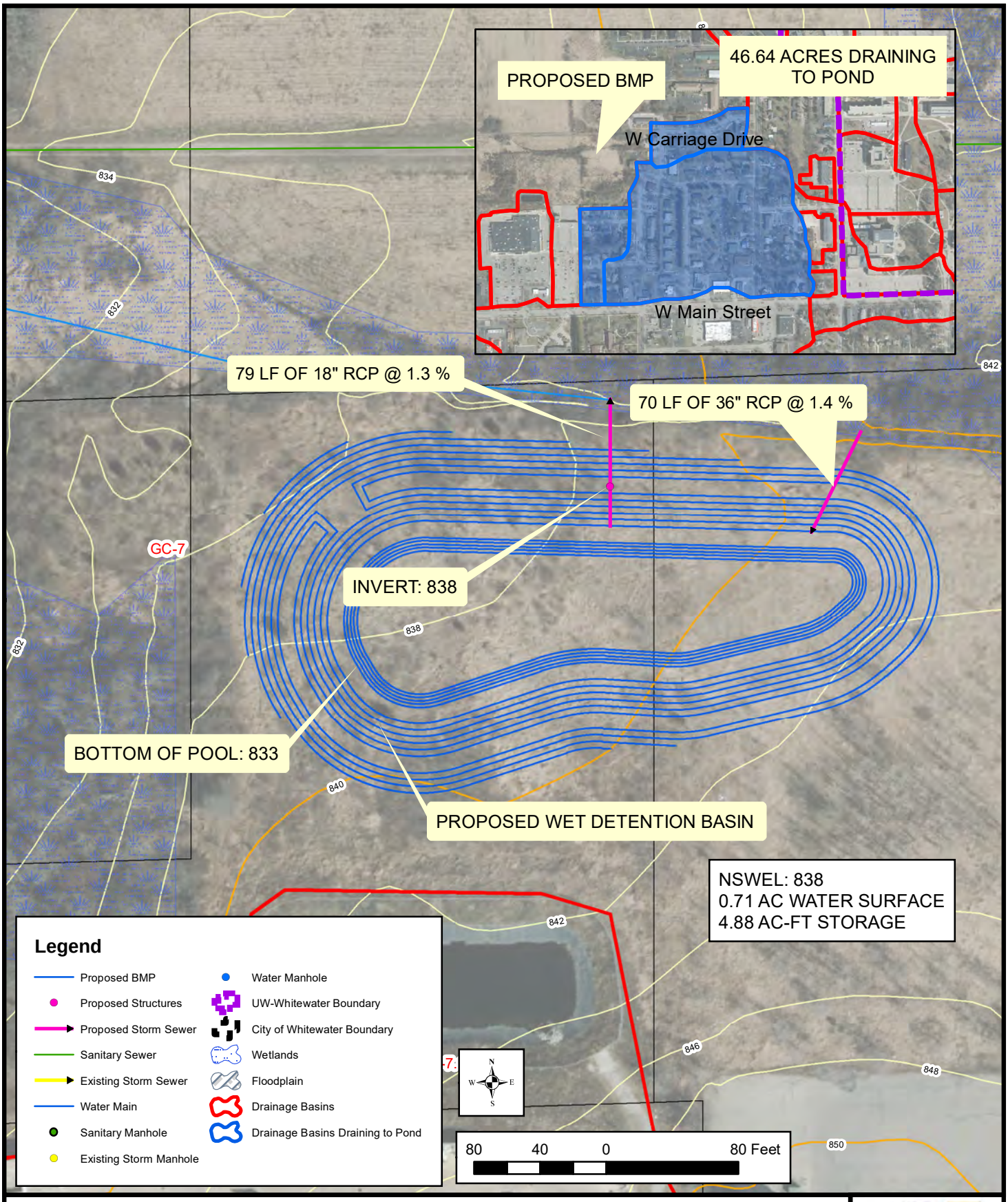
FIGURE M-2
1407.088



CARRIAGE DRIVE WET DETENTION POND (GC-7)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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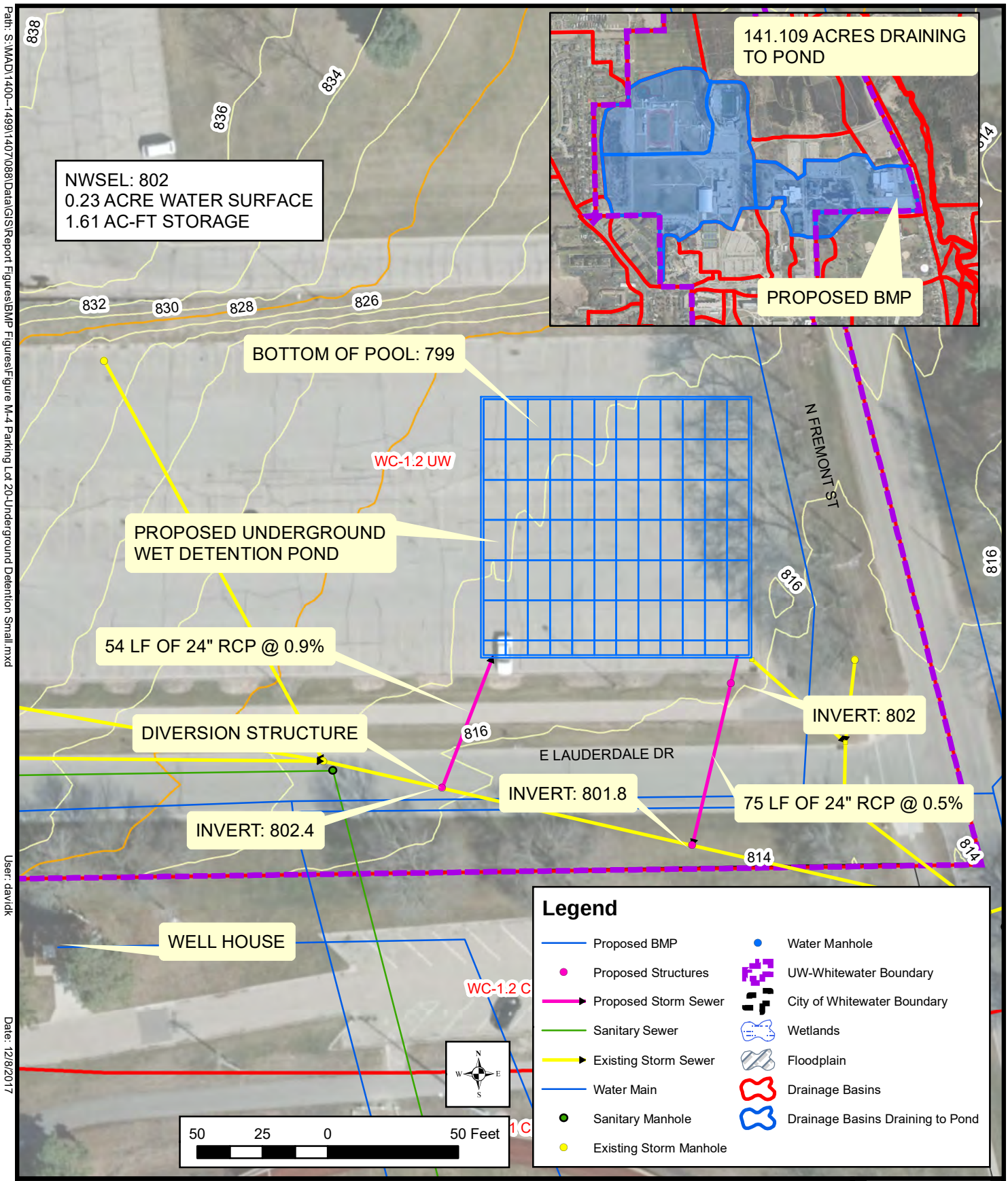
FIGURE M-3
1407.088



PARKING LOT 20 SMALL UNDERGROUND
WET DETENTION POND (WC-1.2 UW)
TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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FIGURE M-4
1407.088

Path: S:\MAD\1400–1499\1407\088\Data\GIS\Report Figures\BMP Figures\Figure M-4 Parking Lot 20-Underground Detention Small.mxd
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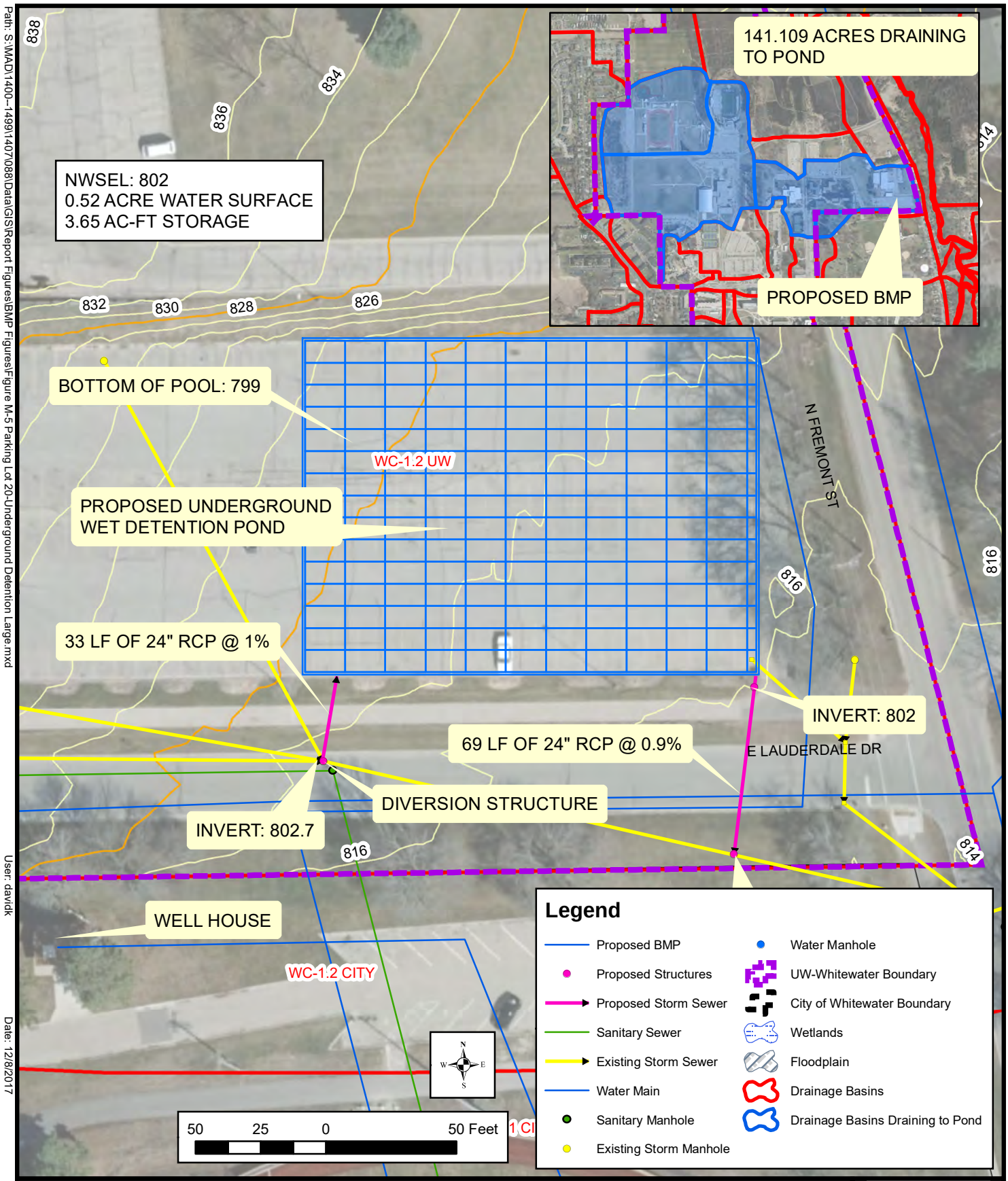

Path: S:\MAD\1400–1499\1407\088\Data\GIS\Report Figures\BMP Figures\Figure M-5 Parking Lot 20-Underground Detention Large.mxd

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PARKING LOT 20 LARGE UNDERGROUND WET DETENTION POND (WC-1.2 UW)

TMDL STORMWATER PLAN

CITY OF WHITEWATER

WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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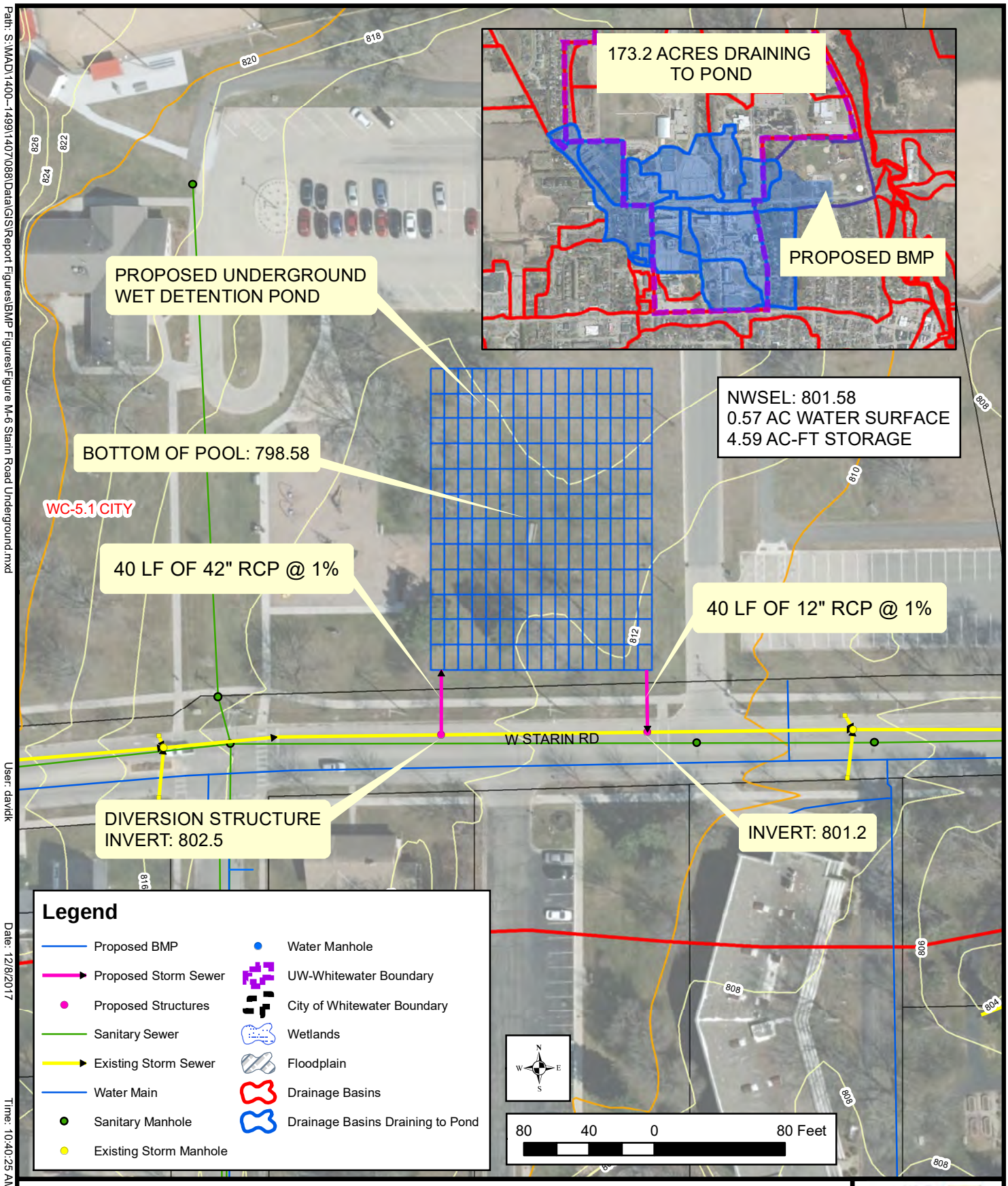
FIGURE M-5

1407.088



Path: S:\MAD\1400–1499\1407\088\Data\GIS\Report Figures\BMP Figures\Figure M-6 Starin Road Underground.mxd

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STARIN ROAD UNDERGROUND WET DETENTION POND (WC-5.1 CITY)

TMDL STORMWATER PLAN

CITY OF WHITEWATER

WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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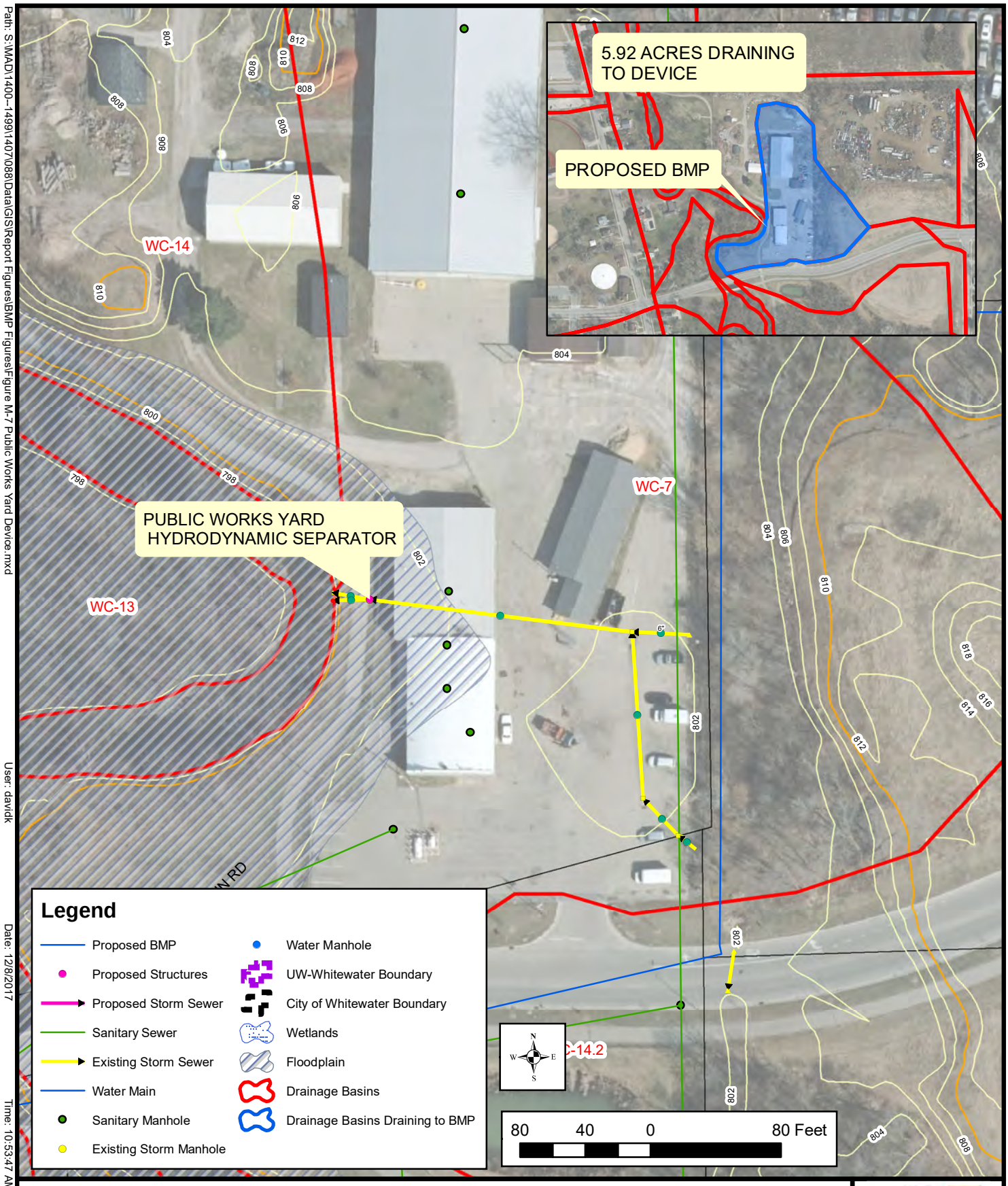
FIGURE M-6

1407.088



Path: S:\MAD\1400–1499\1407\088\Data\GIS\Report Figures\BMP Figures\Figure M-7 Public Works Yard Device.mxd

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PUBLIC WORKS YARD HYDRODYNAMIC SEPARATOR (WC-7)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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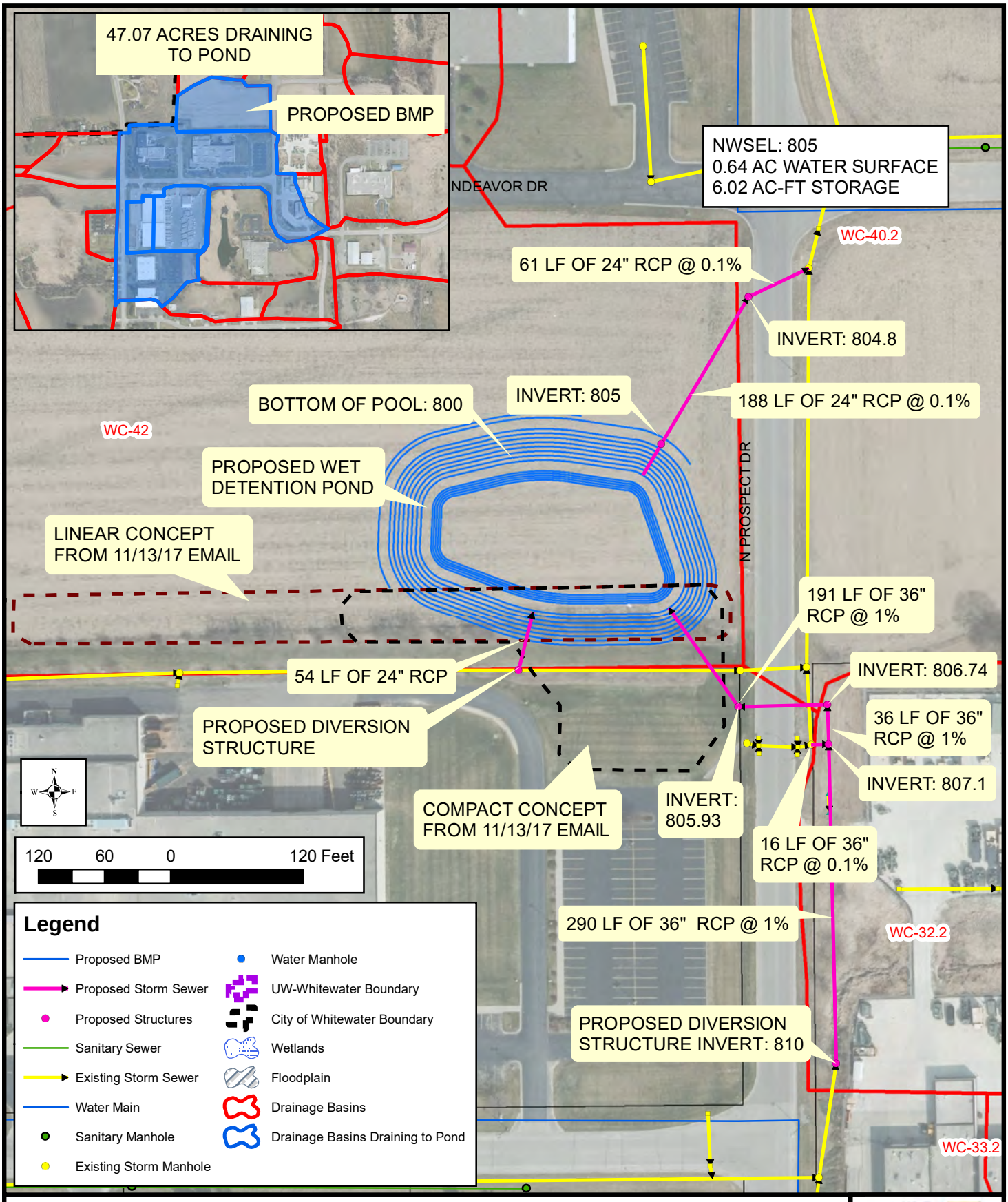
FIGURE M-7
1407.088



Path: S:\MAD\1400–1499\1407\088\Data\GIS\Report Figures\BMP Figures\Figure M-8 Armory Site.mxd

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ARMORY SITE WET DETENTION POND (WC-42)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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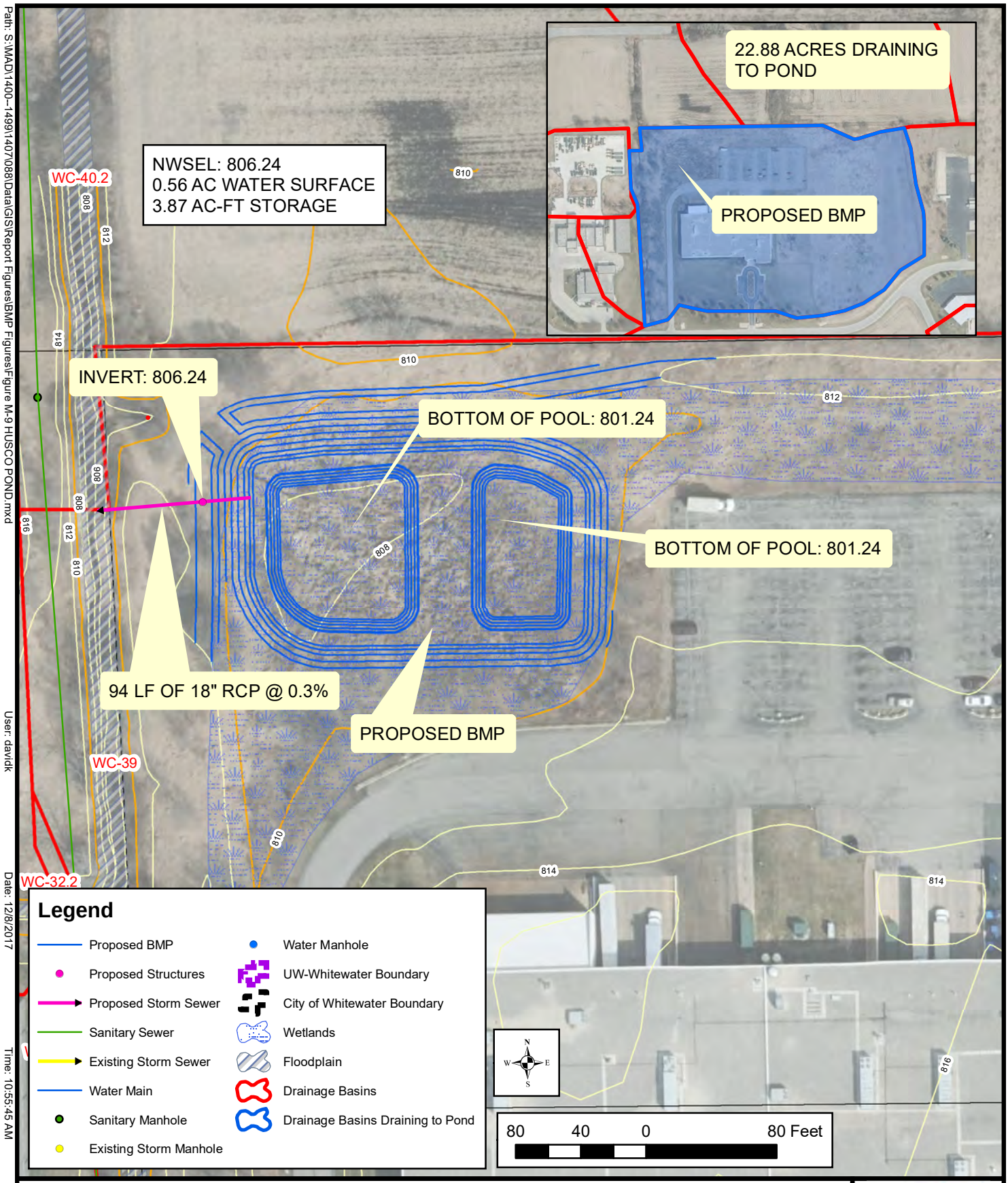
FIGURE M-8
1407.088



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Date: 12/8/2017

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HUSCO DRY TO WET DETENTION POND (WC-39)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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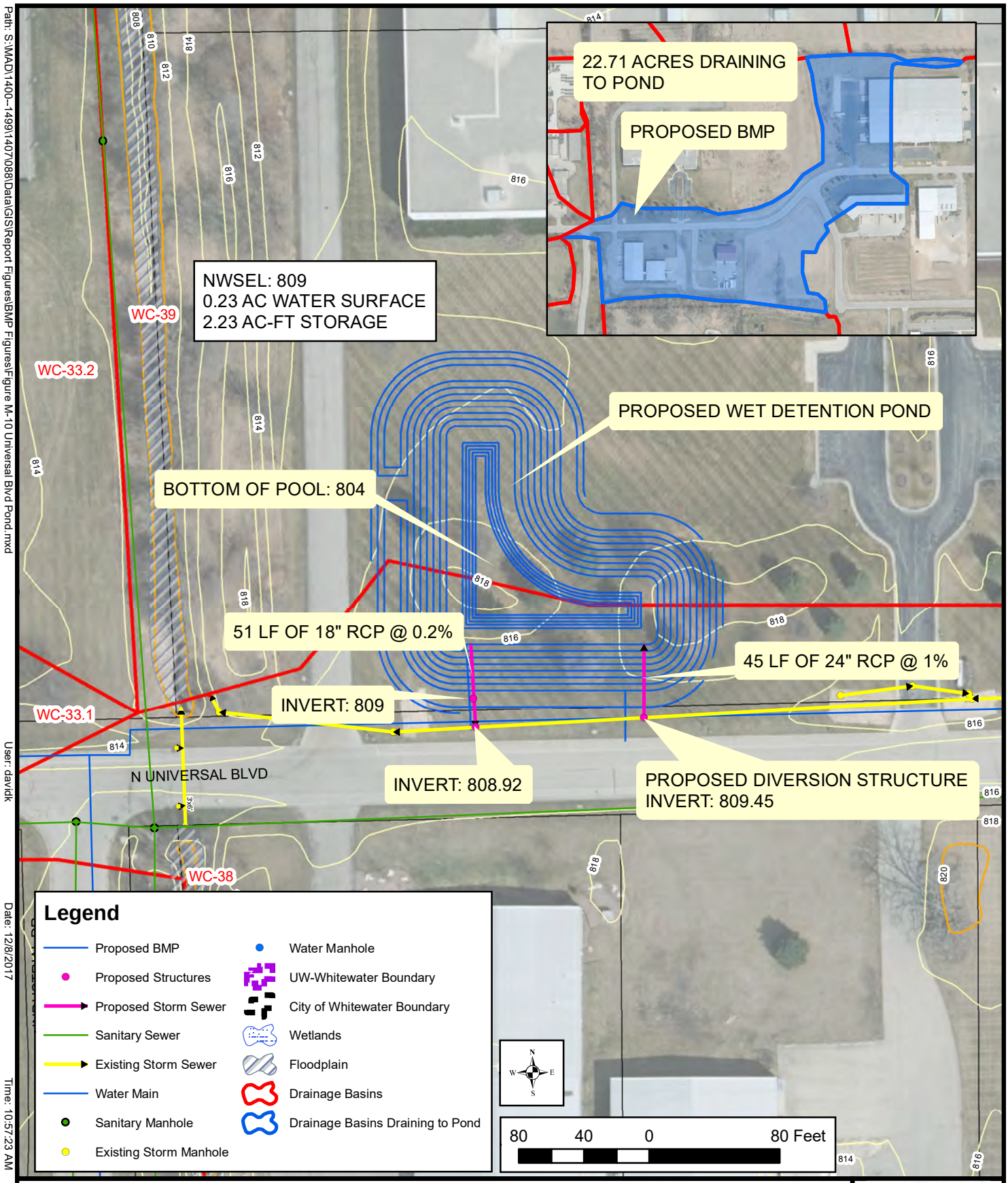
FIGURE M-9
1407.088



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Date: 12/8/2017

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UNIVERSAL BOULEVARD WET DETENTION POND (WC-38)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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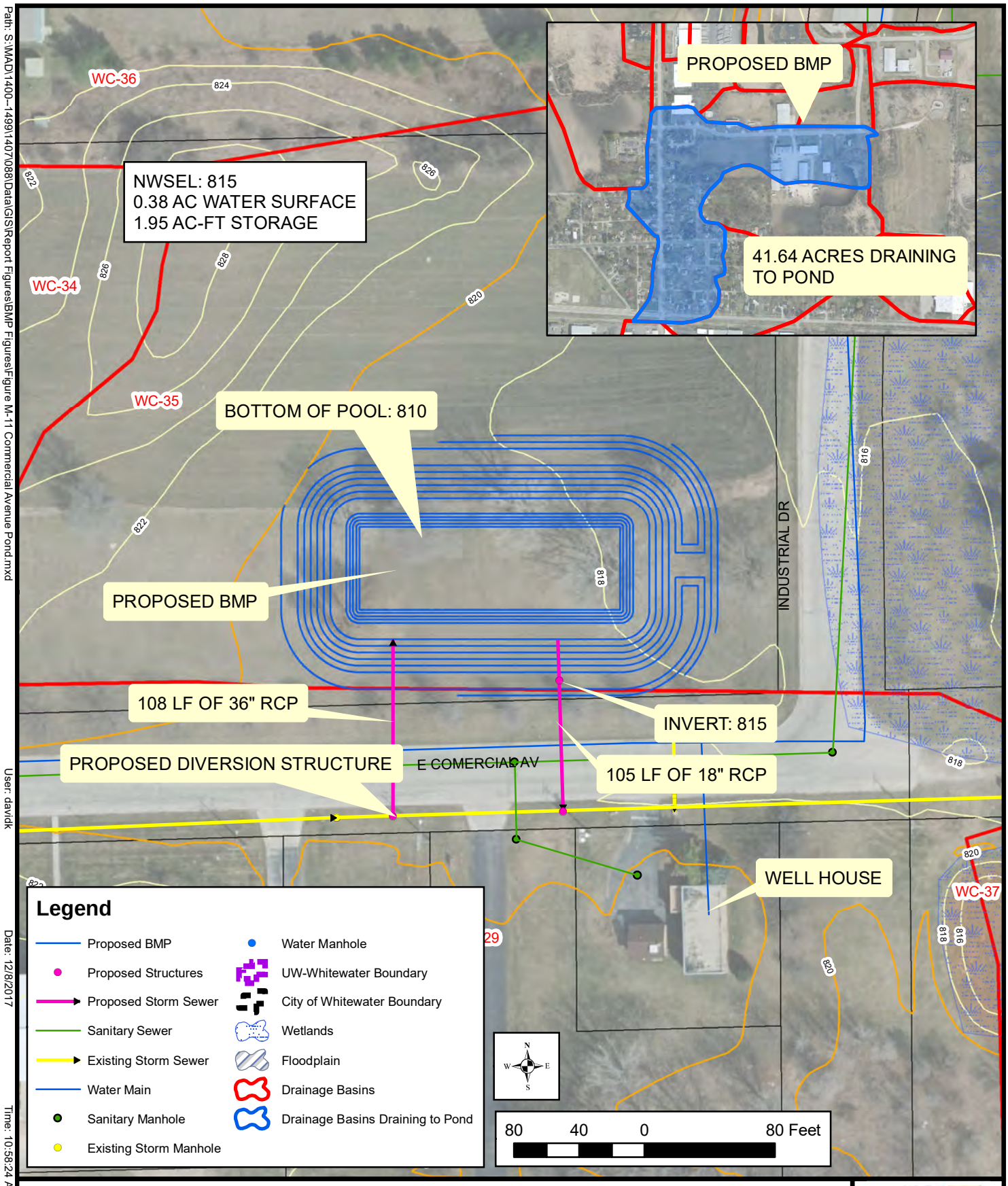
FIGURE M-10
1407.088



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COMMERCIAL AVENUE WET DETENTION POND (WC-35)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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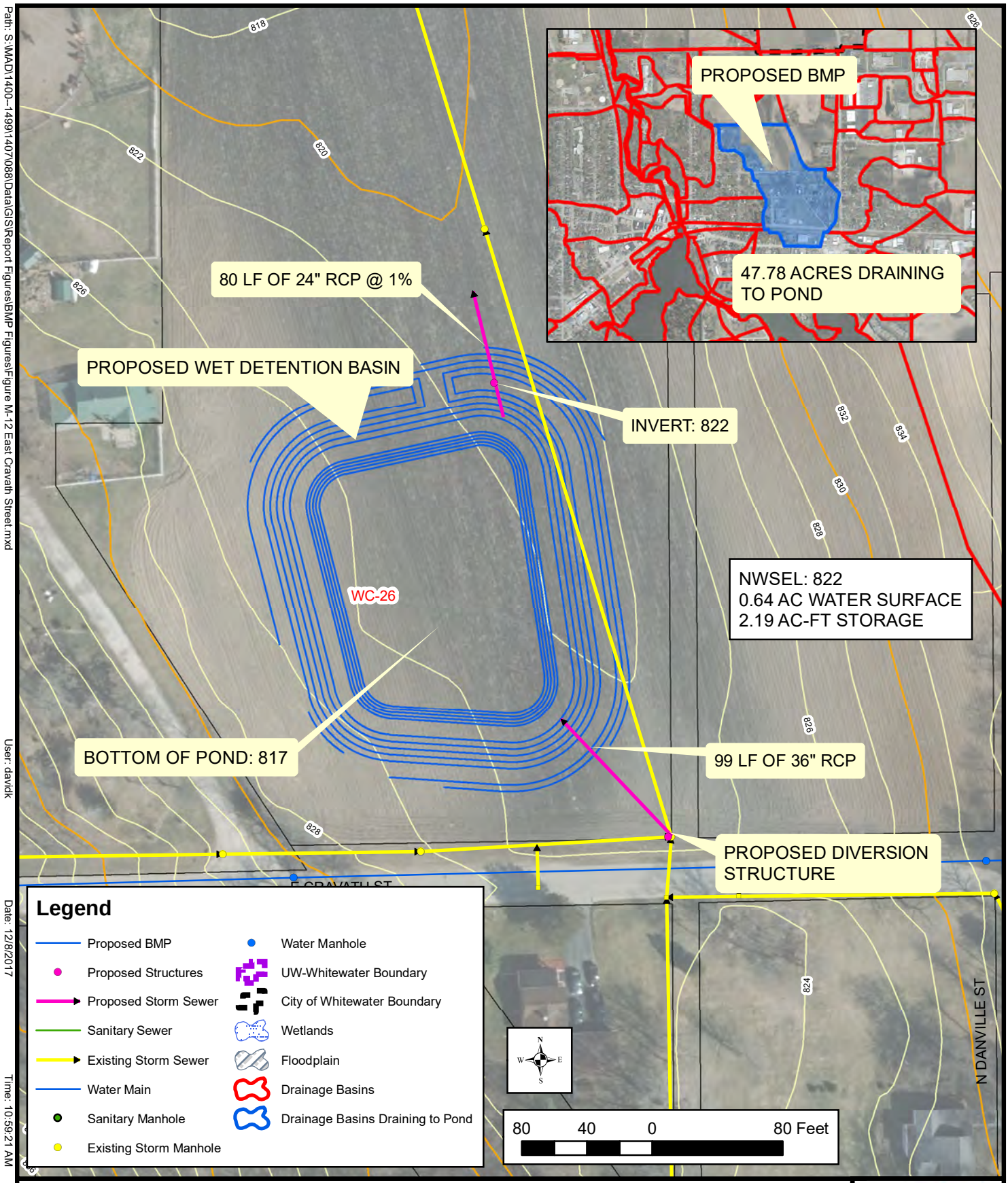
FIGURE M-11
1407.088



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EAST CRAVATH STREET WET DETENTION POND (WC-26)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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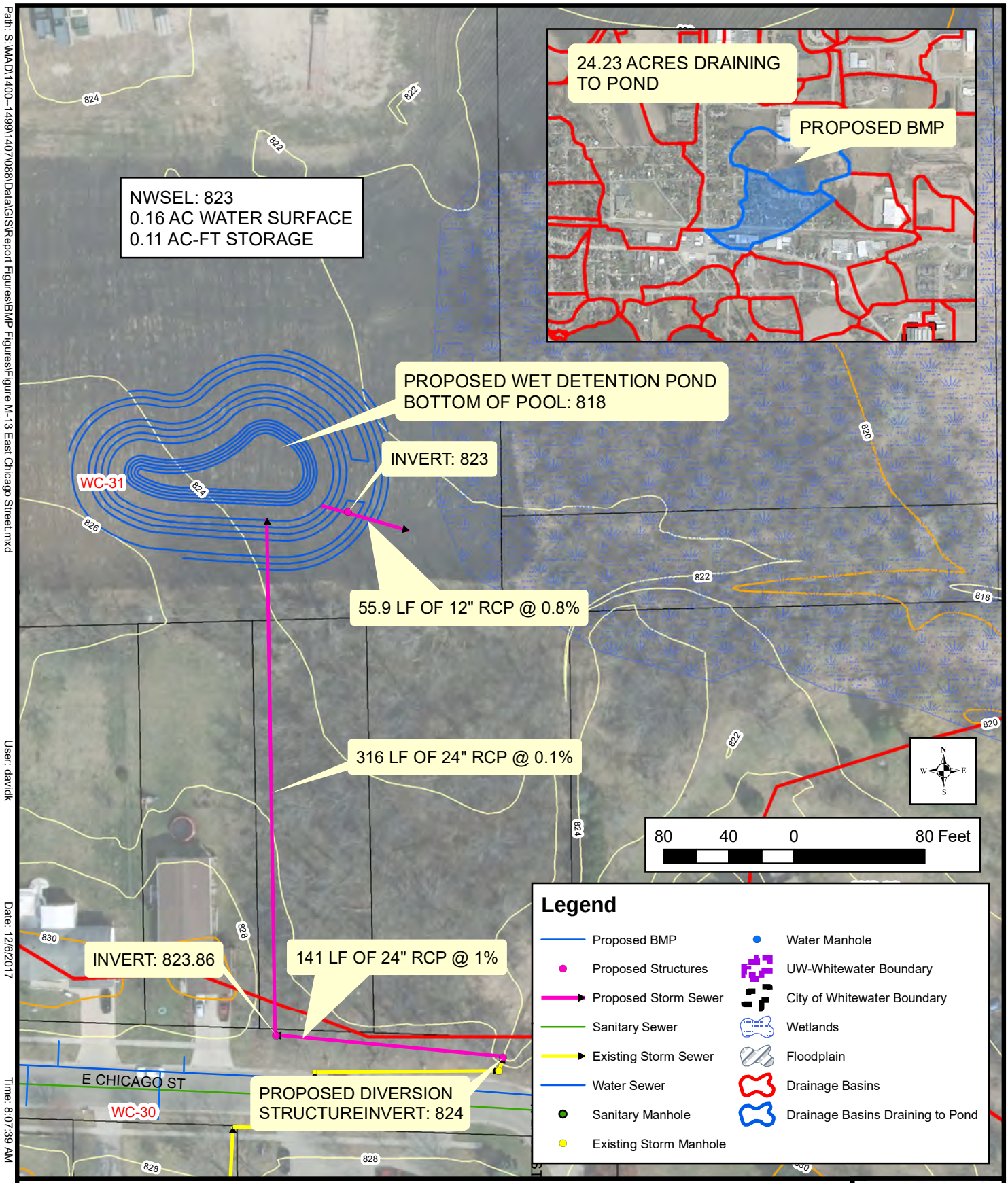
FIGURE M-12
1407.088



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Date: 12/6/2017

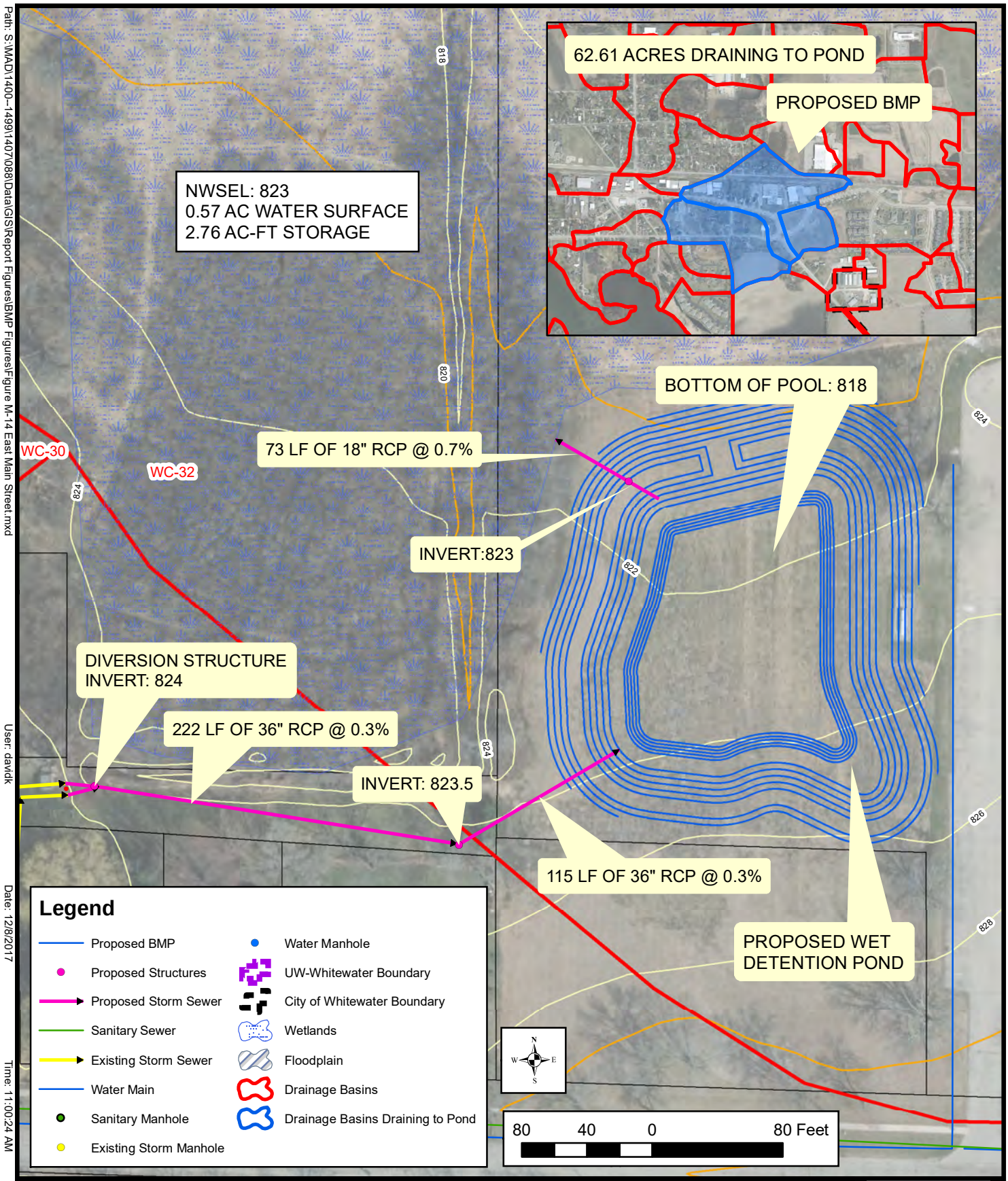
Time: 8:07:39 AM

EAST CHICAGO STREET WET DETENTION POND (WC-31)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

STRAND ASSOCIATES®

FIGURE M-13
1407.088



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Date: 12/8/2017

Time: 11:00:24 AM

EAST MAIN STREET WET DETENTION POND (WC-32)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

STRAND ASSOCIATES®

FIGURE M-14
1407.088

EAST NORTH STREET
HYDRODYNAMIC SEPARATOR

EAST MAIN STREET
HYDRODYNAMIC SEPARATOR

WEST MAIN STREET
HYDRODYNAMIC SEPARATOR

EAST MILWAUKEE STREET
HYDRODYNAMIC SEPARATOR

CRAVATH PARK
HYDRODYNAMIC SEPARATOR

SOUTH WISCONSIN STREET
HYDRODYNAMIC SEPARATOR

20.98 ACRES DRAINING TO DEVICE

PROPOSED BMP

PROPOSED BMP

17.12 ACRES DRAINING TO DEVICE

PROPOSED BMP

4.64 ACRES DRAINING TO DEVICE

PROPOSED BMP

12.83 ACRES DRAINING TO DEVICE

PROPOSED BMP

3.26 ACRES DRAINING TO DEVICE

12.04 ACRES DRAINING TO DEVICE

WC-11
WC-12.5
WC-12.1
WC-8
WC-10
WC-2 CITY
WC-9
CL-10
CL-8
CL-9
CL-7
CL-3
CL-2
CL-12
CL-1
CL-13
CL-15
CL-11

N GEORGE ST
W NORTH ST
N SECOND ST
N FIRST ST
N JEFFERSON ST
N CHERRY ST
W MAIN ST
W CENTER ST
W WHITEWATER ST
S SECOND ST
S FREMONT ST
WANN ST
S RIDGE ST
S WISCONSIN ST
S GREEN ST
E CLAY ST
E MILWAUKEE ST

200 100 0 200 Feet

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Legend

- Proposed BMP
- Proposed Structures
- Proposed Storm Sewer
- Sanitary Sewer
- Existing Storm Sewer
- Water Main
- Sanitary Manhole
- Existing Storm Manhole
- Water Manhole
- UW-Whitewater Boundary
- City of Whitewater Boundary
- Wetlands
- Floodplain
- Drainage Basins
- Drainage Basins Draining to BMP

DOWNTOWN HYDRODYNAMIC SEPARATORS

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

STRAND ASSOCIATES®

M-15
1407.088

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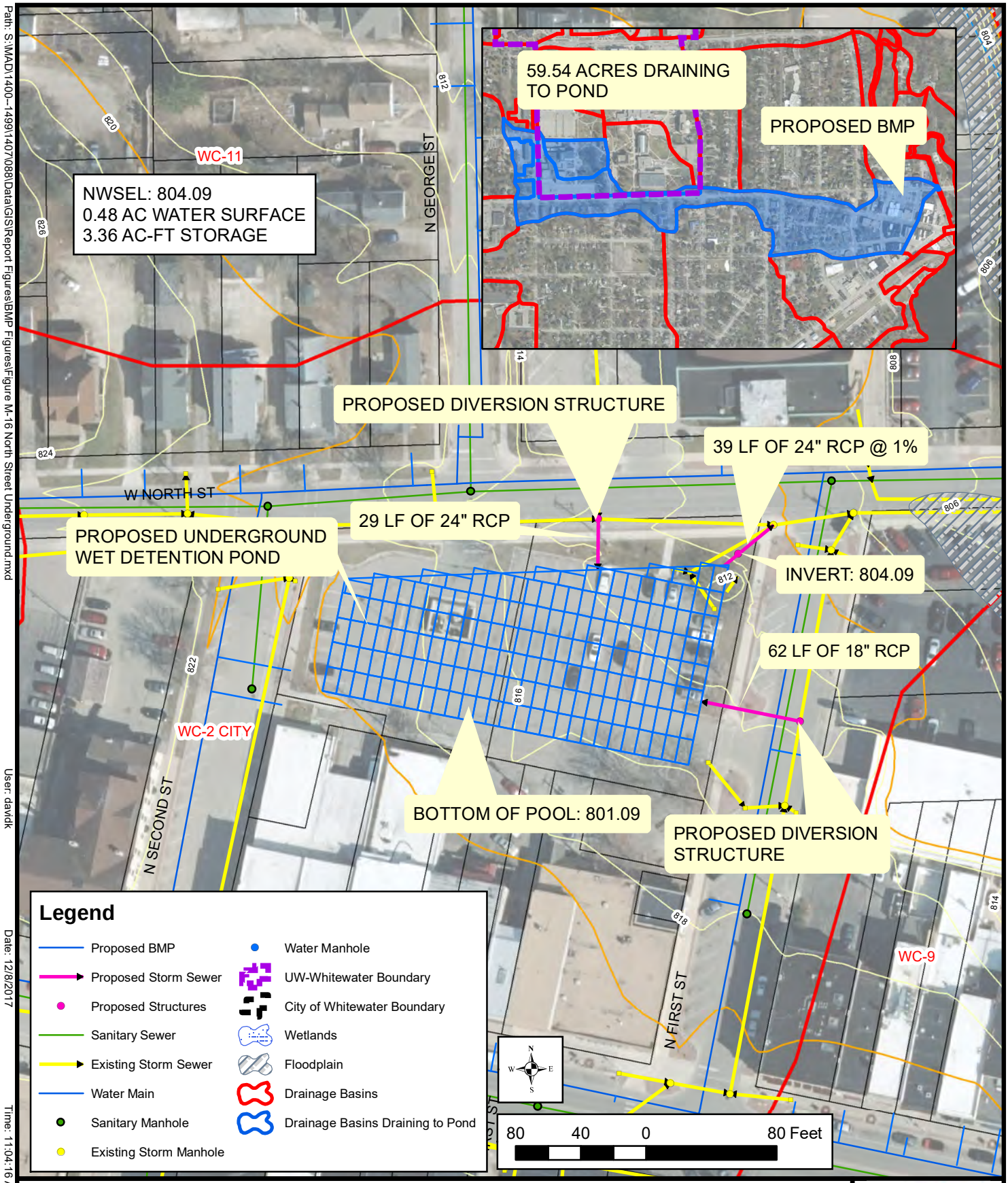

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User: davidk

Date: 12/8/2017

Time: 11:04:16 AM

NORTH STREET UNDERGROUND WET DETENTION POND (WC-21 CITY)

TMDL STORMWATER PLAN

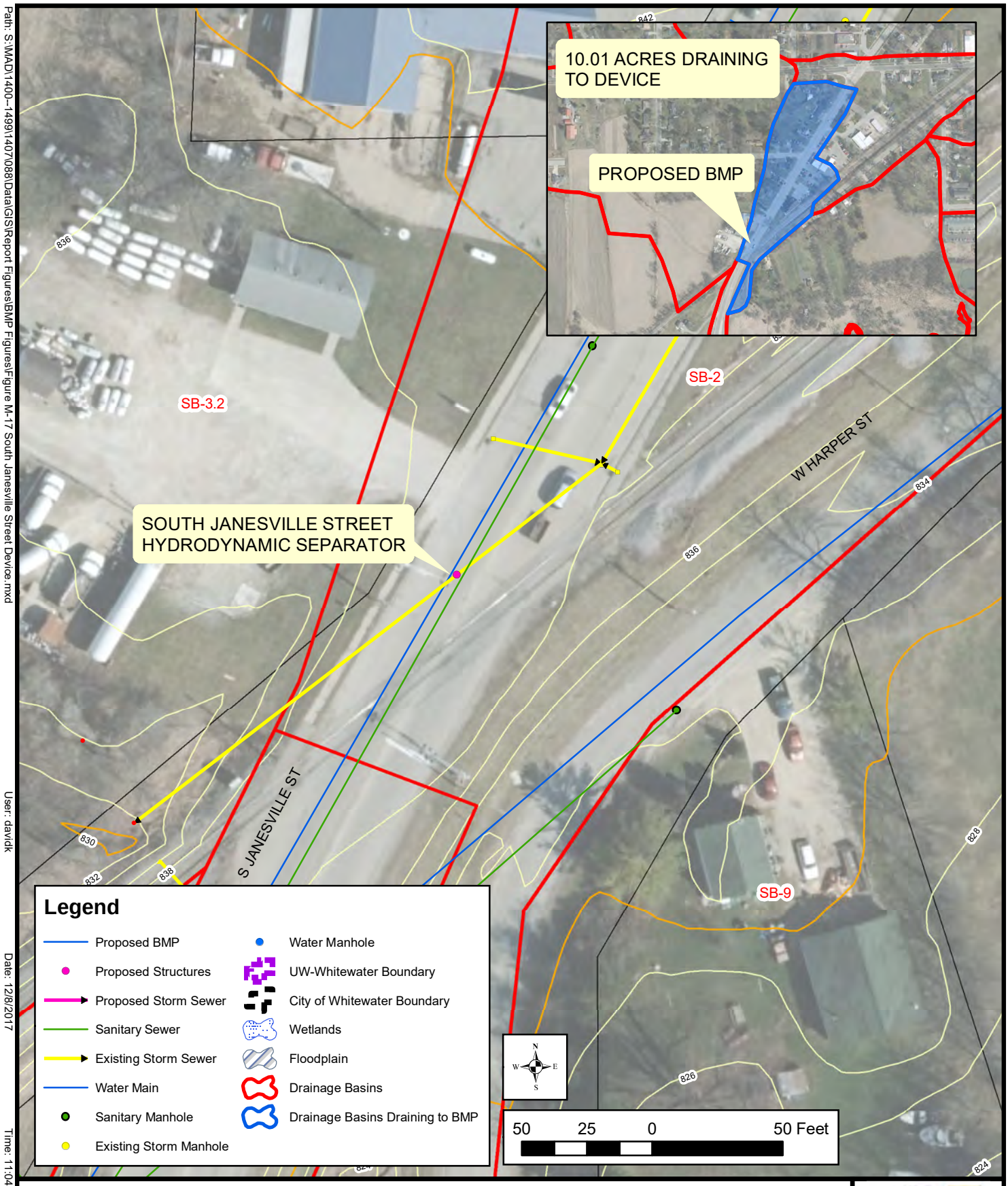
CITY OF WHITEWATER

WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

STRAND ASSOCIATES®

FIGURE M-16

1407.088



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User: davidk

Date: 12/8/2017

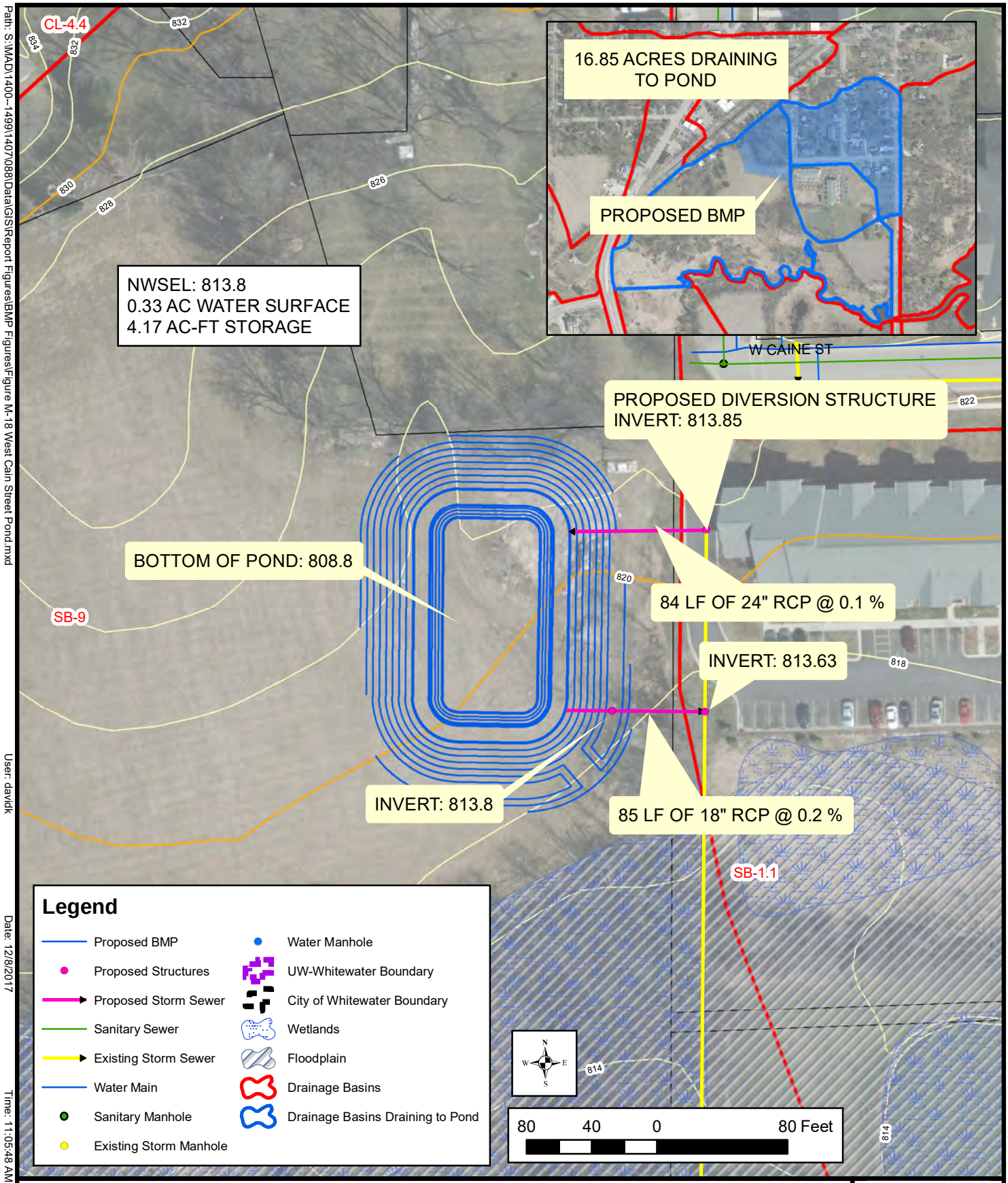
Time: 11:04:47 AM

SOUTH JANESVILLE STREET HYDRODYNAMIC SEPARATOR (SB-2)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

STRAND ASSOCIATES®

FIGURE M-17
1407.088



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User: davidk

Date: 12/8/2017

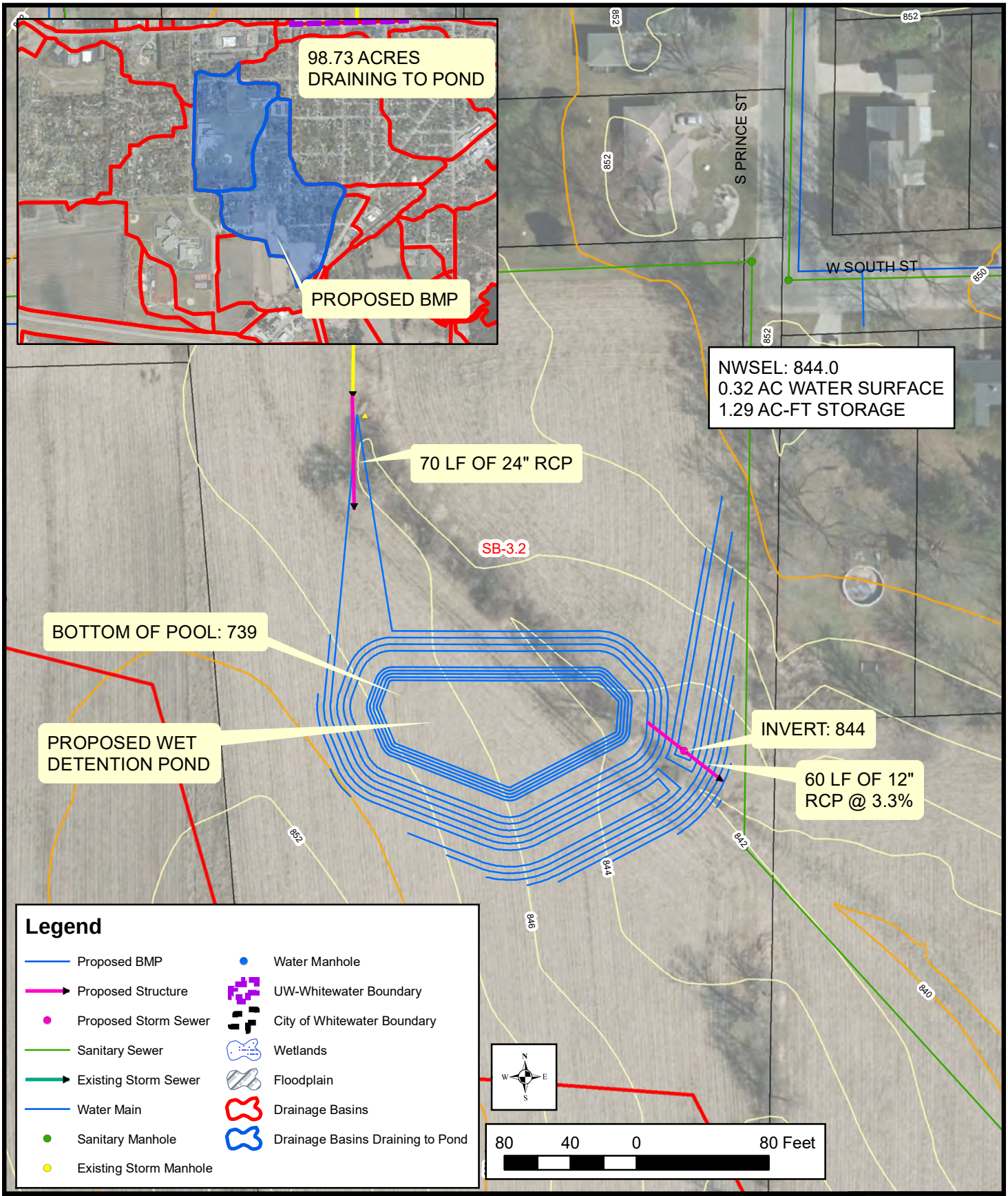
Time: 11:05:48 AM

WEST CAINE STREET WET DETENTION POND (SB-9)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

STRAND ASSOCIATES®

FIGURE M-18
1407.088



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User: davidk

Date: 12/8/2017

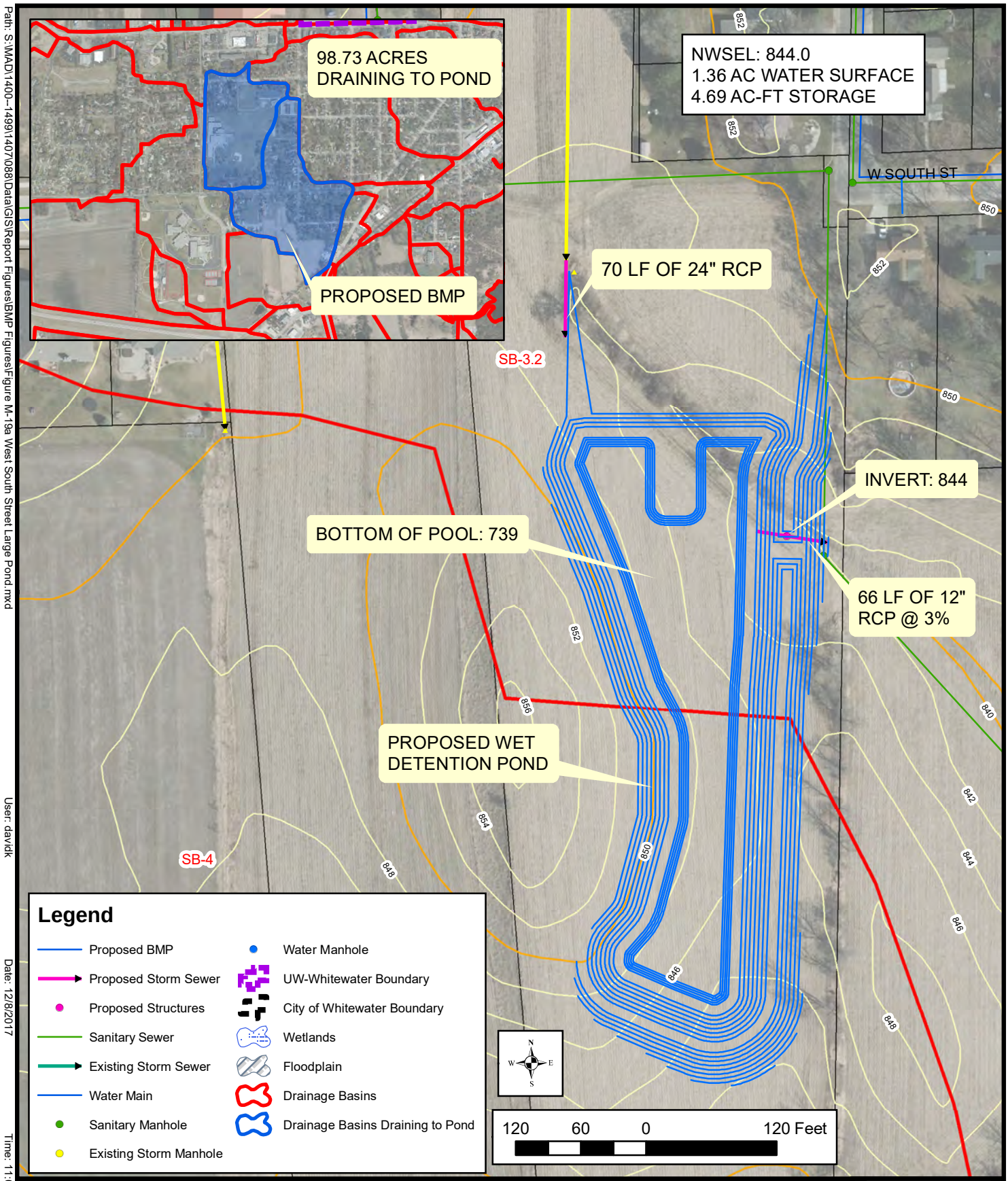
Time: 11:06:47 AM

WEST SOUTH STREET SMALL WET DETENTION POND (SB-3.2)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

STRAND ASSOCIATES®

FIGURE M-19
1407.088



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User: davidk

Date: 12/8/2017

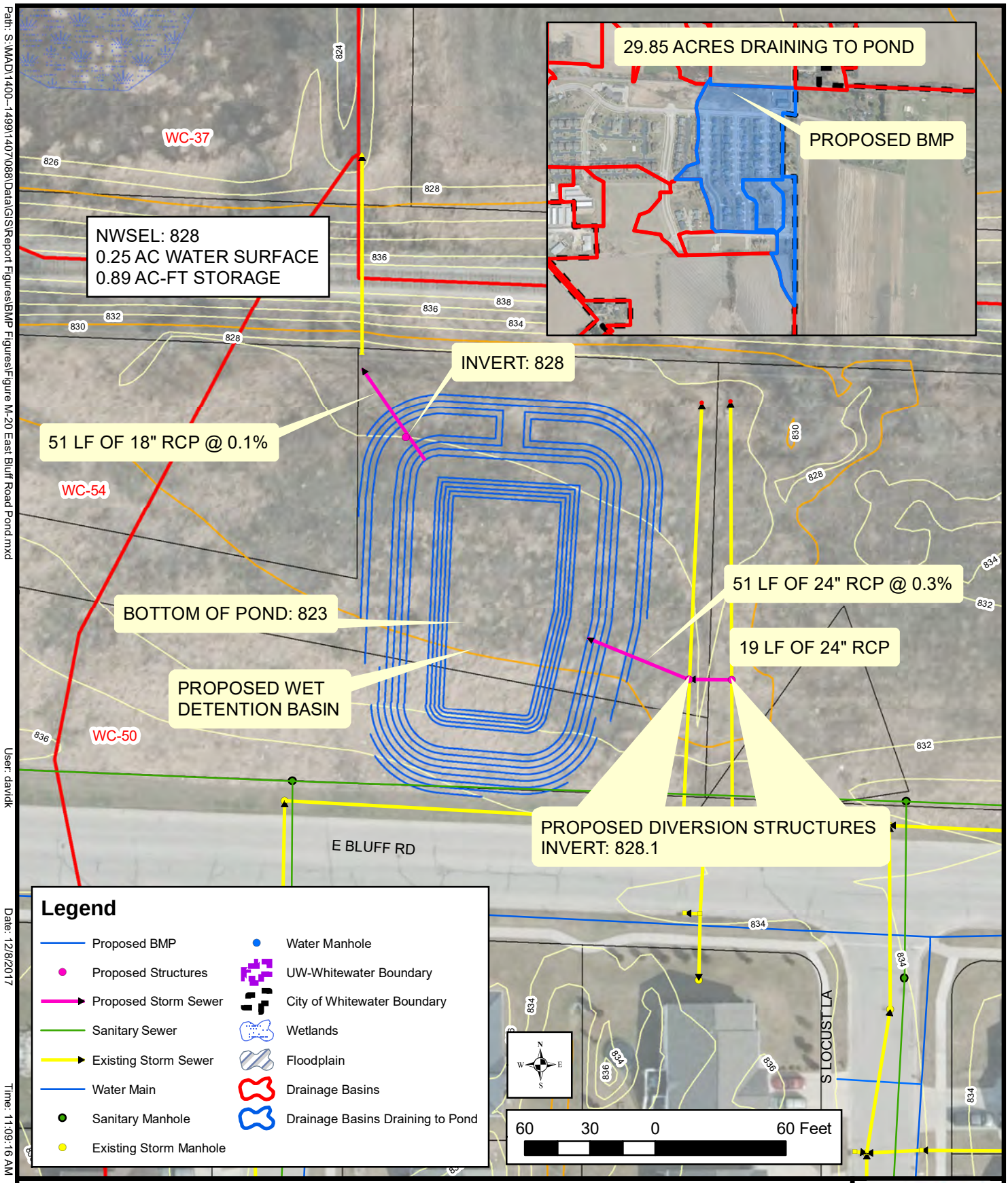
Time: 11:06:38 AM

WEST SOUTH STREET LARGE WET DETENTION POND (SB-3.2)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

STRAND ASSOCIATES®

FIGURE M-19a
1407.088



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User: davidk

Date: 12/8/2017

Time: 11:09:16 AM

EAST BLUFF ROAD WET DETENTION POND (WC-50)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

STRAND ASSOCIATES®

FIGURE M-20
1407.088

APPENDIX N
CITY OPCCS

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Mound Meadows Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$6,800	$6,800
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	1	EA	$185.00	$185
9	Stone Weeper at Outfall	1	EA	$225.00	$225
10	Silt Fence	200	LF	$3.00	$600
11	Unclassified Excavation	4,379	CY	$30.00	$131,370
12	Clay Liner	646	CY	$27.00	$17,448
13	Clay Bedding Dike	1	EA	$450.00	$450
14	21" RCP	146	LF	$75.00	$10,950
15	24" RCP	306	LF	$80.00	$24,480
16	36" RCP	59	LF	$115.00	$6,785
17	21" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,675.00	$2,675
18	24" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,850.00	$2,850
19	36" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$3,700.00	$3,700
20	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
21	Diversion Structure (8-FT DIA)	2	EA	$7,000.00	$14,000
22	Storm Sewer Manhole (5-FT DIA)	2	EA	$2,700.00	$5,400
23	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	33	SY	$60.00	$2,000
24	6-IN Salvaged Topsoil Placement 75%	2,651	SY	$2.50	$6,628
25	6-IN Hauled-In Topsoil Placement 25%	884	SY	$5.00	$4,419
26	Erosion Control Mat - Class 2, Urban Type B	3,535	SY	$2.25	$7,954
27	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
28	Native Plugs at Water's Edge (2 per lf around pond perimeter)	576	EA	$7.00	$4,032
29	Wet Edge Seed Mix (Elevation 838 to 840)	279	SY	$2.75	$766
30	Low Mow Seed Mix w/Natives (840 to Limits of Disturbance)	3,256	SY	$1.75	$5,699

Subtotal Project Cost	**$279,900**
Contingency and Technical Services Allowance (25%)	**$69,975**
Geotechnical Investigation	**$5,000**
Total Project Cost	**$354,875**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
DLK/Main Street Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$6,300	$6,300
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	3	EA	$185.00	$555
9	Stone Weeper at Outfall	1	EA	$225.00	$225
10	Silt Fence	450	LF	$3.00	$1,350
11	Unclassified Excavation	1,655	CY	$35.00	$57,938
12	Embankment Fill (Move and Recompact Excavated Material))	1,085	CY	$5.00	$5,425
13	Clay Liner	911	CY	$30.00	$27,326
14	Clay Bedding Dike	1	EA	$450.00	$450
15	15" PVC	482	LF	$120.00	$57,840
16	12" RCP	55	LF	$60.00	$3,300
17	30" RCP	67	LF	$90.00	$6,030
18	12" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,000.00	$2,000
19	30" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$3,200.00	$3,200
20	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
21	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
22	Sanitary Sewer Manhole (4-FT DIA)	3	EA	$2,900.00	$8,700
23	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	22	SY	$60.00	$1,333
24	6-IN Salvaged Topsoil Placement 75%	4,317	SY	$2.50	$10,791
25	6-IN Hauled-In Topsoil Placement 25%	1,439	SY	$5.00	$7,194
26	Erosion Control Mat - Class 2, Urban Type B	5,755	SY	$2.25	$12,950
27	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
28	Native Plugs at Water's Edge (2 per lf around pond perimeter)	1,074	EA	$7.00	$7,518
29	Wet Edge Seed Mix (Elevation 835 to 837)	370	SY	$2.75	$1,018
30	Low Mow Seed Mix w/Natives (837 to Limits of Disturbance)	5,385	SY	$1.75	$9,424
			Subtotal Project Cost		**$258,400**
			Contingency and Technical Services Allowance (25%)		**$64,600**
			Geotechnical Investigation		**$5,000**
				Total Project Cost	**$328,000**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Carriage Lane Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$10,600	$10,600
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	3	EA	$185.00	$555
9	Stone Weeper at Outfall	1	EA	$225.00	$225
10	Silt Fence	600	LF	$3.00	$1,800
11	Unclassified Excavation	8,042	CY	$25.00	$201,050
12	Embankment Fill (Move and Recompact Excavated Material))	1,485	CY	$5.00	$7,426
13	Clay Liner	3,017	CY	$23.50	$70,908
14	Clay Bedding Dike	1	EA	$450.00	$450
15	18" RCP	79	LF	$70.00	$5,530
16	36" RCP	70	LF	$115.00	$8,050
17	18" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,500.00	$2,500
18	36" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$3,700.00	$3,700
19	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
20	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
21	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	22	SY	$60.00	$1,333
22	6-IN Salvaged Topsoil Placement 75%	8,365	SY	$2.50	$20,913
23	6-IN Hauled-In Topsoil Placement 25%	2,788	SY	$5.00	$13,942
24	Erosion Control Mat - Class 2, Urban Type B	11,153	SY	$2.25	$25,095
25	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
26	Native Plugs at Water's Edge (2 per lf around pond perimeter)	1,576	EA	$7.00	$11,030
27	Wet Edge Seed Mix (Elevation 838 to 840)	723	SY	$2.75	$1,987
28	Low Mow Seed Mix w/Natives (840 to Limits of Disturbance)	10,431	SY	$1.75	$18,254
		Subtotal Project Cost			**$432,800**
		Contingency and Technical Services Allowance (25%)			**$108,200**
		Geotechnical Investigation			**$7,500**
				Total Project Cost	**$548,500**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Parking Lot 20 Underground Wet Detention Pond - Small

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$22,700	$22,700
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	2	EA	$185.00	$370
9	Silt Fence	400	LF	$3.00	$1,200
10	Unclassified Excavation (Off-site Disposal)	6,326	CY	$35.00	$221,411
11	Unclassified Excavation (On-site Reuse)	3,196	CY	$7.00	$22,372
12	Units (8'-6" Stormtrap Unit + Delivery + Joint Tape + Joint Wrap)	1	LS	$350,000.00	$350,000
13	Install Units	60	EA	$250.00	$15,000
14	Backfill (Around and To Top of Unit)	1,555	CY	$35.00	$54,413
15	Backfill - Compacted Insitu (Over Unit to Ground With Reused Material)	3,196	CY	$7.00	$22,372
16	Stone Beneath Units	207	CY	$35.00	$7,245
17	Liner	1	LS	$26,000.00	$26,000
18	24" RCP	129	LF	$80.00	$10,320
19	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
20	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
21	Storm Sewer Manhole (6-FT DIA)	1	EA	$2,700.00	$2,700
22	Asphalt Removal	1,992	SY	$6.00	$11,951
23	Sawcut	398	LF	$4.00	$1,593
24	Asphalt	478	TON	$220.00	$105,166
25	Basecourse (assume 12")	1,328	TON	$22.00	$29,213
26	6-IN Salvaged Topsoil Placement 75%	140	SY	$2.50	$349
27	6-IN Hauled-In Topsoil Placement 25%	47	SY	$5.00	$233
28	Erosion Control Mat - Class 2, Urban Type B	186	SY	$2.25	$419
29	Low Mow Seed Mix w/Natives (Area not restored with pavement)	186	SY	$1.75	$326
				Subtotal Project Cost	**$931,000**
				Contingency and Technical Services Allowance (25%)	**$232,750**
				Geotechnical Investigation	**$5,000**
				Total Project Cost	**$1,168,750**
			1%	**City Portion**	**$11,688**
			99%	**UW Portion**	**$1,157,063**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Parking Lot 20 Underground Wet Detention Pond - Large

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$40,700	$40,700
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	2	EA	$185.00	$370
9	Silt Fence	490	LF	$3.00	$1,470
10	Unclassified Excavation (Off-site Disposal)	12,562	CY	$25.00	$314,053
11	Unclassified Excavation (On-site Reuse)	5,359	CY	$7.00	$37,512
12	Units (8'-6" Stormtrap Unit + Delivery + Joint Tape + Joint Wrap)	1	LS	$750,000.00	$750,000
13	Install Units	178	EA	$250.00	$44,500
14	Backfill (Around and To Top of Unit)	2,667	CY	$35.00	$93,331
15	Backfill - Compacted Insitu (Over Unit to Ground With Reused Material)	5,359	CY	$7.00	$37,512
16	Sub Grade	431	CY	$35.00	$15,085
17	Liner	1	LS	$45,000.00	$45,000
18	24" RCP	102	LF	$80.00	$8,160
19	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
20	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
21	Storm Sewer Manhole (6-FT DIA)	1	EA	$2,700.00	$2,700
22	Asphalt Removal	2,947	SY	$6.00	$17,680
23	Sawcut	589	LF	$4.00	$2,357
24	Asphalt	707	TON	$220.00	$155,584
25	Basecourse (assume 12")	1,964	TON	$22.00	$43,218
26	Sidewalk Removal	458	SY	$3.00	$1,373
27	Sidewalk Restoration	458	SY	$55.00	$25,172
28	6-IN Salvaged Topsoil Placement 75%	817	SY	$2.50	$2,041
29	6-IN Hauled-In Topsoil Placement 25%	272	SY	$5.00	$1,361
30	Erosion Control Mat - Class 2, Urban Type B	1,089	SY	$2.25	$2,450
31	Low Mow Seed Mix w/Natives (Area not restored with pavement)	1,089	SY	$1.75	$1,905

Subtotal Project Cost		**$1,669,100**
Contingency and Technical Services Allowance (25%)		**$417,275**
Geotechnical Investigation		**$7,500**
	Total Project Cost	**$2,093,875**
1%	**City Portion**	**$20,939**
99%	**UW Portion**	**$2,072,936**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Starin Road Underground Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$35,200	$35,200
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	2	EA	$185.00	$370
9	Silt Fence	490	LF	$3.00	$1,470
10	Unclassified Excavation (Off-site Disposal)	11,436	CY	$25.00	$285,891
11	Unclassified Excavation (On-site Reuse)	5,722	CY	$7.00	$40,056
12	Units (8'-4" Stormtrap Unit + Delivery + Joint Tape + Joint Wrap)	1	LS	$769,479.00	$769,479
13	Install Units	194	EA	$250.00	$48,500
14	Backfill (Around and To Top of Unit)	2,271	CY	$35.00	$79,485
15	Backfill - Compacted Insitu (Over Unit to Ground With Reused Material)	5,722	CY	$7.00	$40,056
16	Sub Grade	470	CY	$35.00	$16,450
17	Liner	1	LS	$55,000.00	$55,000
18	12" RCP	40	LF	$60.00	$2,400
19	42" RCP	40	LF	$140.00	$5,600
20	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
21	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
22	Storm Sewer Manhole (6-FT DIA)	1	EA	$2,700.00	$2,700
23	6-IN Salvaged Topsoil Placement 75%	3,632	SY	$2.50	$9,079
24	6-IN Hauled-In Topsoil Placement 25%	1,211	SY	$5.00	$6,053
25	Erosion Control Mat - Class 2, Urban Type B	4,842	SY	$2.25	$10,895
26	Low Mow Seed Mix w/Natives (Area not restored with pavement)	4,842	SY	$1.75	$8,474

Subtotal Project Cost			**$1,442,800**
Contingency and Technical Services Allowance (25%)			**$360,700**
Geotechnical Investigation			**$7,500**
		Total Project Cost	**$1,811,000**
34%		**City Portion**	**$622,924**
66%		**UW Portion**	**$1,188,076**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Public Works Yard Hydrodynamic Device

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$800	$800
2	Construction Layout	1	LS	$1,500.00	$1,500
3	Clearing and Grubbing	0.00	ACRE	$8,000.00	$0
4	Traffic Control	1	LS	$0.00	$0
5	Dust Control	1	EA	$500.00	$500
6	Silt Fence	100	LF	$3.00	$300
7	Unclassified Excavation	102	CY	$35.00	$3,575
8	Stormceptor (STC-1200)	1	LS	$15,000.00	$15,000
9	Stormceptor (markup and installation-65% addition)	0.65	LS	$15,000.00	$9,750
10	Anti-Seep Collar	1	EA	$1,100.00	$1,100
11	Pipe Removal	15	LF	$22.00	$330
12	12" RCP	15	LF	$60.00	$900
13	6-IN Salvaged Topsoil Placement 75%	19	SY	$2.50	$48
14	6-IN Hauled-In Topsoil Placement 25%	6	SY	$5.00	$32
15	Erosion Control Mat - Class 2, Urban Type B	26	SY	$2.25	$58
16	Low Mow Seed Mix w/Natives	26	SY	$1.75	$45
				Subtotal Project Cost	**$33,900**
				Contingency and Technical Services Allowance (25%)	**$8,475**
				Geotechnical Investigation	**$2,500**
				Total Project Cost	**$44,875**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Armory Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
2	Dewatering	1	LS	$5,000.00	$5,000
3	Dust Control	1	EA	$500.00	$500
4	Stone Tracking Pad	1	EA	$2,900.00	$2,900
5	Inlet Protection	6	EA	$185.00	$1,110
6	Silt Fence	1,021	LF	$3.00	$3,063
7	Unclassified Excavation	15,211	CY	$10.00	$152,110
8	Clay Liner	2,686	CY	$15.00	$40,295
9	Clay Bedding Dike	1	EA	$450.00	$450
10	24" RCP	303	LF	$80.00	$24,240
11	36" RCP	533	LF	$112.00	$59,696
12	24" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,850.00	$2,850
13	36" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$3,700.00	$3,700
14	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
15	Diversion Structure (8-FT DIA)	2	EA	$7,000.00	$14,000
16	Storm Sewer Manhole (4-FT DIA)	4	EA	$2,700.00	$10,800
17	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	22	SY	$60.00	$1,333
18	6-IN Salvaged Topsoil Placement 75%	6,398	SY	$2.50	$15,995
19	6-IN Hauled-In Topsoil Placement 25%	2,133	SY	$5.00	$10,663
20	Erosion Control Mat - Class 2, Urban Type B	8,531	SY	$2.25	$19,194
21	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
22	Wet Edge Seed Mix (Elevation 805 to 807)	590	SY	$2.75	$1,624
23	Low Mow Seed Mix w/Natives (807 to Limits of Disturbance)	7,940	SY	$1.75	$13,895

Subtotal Project Cost	**$390,500**
Contingency and Technical Services Allowance (25%)	**$97,625**
Geotechnical Investigation	**$5,000**
Total Project Cost	**$493,125**

grant amount	**$416,500**
difference	$76,625

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
HUSCO Dry to Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$8,500	$8,500
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Stone Weeper at Outfall	1	EA	$225.00	$225
9	Silt Fence	550	LF	$3.00	$1,650
10	Unclassified Excavation	7,484	CY	$25.00	$187,100
11	Clay Liner	2,402	CY	$23.50	$56,447
12	Clay Bedding Dike	1	EA	$450.00	$450
13	18" RCP	94	LF	$70.00	$6,580
14	18" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,500.00	$2,500
15	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
16	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	11	SY	$60.00	$667
17	6-IN Salvaged Topsoil Placement 75%	5,784	SY	$2.50	$14,461
18	6-IN Hauled-In Topsoil Placement 25%	1,928	SY	$5.00	$9,641
19	Erosion Control Mat - Class 2, Urban Type B	7,712	SY	$2.25	$17,353
20	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
21	Native Plugs at Water's Edge (2 per lf around pond perimeter)	1,214	EA	$7.00	$8,501
22	Wet Edge Seed Mix (Elevation 806.24 to 808.24)	562	SY	$2.75	$1,546
23	Low Mow Seed Mix w/Natives (808.24 to Limits of Disturbance)	7,150	SY	$1.75	$12,513
			Subtotal Project Cost		**$348,600**
			Contingency and Technical Services Allowance (25%)		**$87,150**
			Geotechnical Investigation		**$7,500**
				Total Project Cost	**$443,250**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Universal Boulevard Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$8,900	$8,900
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	1	EA	$185.00	$185
9	Silt Fence	800	LF	$3.00	$2,400
10	Unclassified Excavation	6,494	CY	$35.00	$227,290
11	Clay Liner	1,139	CY	$30.00	$34,183
12	Clay Bedding Dike	1	EA	$450.00	$450
13	18" RCP	51	LF	$70.00	$3,570
14	24" RCP	45	LF	$80.00	$3,600
15	18" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,500.00	$2,500
16	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
17	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
18	Storm Sewer Manhole (5-FT DIA)	1	EA	$2,700.00	$2,700
19	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	11	SY	$60.00	$667
20	6-IN Salvaged Topsoil Placement 75%	4,693	SY	$2.50	$11,733
21	6-IN Hauled-In Topsoil Placement 25%	1,564	SY	$5.00	$7,822
22	Erosion Control Mat - Class 2, Urban Type B	6,257	SY	$2.25	$14,079
23	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
24	Native Plugs at Water's Edge (2 per lf around pond perimeter)	980	EA	$7.00	$6,860
25	Wet Edge Seed Mix (Elevation 809 to 811)	458	SY	$2.75	$1,259
26	Low Mow Seed Mix w/Natives (811 to Limits of Disturbance)	5,800	SY	$1.75	$10,150
		Subtotal Project Cost			**$365,800**
		Contingency and Technical Services Allowance (25%)			**$91,450**
		Geotechnical Investigation			**$5,000**
				Total Project Cost	**$462,250**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Commercial Avenue Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$10,200	$10,200
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	1	EA	$185.00	$185
9	Silt Fence	630	LF	$3.00	$1,890
10	Unclassified Excavation	3,203	CY	$30.00	$96,075
11	Rock Excavation	3,203	CY	$50.00	$160,125
12	Embankment Fill (Move and Recompact Excavated Material))	96	CY	$5.00	$478
13	Clay Liner	1,724	CY	$27.00	$46,552
14	Clay Bedding Dike	1	EA	$450.00	$450
15	18" RCP	34	LF	$70.00	$2,380
16	36" RCP	91	LF	$115.00	$10,465
17	36" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$3,700.00	$3,700
18	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
19	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
20	Storm Sewer Manhole (5-FT DIA)	1	EA	$2,700.00	$2,700
21	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	11	SY	$60.00	$667
22	6-IN Salvaged Topsoil Placement 75%	4,952	SY	$2.50	$12,380
23	6-IN Hauled-In Topsoil Placement 25%	1,651	SY	$5.00	$8,253
24	Erosion Control Mat - Class 2, Urban Type B	6,603	SY	$2.25	$14,856
25	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
26	Native Plugs at Water's Edge (2 per lf around pond perimeter)	1,068	EA	$7.00	$7,476
27	Wet Edge Seed Mix (Elevation 815 to 817)	497	SY	$2.75	$1,366
28	Low Mow Seed Mix w/Natives (817 to Limits of Disturbance)	6,106	SY	$1.75	$10,685
		Subtotal Project Cost			**$418,400**
		Contingency and Technical Services Allowance (25%)			**$104,600**
		Geotechnical Investigation			**$5,000**
				Total Project Cost	**$528,000**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
East Cravath Street Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$9,500	$9,500
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	3	EA	$185.00	$555
9	Stone Weeper at Outfall	1	EA	$225.00	$225
10	Silt Fence	600	LF	$3.00	$1,800
11	Unclassified Excavation	7,846	CY	$25.00	$196,147
12	Clay Liner	2,695	CY	$23.50	$63,344
13	Clay Bedding Dike	1	EA	$450.00	$450
14	24" RCP	80	LF	$70.00	$5,600
15	36" RCP	99	LF	$115.00	$11,385
16	24" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,500.00	$2,500
17	36" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$3,700.00	$3,700
18	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
19	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
20	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	22	SY	$60.00	$1,333
21	6-IN Salvaged Topsoil Placement 75%	6,094	SY	$2.50	$15,236
22	6-IN Hauled-In Topsoil Placement 25%	2,031	SY	$5.00	$10,157
23	Erosion Control Mat - Class 2, Urban Type B	8,126	SY	$2.25	$18,283
24	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
25	Native Plugs at Water's Edge (2 per lf around pond perimeter)	1,249	EA	$7.00	$8,744
26	Wet Edge Seed Mix (Elevation 822 to 824)	577	SY	$2.75	$1,586
27	Low Mow Seed Mix w/Natives (825 to Limits of Disturbance)	7,549	SY	$1.75	$13,211
		Subtotal Project Cost			**$391,300**
		Contingency and Technical Services Allowance (25%)			**$97,825**
		Geotechnical Investigation			**$7,500**
				Total Project Cost	**$496,625**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
East Chicago Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$4,200	$4,200
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	2	EA	$185.00	$370
9	Stone Weeper at Outfall	1	EA	$225.00	$225
10	Silt Fence	500	LF	$3.00	$1,500
11	Unclassified Excavation	421	CY	$35.00	$14,727
12	Rock Excavation	421	CY	$50.00	$21,039
13	Embankment Fill (Move and Recompact Excavated Material))	220	CY	$5.00	$1,098
14	Clay Liner	694	CY	$30.00	$20,807
15	Clay Bedding Dike	1	EA	$450.00	$450
16	12" RCP	56	LF	$60.00	$3,360
17	24" RCP	457	LF	$80.00	$36,560
18	12" RCP Apron Endwall with Grate and Cutoff Wall	2	EA	$2,000.00	$4,000
19	24" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,850.00	$2,850
20	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
21	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
22	Storm Sewer Manhole (5-FT DIA)	1	EA	$2,700.00	$2,700
23	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	33	SY	$60.00	$2,000
24	6-IN Salvaged Topsoil Placement 75%	2,370	SY	$2.50	$5,924
25	6-IN Hauled-In Topsoil Placement 25%	790	SY	$5.00	$3,950
26	Erosion Control Mat - Class 2, Urban Type B	3,160	SY	$2.25	$7,109
27	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
28	Native Plugs at Water's Edge (2 per lf around pond perimeter)	694	EA	$7.00	$4,858
29	Wet Edge Seed Mix (Elevation 823 to 825)	160	SY	$2.75	$439
30	Low Mow Seed Mix w/Natives (825 to Limits of Disturbance)	3,000	SY	$1.75	$5,250
				Subtotal Project Cost	**$170,900**
				Contingency and Technical Services Allowance (25%)	**$42,725**
				Geotechnical Investigation	**$5,000**
				Total Project Cost	**$218,625**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
East Main Street Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$10,400	$10,400
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Stone Weeper at Outfall	1	EA	$225.00	$225
9	Silt Fence	600	LF	$3.00	$1,800
10	Unclassified Excavation	2,549	CY	$25.00	$63,737
11	Rock Excavation	2,549	CY	$50.00	$127,474
12	Embankment Fill (Move and Recompact Excavated Material))	1,298	CY	$5.00	$6,491
13	Clay Liner	2,435	CY	$23.50	$57,230
14	Clay Bedding Dike	1	EA	$450.00	$450
15	18" RCP	73	LF	$70.00	$5,110
16	36" RCP	337	LF	$115.00	$38,755
17	18" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,500.00	$2,500
18	36" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$3,700.00	$3,700
19	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
20	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
21	Storm Sewer Manhole (5-FT DIA)	1	EA	$2,700.00	$2,700
22	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	22	SY	$60.00	$1,333
23	6-IN Salvaged Topsoil Placement 75%	6,970	SY	$2.50	$17,426
24	6-IN Hauled-In Topsoil Placement 25%	2,323	SY	$5.00	$11,617
25	Erosion Control Mat - Class 2, Urban Type B	9,294	SY	$2.25	$20,911
26	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
27	Native Plugs at Water's Edge (2 per lf around pond perimeter)	1,259	EA	$7.00	$8,813
28	Wet Edge Seed Mix (Elevation 823 to 825)	582	SY	$2.75	$1,600
29	Low Mow Seed Mix w/Natives (825 to Limits of Disturbance)	8,712	SY	$1.75	$15,246
				Subtotal Project Cost	**$425,000**
				Contingency and Technical Services Allowance (25%)	**$106,250**
				Geotechnical Investigation	**$7,500**
				Total Project Cost	**$538,750**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Cravath Park Hydrodynamic Separator

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$900	$900
2	Construction Layout	1	LS	$1,500.00	$1,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$1,500.00	$1,500
5	Dust Control	1	EA	$500.00	$500
6	Silt Fence	100	LF	$3.00	$300
7	Unclassified Excavation	102	CY	$35.00	$3,575
8	Stormceptor (STC-1200)	1	LS	$15,000.00	$15,000
9	Stormceptor (markup and installation-65% addition)	0.65	LS	$15,000.00	$9,750
10	Anti-Seep Collar	1	EA	$1,100.00	$1,100
11	Pipe Removal	15	LF	$22.00	$330
12	12" RCP	15	LF	$60.00	$900
13	6-IN Salvaged Topsoil Placement 75%	19	SY	$2.50	$48
14	6-IN Hauled-In Topsoil Placement 25%	6	SY	$5.00	$32
15	Erosion Control Mat - Class 2, Urban Type B	26	SY	$2.25	$58
16	Low Mow Seed Mix w/Natives	26	SY	$1.75	$45
		Subtotal Project Cost			**$36,700**
		Contingency and Technical Services Allowance (25%)			**$9,175**
		Geotechnical Investigation			**$2,500**
				Total Project Cost	**$48,375**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
South Wisconsin Street Hydrodynamic Separator

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$900	$900
2	Construction Layout	1	LS	$1,500.00	$1,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$1,500.00	$1,500
5	Dust Control	1	EA	$500.00	$500
6	Silt Fence	100	LF	$3.00	$300
7	Unclassified Excavation	102	CY	$35.00	$3,575
8	Stormceptor (STC-1200)	1	LS	$15,000.00	$15,000
9	Stormceptor (markup and installation-65% addition)	0.65	LS	$15,000.00	$9,750
10	Anti-Seep Collar	1	EA	$1,100.00	$1,100
11	Pipe Removal	15	LF	$22.00	$330
12	15" RCP	15	LF	$65.00	$975
13	Asphalt Removal	26	SY	$6.00	$154
14	Asphalt Sawcut	46	LF	$4.00	$184
15	Asphalt	6	TON	$220.00	$1,320
16	Basecourse (Assume 12")	17	TON	$22.00	$374
		Subtotal Project Cost			**$38,700**
		Contingency and Technical Services Allowance (25%)			**$9,675**
		Geotechnical Investigation			**$2,500**
				Total Project Cost	**$50,875**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
East Milwaukee Street Hydrodynamic Separator

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$1,500	$1,500
2	Construction Layout	1	LS	$1,500.00	$1,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$1,500.00	$1,500
5	Dust Control	1	EA	$500.00	$500
6	Silt Fence	100	LF	$3.00	$300
7	Unclassified Excavation	210	CY	$35.00	$7,365
8	Stormceptor (STC-4800)	1	LS	$27,500.00	$27,500
9	Stormceptor (markup and installation-65% addition)	0.65	LS	$27,500.00	$17,875
10	Anti-Seep Collar	1	EA	$1,100.00	$1,100
11	Pipe Removal	15	LF	$22.00	$330
12	24" RCP	15	LF	$80.00	$1,200
13	6-IN Salvaged Topsoil Placement 75%	28	SY	$2.50	$71
14	6-IN Hauled-In Topsoil Placement 25%	9	SY	$5.00	$47
15	Erosion Control Mat - Class 2, Urban Type B	38	SY	$2.25	$85
16	Low Mow Seed Mix w/Natives	38	SY	$1.75	$66
		Subtotal Project Cost			**$62,100**
		Contingency and Technical Services Allowance (25%)			**$15,525**
		Geotechnical Investigation			**$2,500**
				Total Project Cost	**$80,125**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
East Main Street Hydrodynamic Separator

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$2,700	$2,700
2	Construction Layout	1	LS	$1,500.00	$1,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$1,500.00	$1,500
5	Dust Control	1	EA	$500.00	$500
6	Silt Fence	100	LF	$3.00	$300
7	Unclassified Excavation	468	CY	$35.00	$16,390
8	Stormceptor (STC-11000)	1	LS	$47,500.00	$47,500
9	Stormceptor (markup and installation-65% addition)	0.65	LS	$47,500.00	$30,875
10	Anti-Seep Collar	1	EA	$1,100.00	$1,100
11	Pipe Removal	15	LF	$22.00	$330
12	24" RCP	15	LF	$80.00	$1,200
13	Pavement Removal	83	SY	$6.00	$501
14	Sawcut	150	LF	$4.00	$601
15	Concrete Restoration	83	SY	$60.00	$5,007
				Subtotal Project Cost	**$111,200**
				Contingency and Technical Services Allowance (25%)	**$27,800**
				Geotechnical Investigation	**$2,500**
				Total Project Cost	**$141,500**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
East North Street Hydrodynamic Separator

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$1,200	$1,200
2	Construction Layout	1	LS	$1,500.00	$1,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$1,500.00	$1,500
5	Dust Control	1	EA	$500.00	$500
6	Silt Fence	100	LF	$3.00	$300
7	Unclassified Excavation	141	CY	$35.00	$4,951
8	Stormceptor (STC-2400)	1	LS	$19,500.00	$19,500
9	Stormceptor (markup and installation-65% addition)	0.65	LS	$19,500.00	$12,675
10	Anti-Seep Collar	1	EA	$1,100.00	$1,100
11	Pipe Removal	15	LF	$22.00	$330
12	21" RCP	15	LF	$75.00	$1,125
13	Pavement Removal	31	SY	$6.00	$184
14	Sawcut	150	LF	$4.00	$601
15	Concrete Restoration	31	SY	$60.00	$1,841
				Subtotal Project Cost	**$48,500**
				Contingency and Technical Services Allowance (25%)	**$12,125**
				Geotechnical Investigation	**$2,500**
				Total Project Cost	**$63,125**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
West Main Street Hydrodynamic Separator

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$1,600	$1,600
2	Construction Layout	1	LS	$1,500.00	$1,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$1,500.00	$1,500
5	Dust Control	1	EA	$500.00	$500
6	Silt Fence	100	LF	$3.00	$300
7	Unclassified Excavation	210	CY	$35.00	$7,365
8	Stormceptor (STC-4800)	1	LS	$27,500.00	$27,500
9	Stormceptor (markup and installation-65% addition)	0.65	LS	$27,500.00	$17,875
10	Anti-Seep Collar	1	EA	$1,100.00	$1,100
11	Pipe Removal	15	LF	$22.00	$330
12	18" RCP	15	LF	$70.00	$1,050
13	Pavement Removal	38	SY	$6.00	$227
14	Sawcut	8	LF	$4.00	$30
15	Concrete Restoration	38	SY	$60.00	$2,273
				Subtotal Project Cost	**$64,300**
				Contingency and Technical Services Allowance (25%)	**$16,075**
				Geotechnical Investigation	**$2,500**
				Total Project Cost	**$82,875**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
West North Street Underground Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$43,200	$43,200
2	Construction Layout	1	LS	$1,500.00	$1,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$1,500.00	$1,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	2	EA	$185.00	$370
9	Silt Fence	490	LF	$3.00	$1,470
10	Unclassified Excavation (Off-site Disposal)	11,715	CY	$30.00	$351,453
11	Unclassified Excavation (On-site Reuse)	3,191	CY	$7.00	$22,336
12	Units (8'-6" Stormtrap Unit + Delivery + Joint Tape + Joint Wrap)	1	LS	$737,961.50	$737,962
13	Install Units	181	EA	$250.00	$45,250
14	Backfill (Around and To Top of Unit)	1,791	CY	$35.00	$62,680
15	Backfill - Compacted Insitu (Over Unit to Ground With Reused Material)	3,191	CY	$7.00	$22,336
16	Sub Grade	542	CY	$35.00	$18,970
17	Liner	1	LS	$150,000.00	$150,000
18	18" RCP	62	LF	$70.00	$4,340
19	24" RCP	68	LF	$80.00	$5,440
20	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
21	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
22	Storm Sewer Manhole (6-FT DIA)	2	EA	$2,700.00	$5,400
23	Asphalt Removal	3,112	SY	$6.00	$18,669
24	Sawcut	622	LF	$4.00	$2,489
25	Asphalt	747	TON	$220.00	$164,290
26	Basecourse (assume 12")	2,074	TON	$22.00	$45,636
27	Curb and Gutter Removal	1,041	LF	$6.00	$6,246
28	Curb and Gutter Restoration, 24-inch	1,041	LF	$30.00	$31,230
29	Sidewalk Removal	37	SY	$3.00	$110
30	Sidewalk Restoration	37	SY	$55.00	$2,009
31	6-IN Salvaged Topsoil Placement 75%	734	SY	$2.50	$1,836
32	6-IN Hauled-In Topsoil Placement 25%	245	SY	$5.00	$1,224
33	Erosion Control Mat - Class 2, Urban Type B	979	SY	$2.25	$2,203
34	Low Mow Seed Mix w/Natives (Area not restored with pavement)	979	SY	$1.75	$1,713

Subtotal Project Cost			**$1,772,500**
Contingency and Technical Services Allowance (25%)			**$443,125**
Geotechnical Investigation			**$6,000**
		Total Project Cost	**$2,221,625**
	75%	**City Portion**	**$1,677,190**
	25%	**UW Portion**	**$544,435**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
South Janesville Street Hydrodynamic Separator

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$1,600	$1,600
2	Construction Layout	1	LS	$1,500.00	$1,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$1,500.00	$1,500
5	Dust Control	1	EA	$500.00	$500
6	Silt Fence	100	LF	$3.00	$300
7	Unclassified Excavation	210	CY	$35.00	$7,365
8	Stormceptor (STC-4800)	1	LS	$27,500.00	$27,500
9	Stormceptor (markup and installation-65% addition)	0.65	LS	$27,500.00	$17,875
10	Anti-Seep Collar	1	EA	$1,100.00	$1,100
11	Pipe Removal	15	LF	$22.00	$330
12	21" RCP	15	LF	$75.00	$1,125
13	Pavement Removal	38	SY	$6.00	$227
14	Sawcut	8	LF	$4.00	$30
15	Concrete Restoration	38	SY	$60.00	$2,273
				Subtotal Project Cost	**$64,400**
				Contingency and Technical Services Allowance (25%)	**$16,100**
				Geotechnical Investigation	**$2,500**
				Total Project Cost	**$83,000**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
West Caine Street Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$9,700	$9,700
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	2	EA	$185.00	$370
9	Silt Fence	490	LF	$3.00	$1,470
10	Unclassified Excavation	8,385	CY	$30.00	$251,550
11	Clay Liner	1,445	CY	$27.00	$39,011
12	Clay Bedding Dike	1	EA	$450.00	$450
13	18" RCP	84	LF	$70.00	$5,880
14	24" RCP	85	LF	$80.00	$6,800
15	18" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,500.00	$2,500
16	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
17	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
18	Storm Sewer Manhole (5-FT DIA)	1	EA	$2,700.00	$2,700
19	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	11	SY	$60.00	$667
20	6-IN Salvaged Topsoil Placement 75%	4,378	SY	$2.50	$10,944
21	6-IN Hauled-In Topsoil Placement 25%	1,459	SY	$5.00	$7,296
22	Erosion Control Mat - Class 2, Urban Type B	5,837	SY	$2.25	$13,133
23	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
24	Native Plugs at Water's Edge (2 per lf around pond perimeter)	900	EA	$7.00	$6,300
25	Wet Edge Seed Mix (Elevation 813.8 to 815.8)	889	SY	$2.75	$2,444
26	Low Mow Seed Mix w/Natives (813.8 to Limits of Disturbance)	4,948	SY	$1.75	$8,659
		Subtotal Project Cost			**$397,400**
		Contingency and Technical Services Allowance (25%)			**$99,350**
		Geotechnical Investigation			**$5,000**
				Total Project Cost	**$501,750**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
West South Street Small Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
2	Dewatering	1	LS	$3,000.00	$3,000
3	Stone Tracking Pad	1	EA	$2,900.00	$2,900
4	Stone Weeper at Outfall	1	EA	$225.00	$225
5	Silt Fence	600	LF	$3.00	$1,800
6	Unclassified Excavation	4,216	CY	$20.00	$84,320
7	Embankment Fill (Move and Recompact Excavated Material))	1,186	CY	$5.00	$5,928
8	Clay Liner	1,470	CY	$25.00	$36,742
9	Clay Bedding Dike	1	EA	$450.00	$450
10	12" RCP	60	LF	$70.00	$4,200
11	24" RCP	70	LF	$115.00	$8,050
12	12" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,500.00	$2,500
13	24" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$3,700.00	$3,700
14	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
15	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
16	Storm Sewer Manhole (5-FT DIA)	1	EA	$2,700.00	$2,700
17	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	33	SY	$60.00	$2,000
18	6-IN Salvaged Topsoil Placement 75%	4,250	SY	$2.50	$10,626
19	6-IN Hauled-In Topsoil Placement 25%	1,417	SY	$5.00	$7,084
20	Erosion Control Mat - Class 2, Urban Type B	5,667	SY	$2.25	$12,751
21	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
22	Wet Edge Seed Mix (Elevation 823 to 825)	434	SY	$2.75	$1,193
23	Low Mow Seed Mix w/Natives (825 to Limits of Disturbance)	5,233	SY	$1.75	$9,158
				Subtotal Project Cost	**$213,400**
				Contingency and Technical Services Allowance (25%)	**$53,350**
				Geotechnical Investigation	**$5,000**
				Total Project Cost	**$271,750**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
West South Street Large Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$17,200	$17,200
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Stone Weeper at Outfall	1	EA	$225.00	$225
9	Silt Fence	600	LF	$3.00	$1,800
10	Unclassified Excavation	19,429	CY	$20.00	$388,585
11	Embankment Fill (Move and Recompact Excavated Material))	3,825	CY	$5.00	$19,127
12	Clay Liner	5,744	CY	$20.00	$114,879
13	Clay Bedding Dike	1	EA	$450.00	$450
14	12" RCP	66	LF	$70.00	$4,620
15	24" RCP	70	LF	$115.00	$8,050
16	12" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,500.00	$2,500
17	24" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$3,700.00	$3,700
18	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
19	Diversion Structure (8-FT DIA)	1	EA	$7,000.00	$7,000
20	Storm Sewer Manhole (5-FT DIA)	1	EA	$2,700.00	$2,700
21	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	33	SY	$60.00	$2,000
22	6-IN Salvaged Topsoil Placement 75%	9,736	SY	$2.50	$24,341
23	6-IN Hauled-In Topsoil Placement 25%	3,245	SY	$5.00	$16,227
24	Erosion Control Mat - Class 2, Urban Type B	12,982	SY	$2.25	$29,209
25	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
26	Native Plugs at Water's Edge (2 per lf around pond perimeter)	2,744	EA	$7.00	$19,208
27	Wet Edge Seed Mix (Elevation 823 to 825)	1,242	SY	$2.75	$3,416
28	Low Mow Seed Mix w/Natives (825 to Limits of Disturbance)	11,740	SY	$1.75	$20,545
		Subtotal Project Cost			**$706,300**
		Contingency and Technical Services Allowance (25%)			**$176,575**
		Geotechnical Investigation			**$7,500**
				Total Project Cost	**$890,375**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
East Bluff Road Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$5,600	$5,600
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	3	EA	$185.00	$555
9	Stone Weeper at Outfall	1	EA	$225.00	$225
10	Silt Fence	300	LF	$3.00	$900
11	Unclassified Excavation	3,031	CY	$35.00	$106,068
12	Clay Liner	1,092	CY	$30.00	$32,751
13	Clay Bedding Dike	1	EA	$450.00	$450
14	18" RCP	51	LF	$70.00	$3,570
15	24" RCP	51	LF	$80.00	$4,080
16	18" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,500.00	$2,500
17	24" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,850.00	$2,850
18	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
19	Diversion Structure (8-FT DIA)	2	EA	$7,000.00	$14,000
20	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	22	SY	$60.00	$1,333
21	6-IN Salvaged Topsoil Placement 75%	3,151	SY	$2.50	$7,878
22	6-IN Hauled-In Topsoil Placement 25%	1,050	SY	$5.00	$5,252
23	Erosion Control Mat - Class 2, Urban Type B	4,202	SY	$2.25	$9,454
24	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
25	Native Plugs at Water's Edge (2 per lf around pond perimeter)	810	EA	$7.00	$5,670
26	Wet Edge Seed Mix (Elevation 828 to 830)	283	SY	$2.75	$777
27	Low Mow Seed Mix w/Natives (830 to Limits of Disturbance)	3,919	SY	$1.75	$6,858
		Subtotal Project Cost			**$231,300**
		Contingency and Technical Services Allowance (25%)			**$57,825**
		Geotechnical Investigation			**$5,000**
				Total Project Cost	**$294,125**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Traffic-Calming Bioretention Bumpout

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Traffic-Calming Bioretention Bumpout (Single Intersection)	1	EA	$146,000	$146,000
				Subtotal Project Cost	**$146,000**
				Contingency and Technical Services Allowance (25%)	**$36,500**
				Geotechnical Investigation	**$7,500**
				Total Project Cost	**$190,000**

Whitewater TMDL Stormwater Plan

City of Whitewater, Wisconsin

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL

Alt.1

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	City and UWW: Twice Per Month (Mechanical)				
1	Wages & Salaries/Permanent	1	LS	$20,056	$20,056
2	Fuel Expenses	1	LS	$2,886	$2,886
3	Equipement Parts/Supplies	1	LS	$7,215	$7,215
4	Depreciation Expense (Depreciation Ended in 2014)	1	LS	$0	$0
	Total Annual Cost				$30,157

Alt.2

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	City and UWW: Twice Per Month (Vacuum)				
1	Wages & Salaries/Permanent	1	LS	$20,056	$20,056
2	Fuel Expenses	1	LS	$2,886	$2,886
3	Equipement Parts/Supplies	1	LS	$7,215	$7,215
4	Additional Maintenance Expense for Vacuum Sweeper (20% Higher)	1	LS	$1,443	$1,443
	Total Annual Cost				$31,600

Existing Conditions

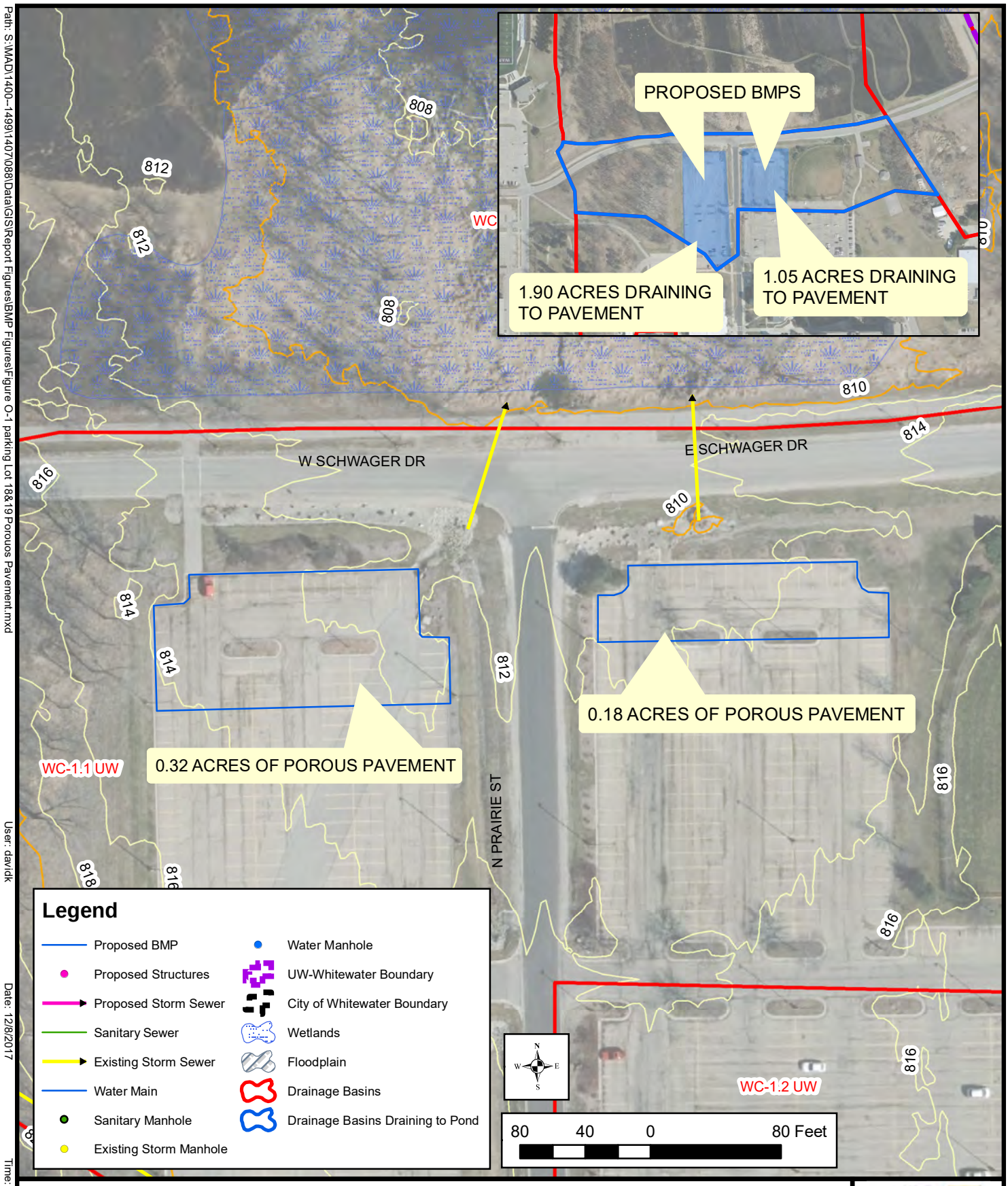
ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	City: Twice Per Month; UWW: Twice Per Year (Mechanical)			2016 Budget	
1	Wages & Salaries/Permanent	1	LS	$19,457	$19,457
2	Fuel Expenses	1	LS	$2,800	$2,800
3	Equipement Parts/Supplies	1	LS	$7,000.00	$7,000
4	Depreciation Expense (Depreciation Ended in 2014)	1	LS	$0.00	$0
	Total Annual Cost				$29,257

Note: City Stormwater Utility Budget Appears to Have Ended the Depreciation of the Existing Mechanical Sweeper in 2014. Assume replacement in 5 years

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Chemical Treatment of Wet Ponds

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total	Comments
BMP						
1	Chemical Treatment At Ann Street Wet Detention Basin	78.8	lb TP removed	$4,562	$359,384	2017 Total Cost
1	Chemical Treatment At Ann Street Wet Detention Basin	1,576	lb TP removed	$591	$931,056	20-Year NPW Cost
2	Chemical Treatment At Innovation Center Wet Pond	10.8	lb TP removed	$4,562	$49,359	2017 Total Cost
2	Chemical Treatment At Innovation Center Wet Pond	216	lb TP removed	$591	$127,875	20-Year NPW Cost

APPENDIX O
UWW ALTERNATIVE BMP FIGURES



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User: davidk

Date: 12/8/2017

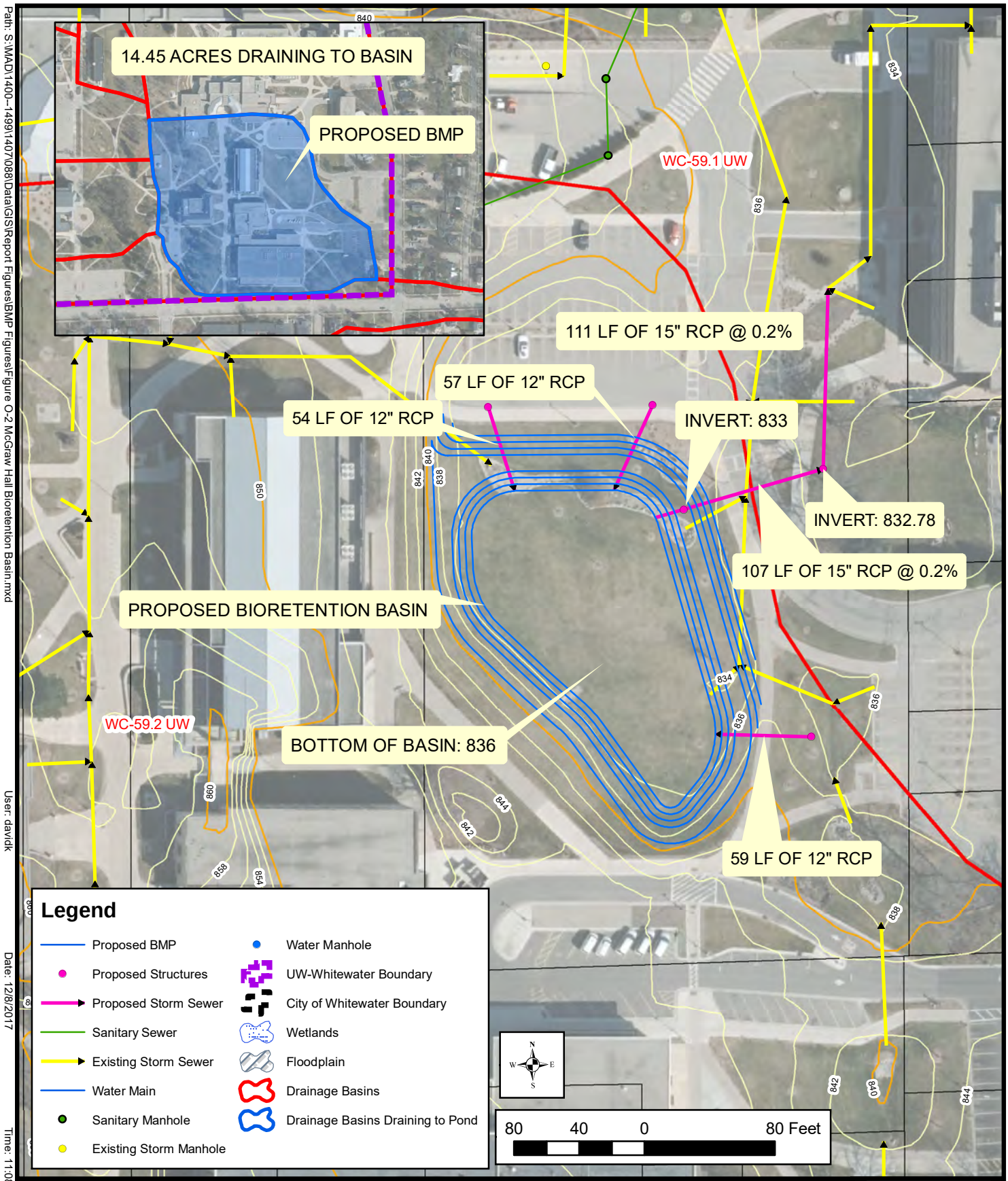
Time: 11:08:36 AM

PARKING LOT 18 & 19 POROUS PAVEMENT (WC-1.1 UW)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

STRAND ASSOCIATES®

FIGURE O-1
1407.088



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User: davidk

Date: 12/8/2017

Time: 11:08:42 AM

MCGRAW HALL BIORETENTION BASIN (WC-59.2 UW)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES, WISCONSIN

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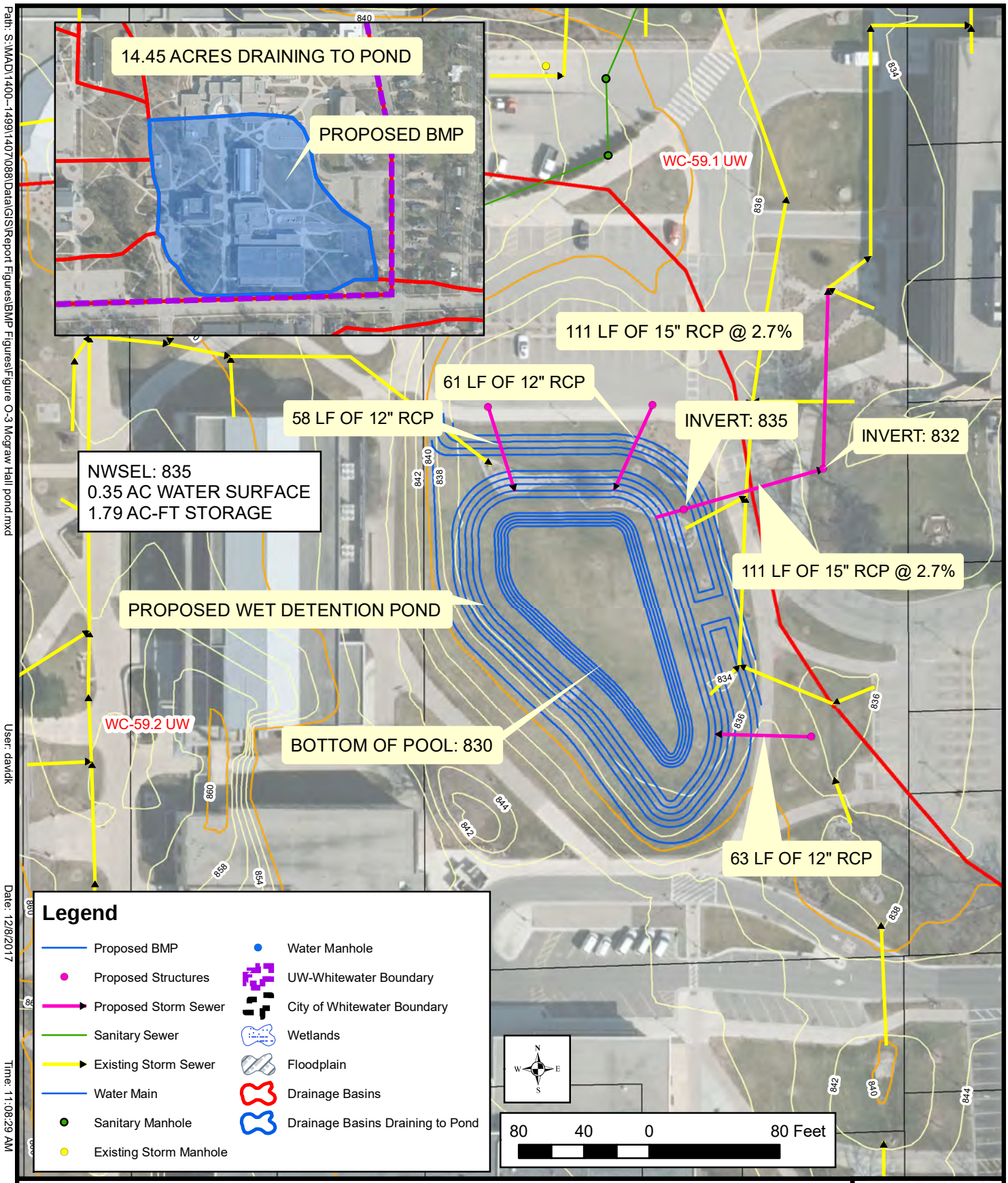
FIGURE O-2
1407.088



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User: davidk

Date: 12/8/2017

Time: 11:08:29 AM

MCGRAW HALL WET DETENTION POND (WC-59.2 UW)

TMDL STORMWATER PLAN
CITY OF WHITEWATER
WALWORTH AND JEFFERSON COUNTIES

STRAND ASSOCIATES®

FIGURE O-3
1407.088

APPENDIX P
UWW OPCCS

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
McGraw Hall Wet Detention Pond

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$6,600	$6,600
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	0.15	ACRE	$8,000.00	$1,200
4	Traffic Control	1	LS	$2,500.00	$2,500
5	Dewatering	1	LS	$5,000.00	$5,000
6	Dust Control	1	EA	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	3	EA	$185.00	$555
9	Silt Fence	744	LF	$3.00	$2,232
10	Unclassified Excavation	3,491	CY	$30.00	$104,730
11	Embankment Fill (Move and Recompact Excavated Material))	8	CY	$5.00	$42
12	Clay Liner	1,581	CY	$27.00	$42,687
13	Clay Bedding Dike	1	EA	$450.00	$450
14	12" RCP	182	LF	$60.00	$10,920
15	15" RCP	222	LF	$65.00	$14,430
16	12" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,000.00	$2,000
17	15" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	$2,300.00	$2,300
18	2'x3' Storm Sewer Inlet	3	EA	$2,000.00	$6,000
19	Outlet Control Structure (6-FT DIA)	1	LS	$4,000.00	$4,000
20	Storm Sewer Manhole (5-FT DIA)	1	EA	$2,700.00	$2,700
21	Rip Rap (Incoming Pipe, Outgoing Pipe, Outfall)	33	SY	$60.00	$2,000
22	6-IN Salvaged Topsoil Placement 75%	4,689	SY	$2.50	$11,723
23	6-IN Hauled-In Topsoil Placement 25%	1,563	SY	$5.00	$7,815
24	Erosion Control Mat - Class 2, Urban Type B	6,252	SY	$2.25	$14,067
25	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	$19.00	$1,900
26	Native Plugs at Water's Edge (2 per lf around pond perimeter)	1,034	EA	$7.00	$7,238
27	Wet Edge Seed Mix (Elevation 835 to 837)	482	SY	$2.75	$1,326
28	Low Mow Seed Mix w/Natives (837 to Limits of Disturbance)	5,770	SY	$1.75	$10,098
		Subtotal Project Cost			**$270,400**
		Contingency and Technical Services Allowance (25%)			**$67,600**
		Geotechnical Investigation			**$5,000**
				Total Project Cost	**$343,000**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
McGraw Hall Bioretention Basin

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of construction cost)	1	LS	$13,495.00	$13,495
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Clearing and Grubbing	1	LS	$1,000.00	$1,000
4	Traffic Control	1	LS	$1,000.00	$1,000
5	Dewatering	1	LS	$2,500.00	$2,500
6	Dust Control	1	LS	$500.00	$500
7	Stone Tracking Pad	1	EA	$2,900.00	$2,900
8	Inlet Protection	1	EA	$185.00	$185
9	Stone Weeper at Outfall	1	EA	$225.00	$225
10	Silt Fence	744	LF	$3.00	$2,232
11	Unclassified Excavation	1,923	CY	$30.00	$57,690
12	Bioretention Section (Plugs, Mulch, Engineered Soil, No. 57 Stone, 6" Underdrain)	15,065	SF	$17.00	$256,105
13	Clay Bedding Dike	1	EA	$450.00	$450
14	12" RCP	170	LF	$60.00	$10,200
15	15" RCP	218	LF	$65.00	$14,170
16	Bioretention (engineered soil)	1,674	SY	$15.00	$25,108
17	Outlet Control Structure	1	LS	$4,000.00	$4,000
18	Storm Sewer Manhole	1	EA	$2,400.00	$2,400
19	Storm Sewer Inlet	3	EA	$2,000.00	$6,000
20	Rip Rap (3 inlets)	33	SY	$60.00	$2,000
21	6-IN Salvaged Topsoil Placement 100%	4,578	SY	$2.50	$11,445
22	Erosion Control Mat - Class I, Urban Type A	4,578	SY	$1.25	$5,723
23	No Mow Seed Mix	4,578	SY	$1.75	$8,012
24	3-Year Maintenance of Native Vegetation	0.35	AC	$23,000.00	$7,954
				Subtotal Project Cost	**$437,800**
				Contingency and Technical Services Allowance (25%)	**$109,450**
				Geotechnical Investigation	**$7,500**
				Total Project Cost	**$554,750**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Parking Lots 18 and 19 Porous Pavement

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Mobilization (2.5% of Construction Cost)	1	LS	$8,300	$8,300
2	Construction Layout	1	LS	$2,500.00	$2,500
3	Traffic Control	1	LS	$2,500.00	$2,500
4	Dewatering	1	LS	$2,500.00	$2,500
5	Dust Control	1	LS	$500.00	$500
6	Stone Tracking Pad	1	EA	$2,900.00	$2,900
7	Inlet Protection	3	EA	$185.00	$555
8	Silt Fence	100	LF	$3.00	$300
9	Outlet Control Structure	2	EA	$2,500.00	$5,000
10	Unclassified Excavation	1,192	CY	$35.00	$41,728
11	Porous Concrete (6" Depth)	2,384	SY	$84.00	$200,293
12	Aggregate Storage Layer (12")	795	CY	$60.00	$47,689
13	Geotextile	2,384	SY	$3.50	$8,346
14	Underdrain	716	LF	$18.00	$12,888
15	Cleanout	8	EA	$360.00	$2,880
				Subtotal Project Cost	**$338,900**
				Contingency and Technical Services Allowance (25%)	**$84,725**
				Geotechnical Investigation	**$7,500**
				Total Project Cost	**$431,125**

Whitewater TMDL Stormwater Plan
City of Whitewater, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Traffic-Calming Bioretention Bumpout

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	BMP				
1	Traffic-Calming Bioretention Bumpout (Single Intersection)	1	EA	$146,000	$146,000
				Subtotal Project Cost	**$146,000**
				Contingency and Technical Services Allowance (25%)	**$36,500**
				Geotechnical Investigation	**$7,500**
				Total Project Cost	**$190,000**

APPENDIX Q
ORDINANCE CHANGES AND SWU RATE ADJUSTMENTS

STRAND ASSOCIATES®

Strand Associates, Inc.®
910 West Wingra Drive
Madison, WI 53715
(P) 608-251-4843
(F) 608-251-8655

April 1, 2014

Mr. Cameron Clapper, City Manager
City of Whitewater
312 West Whitewater Street
Whitewater, WI 53190

Re: Stormwater Ordinance Revisions and Stormwater Utility Rate Adjustment

Dear Cameron,

Based on discussions during our January 29, 2014, stormwater management meeting, City of Whitewater (City) staff requested a summary of recommendations that pertain to potential stormwater ordinance revisions and potential stormwater utility (SWU) rate adjustments. The following letter provides a summary of these recommendations.

Potential Stormwater Ordinance Revisions

Postconstruction stormwater management requirements for land development in the City is currently regulated by Chapter 16.16 of the City's Code of Ordinances. The threshold for providing permanent on-site stormwater management measures (e.g, detention basins, bioretention basins) for land development projects is currently set at 1 acre of land disturbance, regardless of how much additional impervious surface area is introduced. This applicability threshold is consistent with the Wisconsin Department of Natural Resources (WDNR) stormwater rules.

Additionally, the City's current construction site erosion control requirements for land development is regulated by Chapter 16.17 of the City Code of Ordinances and the applicability threshold for land development projects is also set at 1 acre of land disturbance (also consistent with current WDNR rules).

City staff have voiced concern over multiple recent land development projects that involved land disturbance less than 1 acre and the potential cumulative effect these developments may be having on the City's stormwater system. We have compiled a list of current stormwater management and construction site erosion control applicability thresholds for several area communities for a basis of comparison (refer to Table 1).

Community	Erosion Control	Stormwater Management
Whitewater	>1-acre land disturbance (WDNR Std.)	>1-acre land disturbance (WDNR Std.)
Jefferson	• >1-acre land disturbance • Land disturbance on slopes >10% • 1,000 CY of excavation/filling • 200 linear feet of ditch disturbance • New road > 200 feet • Developments w/subdiv. or condo plat	• 1-acre land disturbance • Developments w/subdiv. or condo plat • Redevelopment > 4,000 sf
Fort Atkinson	>1-acre land disturbance (WDNR Std.)	>1-acre land disturbance (WDNR Std.)
Watertown	>1-acre land disturbance (WDNR Std.)	>1-acre land disturbance (WDNR Std.)
Lake Mills	• >10,000 sf additional impervious area • Net impervious area >20% of the total area of the site	• >10,000 sf additional impervious area • Net impervious area >20% of the total area of the site
Stoughton (Dane Co. req.)	>Land disturbance >4,000 SF	>20,000 sf impervious surface
Walworth Co.	• Utility replacement >300 LF • >4,000 sf land disturbance • >400 CY excavation • Any grading within 1,000 feet of lake or within 300 feet of stream	• Subdivision plat • CSM resulting in >0.5 ac. impervious area • New or private road serving >5 lots • >1-acre land disturbance

Table 1 Summary of Erosion Control and Stormwater Management Ordinance Thresholds

Typically, the applicability threshold for construction site erosion control requirements is much less than postconstruction stormwater management requirement thresholds. For example, Walworth County, Dane County, and Delavan each have erosion control applicability standards set at 4,000 square feet (SF) of land disturbance that we feel is reasonable.

For stormwater management requirements, we feel it is appropriate to establish thresholds that are based on both land disturbance and additional impervious surface. The Walworth County and Dane County thresholds for stormwater management are both set at 20,000 SF (0.5 acre). The threshold for the City of Lake Mills is set at 10,000 SF of additional impervious surface or impervious surface greater than 20 percent of the total area of the site. A reasonable stormwater management threshold for consideration is 10,000 SF of additional impervious surface and 20,000 SF of land disturbance. Language should be provided that states the 10,000 SF of additional impervious surface shall be considered cumulatively for common plans of development. Overall applicability recommendations are provided in Table 2.

Erosion Control	Stormwater Management
>4,000 SF land disturbance	>20,000 SF land disturbance >10,000 SF impervious surface (cumulative for common plans of development)

Table 2 Recommended Erosion Control and Stormwater Management Ordinance Thresholds

City staff have also requested a review of the City's Zoning code (Title 19) with respect to setting appropriate impervious area limits for the following residential zoning districts:

R-1–One-family residence district (Title 19.15)
R-2–One- and two-family residence district (Title 19.18)
R-3–Multifamily residence district (Title 19.21)

Language in Titles 19.15 and 19.18 stipulates a maximum lot coverage of 30 percent for zoning districts R-1 and R-2, respectively. It is assumed that lot coverage was intended to include all impervious surface on the lot, including sidewalks, driveways, and buildings. However, lot coverage is not specifically defined in the code. The only other reference to lot coverage in the zoning code is in Title 19.27.070 (community business district) where maximum building lot coverage is stated to be 50 percent. For this reason, the definition of lot coverage in Titles 19.15 and 19.18 has similarly been interpreted as building lot coverage, not impervious area lot coverage as was likely originally intended. It is therefore recommended that the language in Titles 19.15 and 19.18 be clarified as a maximum "impervious area lot coverage" of 30 percent instead of just lot coverage.

Similar concerns exist for adequate impervious area controls for zoning district R-3 (multifamily), which requires 350 square feet of usable open space for each dwelling unit for two or more dwelling units. While this policy may provide greater percentages of green space for large dwelling unit developments, it likely results in very small percentages for smaller dwelling unit developments. It may be more appropriate to establish a maximum "impervious area lot coverage" policy that is in place for the R-1 and R-2 zoning districts. To help facilitate selection of appropriate maximum impervious area coverage percentages, we have provided impervious area percentages from several recent multifamily developments; see Table 3. It is our understanding the City planner is currently working with the City of Oshkosh to amend its stormwater ordinance to restrict maximum impervious area coverage for R-3 zoning areas to 60 percent unless otherwise approved by City staff and the planning commission.

Development	Total Lot Area (SF)	Impervious Area (SF)	Impervious Area Percentage
165 North Tratt Street	35,500	16,275	46%
Prince Street Development	87,569	50,004	57%
The Element	74,705	45,738	61%

Table 3 Percent Impervious Areas for Recent Multifamily Developments

City staff have also suggested investigating implementation of a policy that allows developments to pay the City a "fee-in-lieu" of providing on-site postconstruction stormwater management. Fee-in-lieu of policies are currently in place in the City of Lake Mills and the City of Madison where the fees are based on land acquisition and construction cost estimates (an example of a fee calculation spreadsheet is attached). Revenue generated from these fees typically must be used to construct regional stormwater facilities that receive stormwater runoff from developments where the fee is collected and would be allowed at the sole discretion of the City.

Potential SWU Rate Adjustments

Stormwater utility (SWU) service charges in the City are based on Equivalent Runoff Units (ERUs). One ERU equals the average impervious area on a typical single-family residential property. In the City, one ERU is equivalent to 3,850 square feet of impervious area. The City has implemented a tiered SWU rate structure for single-family residential properties as follows:

- Residential lot size <5,445 SF = 0.7 ERU.
- Residential lot size >5,445 SF and < 21,781 SF = 1.0 ERU.
- Residential lot size >21,781 SF = 1.2 ERU.

The fee for nonresidential parcels is based on the number of ERUs. The number of ERUs is determined by dividing the total estimated impervious area on the parcel by the typical residential impervious area. For instance, the measured impervious area at a fast food restaurant in the City is 46,200 SF, so it has 12 ERUs (46,200 SF ÷ 3,850 SF).

The current SWU rate for the City is set at $4.75 per ERU per month and was last adjusted in March 2013. Applying the total customer base for the SWU (including applying SWU credits), approximately $378,000 of revenue is generated annually. This revenue primarily funds services related to stormwater system operation and maintenance (i.e., street sweeping, leaf and brush collection, lake weed control, and storm sewer or detention basin maintenance), administrative costs (SWU billing, SWU administration, and the National Pollutant Discharge Elimination System (NPDES) permit compliance and fees). Limited remaining revenue is used for stormwater capital improvements and planning.

When the SWU was originally adopted in 2008, it was anticipated that SWU rates would need to steadily increase to meet the NPDES stormwater permit requirements. The most significant cost related to the NPDES permit compliance was meeting the 40 percent City-wide Total Suspended Solids (TSS) requirement. It was estimated in the 2007 SWU Feasibility Study Report that the monthly SWU rate in the City would need to increase to $5.39/ERU by 2014 to comply with the NPDES permit requirements. However in 2011, the state (according to Wisconsin Act 32) lowered the TSS reduction requirement from 40 to 20 percent for NPDES-permitted communities, including the City. Because the City's current TSS reduction exceeds the minimum 20 percent reduction requirement, the immediate need to reduce TSS levels in the City has been lessened.

However, the City must also consider future TSS reductions that will arise from compliance with the Rock River Total Maximum Daily Load (TMDL) that was adopted in September 2012. Based on review of the TMDL report, the City will ultimately need to increase its TSS reduction up to 41 percent, which is very close to the original 40 percent NPDES permit requirement. A TMDL

compliance schedule has not yet been defined, however, based on discussions with WDNR staff, it is anticipated that communities will be given 15 to 20 years to meet the TMDL requirements.

The City has continued to be proactive in obtaining stormwater grants to help finance stormwater capital improvement projects that are needed to comply with the Rock River TMDL. However, these grants still require a 50 percent local cost share, so additional revenue likely will need to be generated by the SWU moving forward in order to properly fund the City's future stormwater program. Note that grant funds are also available for activities related to compliance with the Rock River TMDL, including long-range capital improvement planning and evaluation of various funding mechanisms.

Based on a review of SWUs currently in place in the State of Wisconsin, the average monthly SWU rate is $4.85/ERU (2.1 percent higher than the City's current SWU rate). Of these SWUs, 45 communities are covered by NPDES municipal stormwater permits (including the City). The average monthly SWU rate for these permitted communities is $5.53/ERU (16.4 percent higher than the City's current SWU rate). Please refer to the attached listing of Wisconsin SWUs published by the American Public Works Association. We have also compiled a listing of current SWU rates for other cities in Wisconsin with state universities (refer to Table 4).

Community	SWU Rate ($/ERU/Month
Eau Claire	$6.92
LaCrosse	$4.49
Menomonie	$3.00
Oshkosh	$8.97
River Falls	$3.14
Stevens Point	$4.92
Superior	$5.90
Average	**$5.34**

Table 4 SWU Rates for Wisconsin Communities with State Universities

A one-time SWU rate increase to match the current averages for permitted communities in Wisconsin may be an initial step to allow the City to continue to fund stormwater capital improvement projects to help comply with future stormwater permit requirements. A more detailed SWU Rate study could be conducted that would better identify costs for forecasted stormwater capital projects and associated debt service payments, operation and maintenance costs, and SWU administration. Figure 1 depicts potential SWU rate adjustments and the resulting impacts to annual SWU revenue generated.

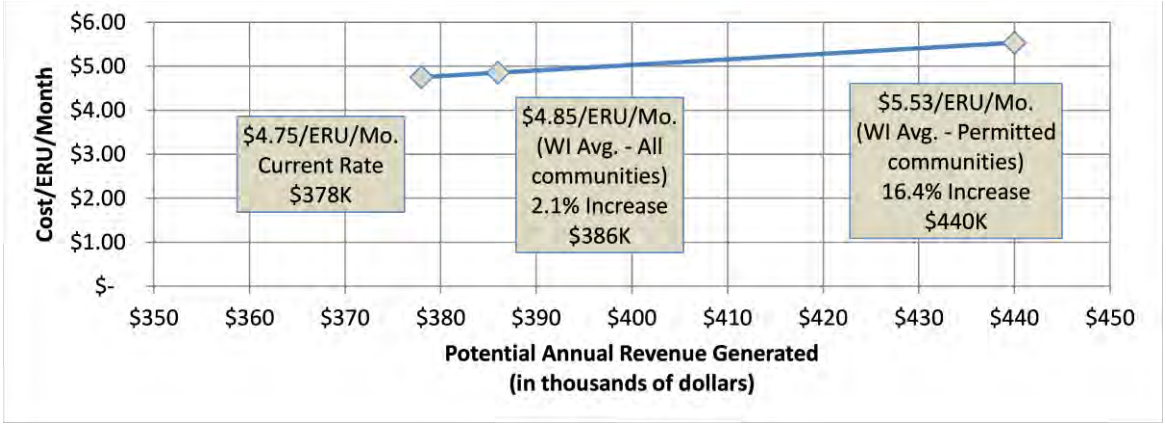

Figure 1 SWU Rate and Annual Revenue Adjustment Options

Please call us with any questions.

Sincerely,

STRAND ASSOCIATES, INC.®

Mark K. Shubak, P.E.

Mark A. Fisher, P.E.

Enclosures

Fee in lieu of on-site stormwater management practices.

A fee in lieu of on-site stormwater management practices may be requested by the applicant, but will only be allowed at the sole discretion of the City. If the chooses to waive all or part of the minimum on-site stormwater management requirements, the applicant shall be required to pay a fee in an amount determined in negotiation with the City of Whitewater and approved by the Common Council. The purpose of the fee is to fund alternative municipal stormwater management measures to offset the environmental and flooding impacts of waiving the requirements. In determining the fee for land development and land redevelopment projects, the City shall consider an equitable distribution of the cost needed for land, engineering design, and construction of stormwater management practices. All such fees collected shall be placed in a designated fund to be used exclusively for the City stormwater management practices to be constructed.

Fee-in-Lieu Calculation of Providing On-Site Detention

SITE: EXAMPLE SITE

DATE: XX/XX/XXXX

DETENTION VOLUME REQUIRED

Volume Required (Supporting Calcs. Req'd)	3.00	acre-feet

LAND AREA REQUIRED

Required Land Area $\left(\sqrt{(VolReq/2)}+10\right)^2$	1.620	acres
Land Value (Per City Assessor's Office)	$10,000	per acre

Value of Required Land Area **$16,197**

CONSTRUCTION COSTS

EXCAVATION AND GRADING (Det. Vol. Required) + [(vol. Req./2)x(min. 4' depth)]

14520	CY @	$4.00	per CY	**$58,080**

RESTORATION AND SEEDING

7839	SY @	$1.50	per SY	**$11,759**

OUTLET CONTROL STRUCTURE

1	LUMP SUM	$5,000.00	EA	**$5,000**

TOTAL CONSTRUCTION COSTS **$74,839**

TOTAL FEE-IN-LIEU COST **$91,035**

CONSTRUCTION COST TABLE (UNIT PRICES BASED ON STORAGE REQ'D)

STORAGE REQUIRED (AC-FT)	*< 0.11*	*0.11 TO 1.0*	*> 1.0*
EXCAVATION AND GRADING	*$5.00*	*$4.50*	*$4.00*
RESTORATION AND SEEDING	*$2.00*	*$1.75*	*$1.50*
OUTLET CONTROL STRUCTURE	*$3,000.00*	*$4,000.00*	*$5,000.00*

WI Stormwater User Charge System Information

Representative Wisconsin Communities

Stormwater user charge information changes often! Contact individual communities to confirm accuracy.

November 20, 2013

	Name of Community or Stormwater District	Population	Created	ERU Size (sf)	Annual $/ERU or 1 fam home	Credit Policy? Y/ N	Credit Policy? Max Amount	Comments/ Web site addresses
1	**Allouez** (Village)	15,443	2006	3,330	$ 84.00			www.villageofallouez.com
2	**Appleton** (City)	73,243	1995	2,368	$ 155.00	Y	77%	www.appleton.org
3	**Ashwaubenon** (Village)	16,973	2012	3,316	$ 50.00	Y	50%	www.Ashwaubenon.com
4	**Baraboo** (City)	11,952	2005	2,379	$ 49.24	N		www.cityofbaraboo.com
5	**Barron** (City)	3,250	2005	10,850	$ 24.00	Y	75%	www.barronwi.us
6	**Beaver Dam** (City)	14,983	2008	2,637	$ 48.61	Y	33%	www.cityofbeaverdam.com
7	**Bellevue** (Village)	14,386	2002	3,221	$ 48.00	Y	100%	www.bellevue-wi.com
8	**Beloit** (City)	36,913	2006	3,347	$ 36.00			beloit.govoffice3.com/
9	**Brown Deer** (Village)	11,895	2004	3,257	$ 91.80	N		www.browndeerwi.org
10	**Butler** (Village)	1,885	1999	3,032	$ 66.00			www.butlerwi.gov/
11	**Chetek** (City)	2,180	2005		$ 27.00	Y		www.chetek.net
12	**Chippewa Falls** (City)	13,374	2005		$ 36.00			www.ci.chippewa-falls.wi.us
13	**Cudahy** (City)	18,430	2001	2,700	$ 60.00	Y	$2/ ERU	www.ci.cudahy.wi.us
14	**De Forest** (Village)	7,400	2005	2,900	$ 60.00			www.vi.deforest.wi.us/
15	**Delafield** (City)	7,820	2004	1,000	$ 29.00			www.cityofdelafield.com/
16	**De Pere** (City)	24,060	2003		$ 62.00			www.de-pere.org/
17	**Eau Claire** (City)	66,623	1997	3,000	$ 83.00	Y	100%	www.ci.eau-claire.wi.us
18	**Elm Grove** (Village)	6,250	2004	6,235	$ 65.50			www.elmgrovewi.org
19	**Fitchburg** (City) - Urban	25,260	2002	3,700	$ 78.00	Y	50%	www.fitchburgwi.gov
20	**Fitchburg** (City) - Rural	4,000	2002	3,700	$ 38.84	Y	50%	www.fitchburgwi.gov
21	**Fox Point** (Village)	6,816	2009	2,988	$ 126.72			http://www.vil.fox-point.wi.us/
22	**Fort Atkinson** (City)	12,407	2009	3,096	$ 33.84			http://www.fortatkinsonwi.net/
23	**Garner's Creek** (watershed)		1998	3,623	$ 96.00	Y	85%	http://www.garnerscreekutility.org/
24	**Glendale** (City)	13,400	1996	3,200	$ 42.00	N	‡	www.glendale-wi.org
25	**Grand Chute** (Town)	21,288	1997	3,283	$ 99.84	Y	85%	www.grandchute.net
26	**Grantsburg** (Village)	1,397	2004		$ 18.00	Y	75%	www.grantsburgwi.com
27	**Green Bay** (City)	105,809	2004	3,000	$ 63.76	Y	67%	www.ci.green-bay.wi.us
28	**Greendale** (Village)	14,410	2004	3,941	$ 78.00	Y	50%	www.greendale.org
29	**Greenfield** (City)	35,476	2009	3,630	$ 49.80			http://www.ci.greenfield.wi.us/
30	**Greenville** (Town)	10,602	1999	4,510	$ 65.00	Y	85%	www.townofgreenville.com
31	**Hales Corners** (Village)	7,665	2008	3,952	$ 9.00			http://www.halescorners.org/
32	**Harrison** (Town of)	5,800	1998		$ 96.00			www.townofharrison.org
33	**Hobart** (Village of)	5,834	2007	4,000	$ 72.00	Y	50%	www.hobart-wi.org/
34	**Holmen** (Village of)	7,176	2007	3,550	$ 44.00	Y	50%	www.holmenwi.com
35	**Howard** (Village)	15,774	2005	3,301	$ 44.00			www.villageofhoward.com
36	**Janesville** (City)	63,479	2003	3,200	$ 39.76	Y	65%	www.ci.janesville.wi.us
37	**Kenosha** (City)	99,738	2007	2,477	$ 60.00	Y		www.kenosha.org
38	**Lake Delton** (Village)	2,975	1993	1,685	$ 18.00	Y	100%	www.lakedelton.org
39	**Lancaster** (City)	4,033	2008	2,400	$ 24.00	Y		www.lancasterwisconsin.com
40	**Lisbon** (Town)	9,359	2007	6,642	$ 40.00	Y	50%	www.townoflisbonwi.com
41	**Little Chute** (Village)	10,830	1998	2,752	$ 96.00	N		www.littlechutewi.org
42	**Madison** (City)	236,901	2001	Lot Area	$ 55.00	Y	50%	www.cityofmadison.com
43	**McFarland** (Village)	6,416	2007	3,456	$ 46.85			www.mcfarland.wi.us
44	**Menomine** (City of)	15,318	2008	3,000	$ 36.00	Y	20%	www.menomonie-wi.gov/
45	**Milton** (City of)	5,667	2009		$ 55.13			http://www.ci.milton.wi.us/
46	**Milwaukee** (City)	597,867	2006	1,610	$ 64.52	Y	60%	http://city.milwaukee.gov/mpw
47	**Monona** (City)	8,000	2004	NA *	$ 60.00	Y	65%	www.monona.wi.us
48	**Monroe** (City)	10,600	2006	2,728	$ 60.00			www.cityofmonroe.org
49	**Neenah** (City)	24,600	2003	3,138	$ 84.00	Y	66%	www.ci.neenah.wi.us

WI Stormwater User Charge System Information

Representative Wisconsin Communities

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November 20, 2013

	Name of Community or Stormwater District	Population	Created	ERU Size (sf)	Annual $/ERU or 1 fam home	Credit Policy? Y/ N	Credit Policy? Max Amount	Comments/ Web site addresses
50	**New Berlin** (City)	39,669	2001	4,000	$ 60.00	N		www.newberlin.org
51	**New Richmond** (City)	7,726	2004	12,632	$ 28.68	Y	75%	www.ci.new-richmond.wi.us
52	**N. Fond du Lac** (Village)	4,557	2007	3,123	$ 56.00	Y		www.nfdl.org
53	**Oak Creek** (City)	28,456	2003	3,300	$ 27.50			http://www.oakcreekwi.org/
54	**Onalaska** (City)	17,900	2009	3,888	$ 59.64	Y	40%	www.cityofonalaska.com
55	**Onalaska** (Town)	5,600	2005	3,709	$ 24.00			www.co.la-crosse.wi.us/townofonalaska
56	**Oshkosh** (City)	66,344	2003	2,817	$ 107.68	Y	75%	www.ci.oshkosh.wi.us
57	**Pewaukee** (City)	11,783	2010	5,339	$ 120.00	Y		www.cityofpewaukee.us
58	**Pleasant Prairie** (Village)	18,000	2006		$ 15.00			www.pleasantprairieonline.com/
59	**Poynette** (Village)	2,563	2006	3,550	$ 50.00			www.poynette-wi.gov/
60	**Racine (**City)	78,853	2004	2,844	$ 72.30	Y	40%	www.cityofracine.org
61	**Raymond** (Town)	3,516	2008	$0.0036/sf imp area		N		www.raymondtownof.com
62	**Reedsburg** (City of)	8,594	2008	3,024	$ 46.00	Y	50%	www.reedsburgwi.gov
63	**River Falls** (City)	14,889	1998	NA *	$ 37.68	Y	100%	www.rfcity.org
64	**Rochester** (Village)	3,682	2011	4,500	$ 73.00	Y	50%	http://rochsterwi.us.index.asp
65	**Salem** (Town)	9,871	2009	6,352	$ 60.00	Y	50%	www.townofsalem.net
66	**Sheboygan** (City)	50,792	2001	2,215	$ 36.00	Y		www.ci.sheboygan.wi.us
67	**Shorewood Hills** (Village)	1,732	2007	2,941				www.shorewood-hills.org
68	**Slinger** (Village)	3,901	2007	4,300	$ 40.00	Y		www.slinger-wi-usa.org/
69	**St. Francis** (Village)	9,373	2001	2,500	$ 48.00			www.ci.stfrancis.wi.gov/
70	**Sun Prairie** (City)	24,464	2003	3,468	$ 72.00	Y	65%	www.cityofsunprairie.com/
71	**Superior** (City)	27,370	2007	1,907	$ 70.80	Y	TBD	www.ci.superior.wi.us/
72	**Sussex** (Village)	9,687	2005		$ 60.00			www.village.sussex.wi.us/
73	**Union Grove** (Village)	4,884	2009	4,000	$ 86.83	Y	50%	www.uniongrove.net
74	**Vernon** (Town)	7,455	2008	6,904	$ 32.00	Y	50%	www.townofvernon.org/
75	**Verona** (City)	7,052	2009	2,842	$ 53.06			http://www.ci.verona.wi.us/
76	**Washburn** (City)	2,300	2005		$ 48.00			www.cityofwashburn.org/
77	**Watertown** (City)	23,163	2005	2,900	$ 76.00			www.cityofwatertown.org/
78	**Waupun** (City)	10,720	2005	3,204	$ 96.00			www.cityofwaupun.org/
79	**Wauwatosa** (City)	46,629	1999	2,174	$ 67.28	Y	100%	www.wauwatosa.net/
80	**West Allis** (City)	60,300	1997	1,827	$ 77.16	Y	56%	www.ci.west-allis.wi.us/
81	**West Milwaukee** (Village)	4,142	1998	1,956	$ 36.00	Y	50%	www.westmilwaukee.org/
82	**Weston** (Village)	12,736	2004	3,338	$ 47.78	Y	68%	www.westonwisconsin.org/

Information presented here is dependent on your input! Please send updates to jmmazanec@gmail.com

Reverse numbers *indicate entries updated or confirmed within 365 days of the date of this publication.*

APPENDIX R
APWA STORMWATER UTILITY CHART 2016

WI Stormwater User Charge System Information

Representative Wisconsin Communities

Stormwater user charge information changes often! Contact individual communities to confirm accuracy.

March 4, 2016

	Name of Community or Stormwater District	Population (2013)	Created	ERU Size (sf)	Annual $/ERU or 1 fam home	Credit Policy? Y/N	Credit Policy? Max Amount	Web site addresses
1	**Allouez** (Village)	13,967	2004	3,663	$ 87.00	N		www.villageofallouez.com
2	**Altoona** (City)	7,056	2007		$ 36.00	Y	75%	www.ci.altoona.wi.us
3	**Antigo** (City)	8,004	2010	3,069	$ 42.24	Y	50%	www.antigo-city.org
4	**Appleton** (City)	73,596	1995	2,368	$ 155.00	Y	73%	www.appleton.org
5	**Ashwaubenon** (Village)	17,116	2012	3,316	$ 50.00	Y	50%	www.Ashwaubenon.com
6	**Baraboo** (City)	12,100	2005	2,379	$ 49.24	N		www.cityofbaraboo.com
7	**Barron** (City)	3,371	2006	10,850	$ 24.00	Y	75%	www.barronwi.us
8	**Bayside** (Village)	4,418	2009	5,269	$ 154.00	N		www.bayside-wi.gov
9	**Beaver Dam** (City)	16,345	2008	2,637	$ 48.61	Y	33%	www.cityofbeaverdam.com
10	**Belleville** (Village)	2,426	2010	2,800	$ 50.04	Y	50%	www.bellevillewi.org
11	**Bellevue** (Village)	14,964	2002	3,221	$ 48.00	Y	100%	www.bellevue-wi.com
12	**Beloit** (City)	36,888	2006	3,347	$ 42.00	Y	90%	www.beloitwi.gov
13	**Brookfield** (Town)	6,390	2003	3,681	$ 81.60	Y	Undfnd	www.townofbrookfield.com
14	**Brown Deer** (Village)	12,102	2004	3,257	$ 106.08	Y	Undfnd	www.browndeerwi.org
15	**Butler** (Village)	1,838	1999	3,032	$ 66.00	Y	Undfnd	www.butlerwi.gov
16	**Caledonia** (Village)	24,737	2013	5,230	$ 65.25	Y	50%	www.caledoniawi.com
17	**Cambridge** (Village)	1,498	2005	43,560	$ 28.00	N		www.ci.cambridge.wi.us
18	**Chetek** (City)	2,210	2006	15,246	$ 27.00	Y	75%	www.chetek.net
19	**Chippewa Falls** (City)	13,718	2005		$ 36.00	Y	75%	www.ci.chippewa-falls.wi.us
20	**Cudahy** (City)	18,340	2001	2,700	$ 83.00	Y	Undfnd	www.ci.cudahy.wi.us
21	**De Forest** (Village)	9,372	2005	2,900	$ 60.00	N		www.vi.deforest.wi.us
22	**De Pere** (City)	24,359	2005	3,861	$ 67.00	Y	60%	www.de-pere.org
23	**Delafield** (City)	7,159	2004	1,000	$ 29.00	Y	Undfnd	www.cityofdelafield.com
24	**Denmark** (Village)	2,169	2006	3,500	$ 48.00	N		www.denmark-wi.org
25	**Durand** (City)	1,878	2010	3,300	$ 48.00	Y	20%	www.durand-wi.com
26	**Eau Claire** (City)	67,545	1996	3,000	$ 86.00	Y	89%	www.ci.eau-claire.wi.us
27	**Elm Grove** (Village)	5,949	2004	6,235	$ 122.80	N		www.elmgrovewi.org
28	**Fitchburg** (City) - Rural	4,000	2002	3,700	$ 38.83	Y	50%	www.fitchburgwi.gov
29	**Fitchburg** (City) - Urban	25,260	2002	3,700	$ 78.00	Y	50%	www.fitchburgwi.gov
30	**Fort Atkinson** (City)	12,482	2009	3,096	$ 33.84	Y	50%	www.fortatkinsonwi.net
31	**Fox Point** (Village)	6,698	2009	2,988	$ 126.72	Y	60%	www.vil.fox-point.wi.us
32	**Garner's Crk** (watershed)	20,922	1998	3,623	$ 96.00	Y	85%	www.garnerscreekutility.org
33	**Glendale** (City)	12,920	1996	3,200	$ 54.00	Y	Undfnd	www.glendale-wi.org
34	**Grand Chute** (Town)	21,288	1997	3,283	$ 99.84	Y	85%	www.grandchute.net
35	**Grantsburg** (Village)	1,317	2004		$ 24.00	Y	75%	www.grantsburgwi.com
36	**Green Bay** (City)	104,779	2004	3,000	$ 70.47	Y	67%	www.ci.green-bay.wi.us
37	**Greendale** (Village)	14,340	2004	3,941	$ 79.60	Y	50%	www.greendale.org
38	**Greenfield** (City)	37,159	2009	3,630	$ 49.80	Y	66%	www.ci.greenfield.wi.us
39	**Greenville** (Town)	10,602	1999	4,510	$ 65.00	Y	85%	www.townofgreenville.com
40	**Hales Corners** (Village)	7,757	2008	3,952	$ 14.00	N		www.halescorners.org
41	**Harrison** (Town of)	5,800	1998		$ 96.00			www.townofharrison.org

WI Stormwater User Charge System Information

Representative Wisconsin Communities

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March 4, 2016

	Name of Community or Stormwater District	Population (2013)	Created	ERU Size (sf)	Annual $/ERU or 1 fam home	Credit Policy? Y/N	Credit Policy? Max Amount	Web site addresses
42	**Hobart** (Village of)	7,365	2007	4,000	$ 72.00	Y	50%	www.hobart-wi.org
43	**Holmen** (Village of)	9,423	2007	3,550	$ 49.00	Y	50%	www.holmenwi.com
44	**Howard** (Village)	18,671	2005	3,301	$ 52.00	Y	67%	www.villageofhoward.com
45	**Hudson** (City)	13,179	2012	2,890	$ 30.00	Y	90%	www.ci.hudson.wi.us
46	**Janesville** (City)	63,820	2003	3,200	$ 39.64	Y	85%	www.ci.janesville.wi.us
47	**Jefferson** (City)	7,984	2008	3,220	$ 40.00	Y	100%	www.jeffersonwis.com
48	**Kaukauna** (City)	15,725	2009	2,944	$ 66.00	Y	50%	www.cityofkaukauna.com
49	**Kenosha** (City)	99,889	2006	2,477	$ 80.04	Y	44%	www.kenosha.org
50	**Kimberly** (Village)	6,641	2007	3,350	$ 110.00	N		www.vokimberly.org
51	**La Crosse** (City)	51,522	2012	2,841	$ 53.92	Y	80%	www.cityoflacrosse.org
52	**Lake Delton** (Village)	2,934	1993	1,685	$ 18.00	Y	Undfnd	www.lakedelton.org
53	**Lancaster** (City)	3,809	2008	3,400	$ 24.00	Y	50%	www.lancasterwisconsin.com
54	**Lawrence** (Town)	4,284	2012	1,000	$ 60.00	Y	60%	www.townoflawrence.org
55	**Ledgeview** (Town)	6,555	2010	5,800	$ 34.20	Y	50%	www.ledgeviewwisconsin.com
56	**Lisbon** (Town)	10,157	2006	6,642	$ 48.00	Y	50%	www.townoflisbonwi.com
57	**Little Chute** (Village)	10,491	1999	2,762	$ 84.00	N		www.littlechutewi.org
58	**Madison** (City)	243,344	2001	Lot Area	$ 86.46	Y	Undfnd	www.cityofmadison.com
59	**Marinette** (City)	10,930	2010	3,105	$ 49.00	N		www.marinette.wi.us
60	**McFarland** (Village)	8,108	2007	3,456	$ 84.72	Y	60%	www.mcfarland.wi.us
61	**Menasha** (City)	17,588	2008	2,980	$ 75.00	Y	Undfnd	www.cityofmenasha-wi.gov
62	**Menasha** (Town)	18,498	2009	4,177	$ 100.00	Y	80%	www.town-menasha.com
63	**Menomonie** (City)	16,156	2008	3,000	$ 36.00	Y	20%	www.menomonie-wi.gov
64	**Middleton** (City)	18,411	2015	2,880	$ 14.80	Y	60%	www.ci.middleton.wi.us
65	**Milton** (City of)	5,564	2009	4,081	$ 62.88	Y	50%	http://www.ci.milton.wi.us
66	**Milwaukee** (City)	599,164	2006	1,610	$ 67.76	Y	60%	http://city.milwaukee.gov/mpw
67	**Monona** (City)	7,745	2004	NA *	$ 60.00	Y	35%	www.monona.wi.us
68	**Monroe** (City)	10,832	2007	2,728	$ 60.00	Y	50%	www.cityofmonroe.org
69	**Mount Pleasant** (Village)	26,224	2007	3,000	$ 55.00	N		www.mtpleasantwi.gov
70	**Mukwonago** (30 cust's)		2006	3,000	$ 10.31	N		www.villageofmukwonago.com
71	**Neenah** (City)	25,892	2003	3,138	$ 84.00	Y	68%	www.ci.neenah.wi.us
72	**Neenah** (Town)	3,475	2008	4,040	$ 75.00	Y	Undfnd	www.townofneenah.com
73	**New Berlin** (City)	39,834	2001	4,000	$ 60.00	N		www.newberlin.org
74	**New Glarus** (Village)	2,160	2009	3,000	$ 58.20	Y	100%	www.newglarusvillage.com
75	**New Richmond** (City)	8,610	2005	13,000	$ 35.28	Y	75%	www.ci.new-richmond.wi.us
76	**N Fond du Lac** (Village)	5,042	2007	3,123	$ 56.00	Y	70%	www.nfdl.org
77	**Oak Creek** (City)	35,008	2003	3,300	$ 29.00	Y	Undfnd	www.oakcreekwi.org
78	**Onalaska** (City)	18,312	2010	3,888	$ 59.63	Y	50%	www.cityofonalaska.com
79	**Onalaska** (Town)	5,882	2005	3,709	$ 24.00	Y	Undfnd	www.co.la-crosse.wi.us/townofonala
80	**Oshkosh** (City)	66,778	2003	2,817	$ 122.92	Y	75%	www.ci.oshkosh.wi.us
81	**Palmyra** (Village)	1,783	2000	3,387	$ 117.24	Y	50%	www.villageofpalmyra.com
82	**Pewaukee** (City)	13,827	2010	5,339	$ 120.00	Y	40%	www.cityofpewaukee.us

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Representative Wisconsin Communities

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March 4, 2016

	Name of Community or Stormwater District	Population (2013)	Created	ERU Size (sf)	Annual $/ERU or 1 fam home	Credit Policy? Y/N	Credit Policy? Max Amount	Web site addresses
83	**Pleasant Prairie** (Village)	20,173	2006	TR-55 M	$ 36.00	Y	30%	www.pleasantprairieonline.com
84	**Poynette** (Village)	2,513	2006	3,550	$ 60.00	Y	50%	www.poynette-wi.gov
85	**Prairie du Sac** (Village)	4,188	2002	43,560	(1)	N		www.prairiedusac.net
86	**Racine (**City)	78,199	2004	2,844	$ 83.01	Y	45%	www.cityofracine.org
87	**Raymond** (Town)	3,909	2008	$0.0036/sf	(2)	Y	50%	www.raymondtownof.com
88	**Reedsburg** (City of)	9,532	2009	3,024	$ 46.80	Y	50%	www.reedsburgwi.gov
89	**Rhinelander** (City)	7,557	2013	3,305	$ 39.00	Y	100%	http://rhinelandercityhall.org
90	**Rice Lake** (City)	8,339	2010	3,701	$ 57.72	N		www.ci.rice-lake.wi.us
91	**River Falls** (City)	15,209	1998	NA *	$ 37.68	Y	100%	www.rfcity.org
92	**Rochester** (Village)	3,693	2011	4,500	$ 63.20	Y	50%	www.rochsterwi.us.index.asp
93	**Salem** (Town)	12,056	2008	6,352	$ 60.00	Y	50%	www.townofsalem.net
94	**Scott** (Town)	3,545	2010	4,250	$ 45.00	Y	50%	
95	**Shorewood Hills** (Village)	1,799	2007	2,941	$ 110.00	Y	Undfnd	www.shorewood-hills.org
96	**Silver Lake** (Village)	2,420	2008	3,870	$ 94.00	N		www.villageofsilverlakewi.com
97	**Slinger** (Village)	5,141	2007	4,300	$ 47.70	Y	50%	www.slinger-wi-usa.org
98	**South Milwaukee** (City)	21,239	2007	2,964	$ 72.00	Y	50%	http://smwi.org
99	**St. Francis** (Village)	9,546	2001	2,500	$ 48.00	Y	Undfnd	www.ci.stfrancis.wi.gov
100	**Stevens Point** (City)	26,670	2013	3,364	$ 59.08	Y	60%	http://stevenspoint.com
101	**Stoughton** (City)	12,945	2012	3,105	$ 51.55	Y	50%	www.ci.stoughton.wi.us
102	**Sun Prairie** (City)	30,871	2003	3,468	$ 90.00	Y	65%	www.cityofsunprairie.com
103	**Superior** (City)	26,869	2004	2,933	$ 70.80	Y	85%	www.ci.superior.wi.us
104	**Sussex** (Village)	10,695	2006	3,897	$ 60.00	Y	49%	www.village.sussex.wi.us
105	**Two Rivers** (City)	11,525	2014	3,015	$ 34.56	Y	60%	www.two-rivers.org
106	**Union Grove** (Village)	4,884	2010	4,000	$ 21.83	Y	50%	www.uniongrove.net
107	**Vernon** (Town)	7,502	2007	6,904	$ 13.00	Y	50%	www.townofvernon.org
108	**Verona** (City)	11,775	2011	2,842	$ 53.06	Y	58%	www.ci.verona.wi.us
109	**Washburn** (City)	2,098	2005	Lot Area	$ 63.00	Y	75%	www.cityofwashburn.org
110	**Watertown** (City)	23,929	2005	2,900	$ 81.24	Y	60%	www.cityofwatertown.org
111	**Waupun** (City)	11,330	2005	3,204	$ 96.00	Y	75%	www.cityofwaupun.org
112	**Wauwatosa** (City)	47,134	2000	2,174	$ 78.60	Y	54%	www.wauwatosa.net
113	**West Allis** (City)	60,697	1997	1,827	$ 77.16	Y	50%	www.ci.west-allis.wi.us
114	**West Milwaukee** (Village)	4,215	1998	1,956	$ 36.00	Y	50%	www.westmilwaukee.org
115	**West Salem** (Village)	4,980	2007	2,400	$ 18.00	Y	Undfnd	www.westsalemwi.com
116	**Weston** (Village)	14,934	2004	3,338	$ 48.00	Y	68%	www.westonwi.gov
117	**Whitefish Bay** (Village)	14,125	2013	3,045	$ 100.00	Y	100%	www.wfbvillage.org
118	**Whitewater** (City)	14,732	2007	3,875	$ 57.00	Y	50%	www.whitewater-wi.gov
119	**Wind Point** (Village)	1,717	2008	3,857	$ 35.20	N		http://windpointwi.us
120	**Wisconsin Rapids** (City)	18,039	2009	2,620	$ 90.00	Y	50%	www.wirapids.org

Information presented here is dependent on your input! Please send updates to jmmazanec@gmail.com

Notes: (1) $43.47 per acre of impervious land; (2) $12.50 for 3,500 sf of impervious area

Special thanks to Steve Kemna/ WI PSC for contributing substantial updated information in 2015!

For more location information please visit www.strand.com

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