



Public Facilities Needs Assessment

For the Lower Badger Mill Creek Sewer and  
Drainage Improvement Impact Fee District

September 9, 2009

## **Introduction**

The City of Madison has prepared this public facilities needs assessment for extensions to the public sanitary sewer system and improvements to the stormwater management system that are required to facilitate well-planned development within the Lower Badger Mill Creek watershed consistent with the Elderberry, Pioneer, and Mid-Town Neighborhood Development Plans. This work shall serve the Lower Badger Mill Creek Sewer and Drainage Improvement Impact Fee District (LBMC Impact Fee District).

The Lower Badger Mill Creek (LBMC) watershed is a developing watershed that is part of the larger Upper Sugar River Watershed. The LBMC is west of County Trunk Highway M on the far west side of Madison, and includes portions of land within the Towns of Middleton and Verona. With future development, the portion belonging to the City of Madison is assumed to expand, with Pioneer Road (extended north and south) as the ultimate boundary to the west. The area generally includes land from Blackhawk Road south to County Trunk Highway PD. (See Exhibit A, attached.) This area will continue to experience steady development, necessitating sanitary sewer and stormwater management planning and improvements.

The City of Madison is proposing to extend and construct a new sanitary sewer interceptor, sanitary force main and lift station, greenways, storm water basins, and roadway culverts as part of the proposed sanitary sewer and drainage improvements for this watershed in order to serve new development in the LBMC Impact Fee District.

The LBMC Impact Fee District was created to help finance these improvements on a regional basis. As the LBMC watershed continues development with public facilities, other areas may require establishment of additional impact fee districts, depending on timing, location, and specific improvements of each development. Rather than levying these specific improvements over the entire LBMC watershed, they shall be levied only to the specific properties impacted by those localized improvements. In addition, in areas where the LBMC Impact Fee District overlaps with existing Impact Fees, and covers the same improvements, the developer will only be required to pay one Impact Fee as determined by the City Engineer.

## **Location Description of Impact Fee District**

The LBMC Impact Fee District consists of two separate impact fee zones: the LBMC Sanitary Sewer Impact Fee Zone, and the LBMC Stormwater Impact Fee Zone. Together, these Impact Fee Zones make up the District. The creation of two separate zones is necessary to address the differing sanitary sewer and drainage needs within the LBMC Impact Fee District. The zones are similar, except for portions of land north of Mineral Point Road, east of Redan Drive, and south of Mid-Town Road.

### ***Location Description of the LBMC Sanitary Sewer Impact Fee Zone***

Any and all parcels (platted and/or metes and bounds), or portions thereof, that reside within, or is altered to discharge within the Lower Badger Mill Creek Watershed. These lands are located within the City of Madison, Town of Middleton, and Town of Verona as follows:

Parts of the SE ¼ of Section 17, all of the East ½ of Section 20, parts of the West ½ and SE ¼ of Section 21, parts of the West ½ of Section 27, parts of all quarters of Section 28, all of the East ½ of Sections 29 and 32, and parts of all quarters of Section 33, all within Town 7 North, Range 8 East, located in the Town of Middleton and the City of Madison. Also parts of the North ½ of Section 4 within Town 6 North, Range 8 East, located in the Town of Verona and the City of Madison. (See Exhibit B, attached.)

### ***Location Description of the LBMC Stormwater Impact Fee Zone***

Any and all parcels (platted and/or metes and bounds), or portions thereof, that reside within, or is altered to discharge within the Lower Badger Mill Creek Watershed. These lands are located within the City of Madison, Town of Middleton, and Town of Verona as follows:

Parts of the SW ¼ of Section 16, parts of the SE ¼ of Section 17, all of the East ½ of Section 20, parts of the West ½ and SE ¼ of Section 21, parts of the West ½ of Section 27, parts of all quarters of Section 28, all of the East ½ of Sections 29 and 32, and parts of all quarters of Section 33, all within Town 7 North, Range 8 East, located in the Town of Middleton and the City of Madison. Also parts of the NE ¼ of Section 4 within Town 6 North, Range 8 East, located in the Town of Verona and the City of Madison. (See Exhibit C attached.)

### **Existing Public Facilities**

#### ***Sanitary Sewer***

Within the LBMC Sanitary Sewer Impact Fee Zone, approximately 1,933 acres are undeveloped. It is assumed that 60% of this area (1,160 acres) shall be developed and will be assessed impact fees. Another 389 acres are already developed and may be levied sanitary assessments or connection charges. Environmental corridors make up approximately 135 acres, and the remaining is within street rights of way. For the purposes of this Impact Fee Zone, all park lands shall be treated as Environmental Corridors.

Presently, the southern portion of the LBMC Sanitary Sewer Impact Fee Zone watershed is served by a series of temporary pumping stations and gravity sewer mains that drain to the City's Shady Point Lift Station. This pumping station utilizes a 10" diameter force main that is connected to a 15" gravity sewer main which is connected to a 24" MMSD sewer Interceptor (Nine Springs Valley/ Midtown Ext.) at Mid-Town Road and County Highway M. A second lift station located at Soaring Sky Run, serves the plat of Hawks Woods. This lift station pumps to the Shady Point Lift Station. Both the Shady Point Lift Station and Soaring Sky Run Lift Station are planned to be taken out of service with this project and replaced with a higher capacity regional lift station, Lower Badger Mill Creek Lift Station, located approximately 1000' west of the Shady Point Lift Station on the north side of Mid-Town Road. The 10" force main will continue to be utilized with the new Lift Station.

A combination of a 15-inch diameter gravity main, a temporary pumping station (Lost Pine Lift Station) and a 4-inch force main serve the middle portion of the watershed. A

combination of a 12-inch diameter gravity main, a temporary pumping station (South Point Road Lift Station) and an 8-inch diameter force main serve the northern portion of the watershed. Both the Lost Pine Lift Station and the South Point Lift Station will remain in service for the intermediate time period. These stations shall be relieved the same time as the ultimate relief of the Lower Badger Mill Creek Lift Station, which is created and installed by this Impact Fee District. MMSD's 24-inch diameter sewer interceptor (Nine Springs Valley/ Midtown Ext.) at Mid-Town Road and County Highway M will have adequate capacity until the Lower Badger Mill Creek Lift Station has reached its projected service limit. All 3 lift stations shall be relieved when MMSD extends the Lower Badger Mill Creek Interceptor to Mid Town Road from County Highway PD.

### ***Stormwater***

Within the LBMC Stormwater Impact Fee Zone, approximately 1,878 acres are undeveloped. It is assumed that 60% of this area (1,127 acres) shall be developed and will be assessed impact fees. Of the remaining area, 416 acres are already developed and 135 acres are within environmental corridors. For the purposes of this Impact Fee Zone, all park lands shall be treated as Environmental Corridors.

The drainage system of the watershed is comprised of a main intermittent channel that flows south while collecting water from east and west branches along its course. For purposes of public improvements, the main channel begins at Mineral Point Road just East of Pioneer Road and flows roughly parallel to Pioneer Road. It crosses under Valley View Road near its intersection with and just East of Meadow Road. It then runs parallel to Meadow Road until it reaches the box culverts at Midtown Road. Presently, the drainage in the area consists of intermittent flow during rain events or snowmelt. The entire watershed extends north of Mineral Point, but the improvements all shall occur only between Mineral Point Road and Mid Town Road. Development brings greater impervious surfaces, more stormwater volume, and a reduction in the time of concentration. Without a stormwater management plan for the LBMC watershed, the result will be a significantly higher peak flow following development. The City of Madison recognizes that unmanaged stormwater runoff from development can negatively impact the water resources in the watershed and in downstream areas by increasing runoff volumes and peak flows while decreasing water quality.

The City of Madison contracted with Earth Tech, Inc. to develop a stormwater management plan for this watershed. The Lower Badger Mill Creek Stormwater Management Plan was developed to address stormwater quality and quantity issues associated with such large-scale development. Implementation of the plan as proposed will keep the peak discharge at the current level (at Mid Town Road). For a more detailed description of existing conditions, refer to the report produced by Earth Tech, Inc. titled *Lower Badger Mill Creek Stormwater Management Analyses*<sup>1</sup> on file at City of Madison Engineering. This report was completed in June 2003.

### **New Public Facilities Required for Land Development**

#### ***Sanitary Sewer***

Preliminarily, the City of Madison is proposing to extend new 12-, 15-, 18-, 21-, and 27-inch sanitary sewer interceptors, and install a 10-inch sanitary force main and lift station to serve the area. Pipe sizes may be adjusted with final design plans. In general, the new sanitary sewer main(s) shall parallel the greenways within a 20-ft easement. Easement acquisition costs, including temporary construction easements, shall be included in the Impact Fee. In some areas, the location may change if necessary due to the location of the proposed ponds and because the mains will need to branch off to serve other developments. The new force main and lift shall be used to serve approximately the first 1,000 dwelling units in the LBMC Sanitary Sewer Impact Fee Zone to develop. The new lift station shall be located east of the intersection of Meadow Road and Midtown Road. The lift station is considered temporary and can be relieved by Madison Metropolitan Sewerage District when necessary (lift station capacity exhausted). See Exhibit B for the layout of the proposed sanitary sewer main and the site of the new lift station.

The estimated costs associated with easement acquisition, planning, designing, permitting, and constructing sanitary gravity mains, force main and pumping station is included in Exhibit D.

### ***Stormwater***

Currently there are twelve (12) public detention ponds in the LBMC watershed to the east of Pioneer Road. These facilities serve existing development only. New proposed facilities will be constructed along the existing primary drainage channel (determined to be non-navigable), which runs north-south near the middle of the watershed. Without these additional stormwater management practices, there would be a significant increase in peak flows during the design storm, associated with new development in this watershed. To control the excess peak flow associated with development, the City of Madison proposes to design and construct “regional” improvements, including seven large retention ponds, new culverts at Midtown Road, Valley View Road, and a segment of greenway that will have to be piped due to existing development constraints. Developers shall be required to construct “local” improvements consisting of detention basins, wet ponds, and greenways with their respective developments within the watershed. These local improvements shall be in compliance with City, County, and Wisconsin Department of Natural Resources stormwater management standards. However, developers shall also benefit overall from this plan since it reduces the uncertainty associated with meeting the regional stormwater goals. These goals became a mandatory component of the amendment approval from the Dane County Regional Plan Commission when the area was brought into the Central Urban Service Area and approved for development and became eligible to receive public sewer. This approval constitutes the State mandated ‘Water Quality Certification’ for this process.

The proposed regional detention basins shall be the primary tool for controlling the peak flow of stormwater runoff. These basins shall have engineered outlet structures and properly proportioned storage areas to prevent exceeding capacities downstream up to and including the 100-year storm event. The majority of the detention systems will be planned and constructed by the city in conjunction with proposed private developments on adjacent lands. For the purpose of the LBMC Stormwater Impact Fee Zone cost estimation, it is assumed that lands for regional basins shall be approximately 50% purchased and 50% dedicated.

The City of Madison has also planned greenway segments within the area. Most, if not all of these shall be constructed by the Developer at the time of platting, but this Stormwater Impact Fee Zone would allow for City purchase and / or construction of greenway segments if necessary, including piping of short segments. The primary function of a greenway is to convey all storm events safely and effectively. Greenways are important features of the landscape as they provide an open space aesthetic for humans, protect the remaining natural resources in an urbanized area, and preserve connectivity between other, large open spaces. Greenways will be constructed as part of and in conjunction with the development of the adjacent lands and will vary in width from 100 feet to 200 feet, depending upon the location.

The estimated costs associated with designing and constructing seven basins, two culverts, and one piped greenway system, are included in Exhibit E. The locations of the projects are shown on the attached map, Exhibit C. Costs are also included for purchase of portions of the lands that the basins will occupy.

### **Project Funding**

To finance such a watershed management plan, the City of Madison, pursuant to Wis. Stats. § 66.0617(2) has passed an Impact Fee Ordinance (Chapter 20 of Madison Code of Ordinances) that can require fees to be paid by developers to compensate for the capital costs necessary to accommodate land development. In the Lower Badger Mill Creek watershed, these costs would be associated with the installation of the sanitary gravity mains, sanitary force mains, lift station, regional retention basins, greenways, and the roadway culvert crossing, including costs for easement or fee acquisition, surveying, planning, design, permitting, and inspection. The design costs would also include the costs of regional studies performed on a planning level, to allow the development within this watershed.

### **Impact Fee**

The impact fees are based on the *net developable* area for the rate calculations. The net developable area is the area of the parcels of land, exclusive of street rights of ways and drainage areas or Park areas. The rate will be the same for all land uses and zoning districts, except that the sanitary sewer lift station and force main costs shall be apportioned on a 'per dwelling unit' basis. It was assumed for this watershed that 60% of the total undeveloped lands would be included in the net developable areas. It is assumed that the remaining 40% will not be developed due to a loss of lands for public purposes such as street rights of ways, public parks, public drainage land, and other public natural areas. Net acres of developed lands are the total area of land, excluding the street rights of way. The costs for the temporary lift station shall be calculated separately for a separate Impact Fee component. Since the lift station serves approximately the first 1,000 dwelling units within the watershed, the Impact Fee shall be levied to the first 1,000 dwelling units on a 'per dwelling unit' basis. Development beyond the 1,000 dwelling units shall be dependent on the schedule for the MMSD relief interceptor. For purposes of calculating and apportioning non-residential properties, those properties shall use an equivalency factor of 1 equivalent dwelling unit = 185 gallons per day usage.

Lands that are already developed may be charged with a sanitary assessment or a connection fee in the future. The assessments and connection fees are based on the same

rate that was used for calculating the impact fees. Properties that are *not* developed shall be levied an impact fee. The estimated total cost to complete the sanitary sewer interceptor and land acquisition components of the project is calculated to be \$3,806,744.23Error! Not a valid link. (2009 dollars). The total estimated cost was divided by the net developable area (1159.662 acres) plus those areas that are subject to sanitary assessments or connection fees (389.32 acres). The City shall assume the cost for properties already developed and on the sanitary sewer system that did not sign waivers prior to instituting the LBMC Sanitary Sewer Impact Fee (336.56 acres). The City's total portion will be \$827,122.48Error! Not a valid link.. Error! Not a valid link.The fee rate (for the interceptor only) is calculated to be \$2,461.84 per acre, or \$56.52 per 1,000 square feet of Net Developed Area.

The total estimated cost for the lift station/force main components is \$595,052. All costs shall be assigned to the first 1000 dwelling units that shall benefit from the improvement prior to the MMSD Interceptor Relief. This rate (for these components only) is calculated to be \$595.05 per dwelling unit and can be applied to any dwelling unit within the LBMC Sanitary Sewer Impact Fee Zone that benefits from the Lift Station and develops prior to the MMSD Interceptor Relief.

To calculate the stormwater impact fees associated with this project, the City of Madison first estimated the total cost to complete the stormwater components of the project to be \$8,476,319 (2009 dollars). The estimated total cost was divided by the net developable area (1126.82 acres) plus the developed area (415.64Error! Not a valid link. acres) within the watershed. This rate is calculated on a Error! Not a valid link.'per acre' basis but also established as a rate 'per 1000 square feet net area'. The City of Madison will use the Stormwater Utility to assume the pro-rated cost for developed areas in the City of Madison. Refer to the attached tables (Exhibit D) for a detailed cost analysis for each segment of the project. The Stormwater Utility's total portion will be \$1,035,155.31. The LBMC Stormwater Impact Fee will cover the remainder of the costError! Not a valid link.. This fee rate is calculated to be \$5,495.33 per net developable acre, or \$126.16 per 1,000 square feet of Net Developed Area.

### **Sanitary Assessment and Connection Fees**

The 389.32 acres already developed will not be levied impact fees; rather they will be specially assessed (City of Madison parcels) or charged a connection fee (Town of Middleton parcels) to help finance the sanitary sewer improvements that will benefit their properties. The Madison Sewer Utility shall pay the proportionate share for any developed properties that will contribute to the sewer system, but are not obligated to pay by assessment. If a property currently has an on-site sewerage disposal system in place, a connection fee for sanitary sewer improvements will be due at the actual time of connection to the sanitary sewer system. The assessment rate and connection fee was calculated to be \$2,461.84 per net acre. (They would incur additional assessment not included in this rate for the local main, lateral, etc.).

### **Adjustments to Impact Fee**

The LBMC Impact Fee shall be adjusted annually for inflation, based on the Construction Cost Index as published in the *Engineering News Record*. The base month/year for

calculating such adjustment shall be the month/year of final Common Council adoption of this Impact Fee Ordinance.

**Effect of storm and sanitary impact fees on housing costs**

Depending on where a parcel is located within the watershed, fees may include any of the following: stormwater impact fees, sanitary interceptor/land acquisition impact fees/assessments, or sanitary lift station impact fees. For new development, the first 1000 dwelling units shall be assessed stormwater impact fees, sanitary interceptor and pumping station fees. The fees were estimated to be \$5,495.33 per net acre for stormwater (\$126.16 per 1,000 square feet of Net Developed Area), \$2,461.84 per net acre for sanitary interceptor (\$56.52 per 1,000 square feet of Net Developed Area), and \$595.05 per dwelling unit for the pumping station. The effect on housing costs was also calculated, based on minimum and average housing densities for a variety of residential zones, including the two examples that follow. The current (2009) minimum lot size for R2Z, single-family housing, is 3,500 square feet whereas the average city lot size is 0.25 acre (10,890 square feet). The additional cost incurred by new dwelling units in the District would be as follows:

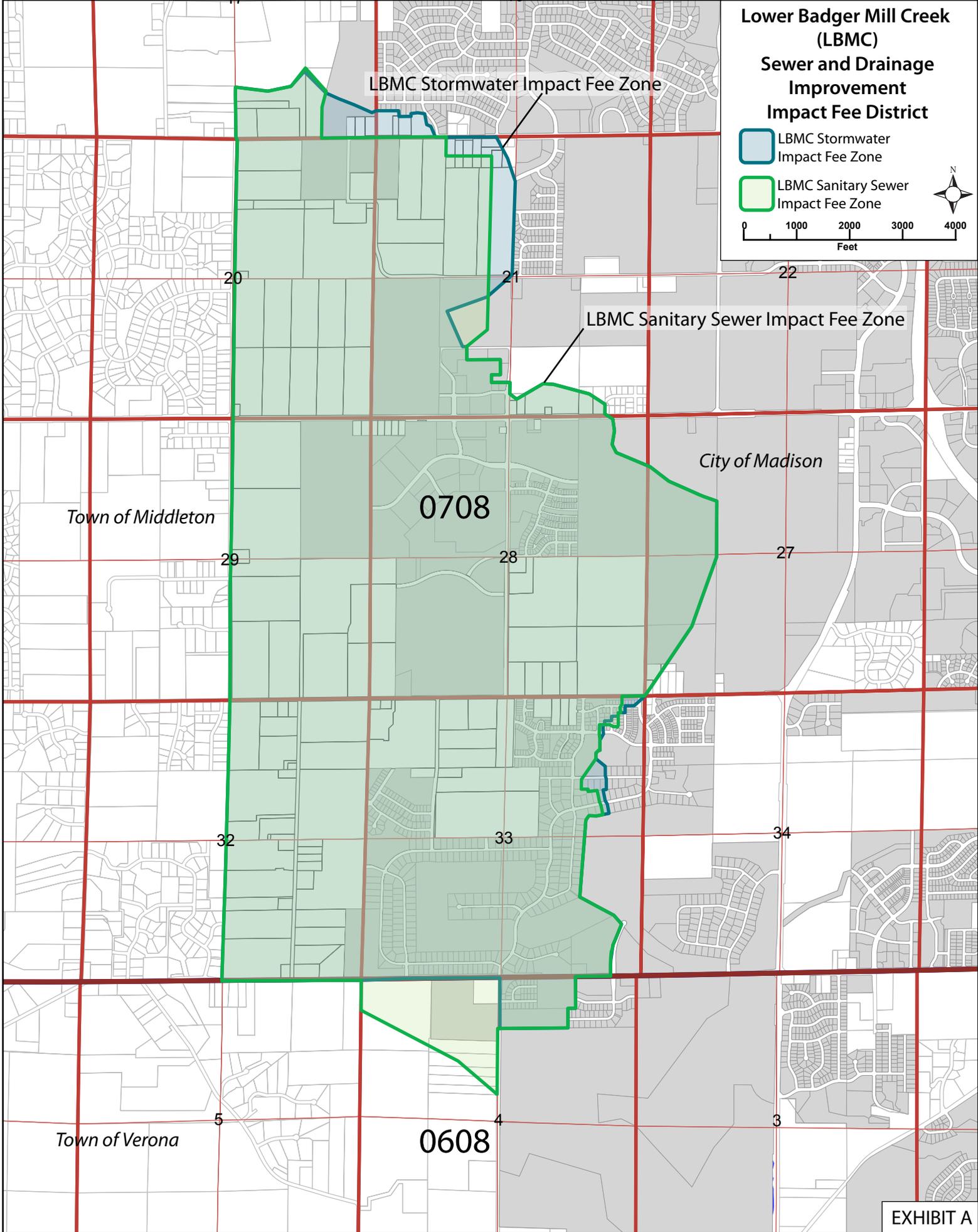
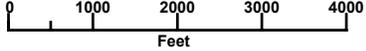
	Stormwater Zone Only		Sanitary Sewer Zone Only		Both Zones	
	3500 ft <sup>2</sup>	.25 acre	3500 ft <sup>2</sup>	.25 acre	3500 ft <sup>2</sup>	.25 acre
First 1000 Dwelling Units	1036.59	1968.88	792.86	1210.51	1234.4	2584.34
Subsequent Units	441.54	1373.83	197.81	615.46	639.35	1989.29

The City of Madison has over 108,000 existing dwelling units, many of which are affordable to a wide range of households. The City has prepared a Comprehensive Plan which includes objectives and policies to increase housing affordability within the City. This Plan builds on plans targeted specifically at providing affordable housing including the Comprehensive Housing Affordability Strategy, the Five Year Housing and Community Development (Consolidated) Plan and the Madison Community Development Authority’s Public Housing Plans. The City has also worked to preserve the quality of its existing housing stock and to provide new housing and higher relative densities as one way to reduce the per unit cost of land and to increase the efficiency of service provided to housing which is built. Impact fees charged for new development in the City cover the provision of basic infrastructure and capital facilities that are a prerequisite for development in the areas covered by the fees. The amount of the fees is directly related to the need to provide capital facilities which are necessitated by and attributable to the benefitting development. These fees represent a small proportion of the total costs to provide housing when considering the cost of land, other infrastructure requirements, the cost to construct housing and financing. Hence, the cumulative effect of all the Impact Fees already imposed by the City of Madison, as well as the effect of the LBMC Impact Fees, should not have a significant negative impact on the availability of affordable housing within the community.

<sup>1</sup> From a report by Earth Tech, Inc. *Lower Badger Mill Creek Stormwater Management Analyses*. June 2003.

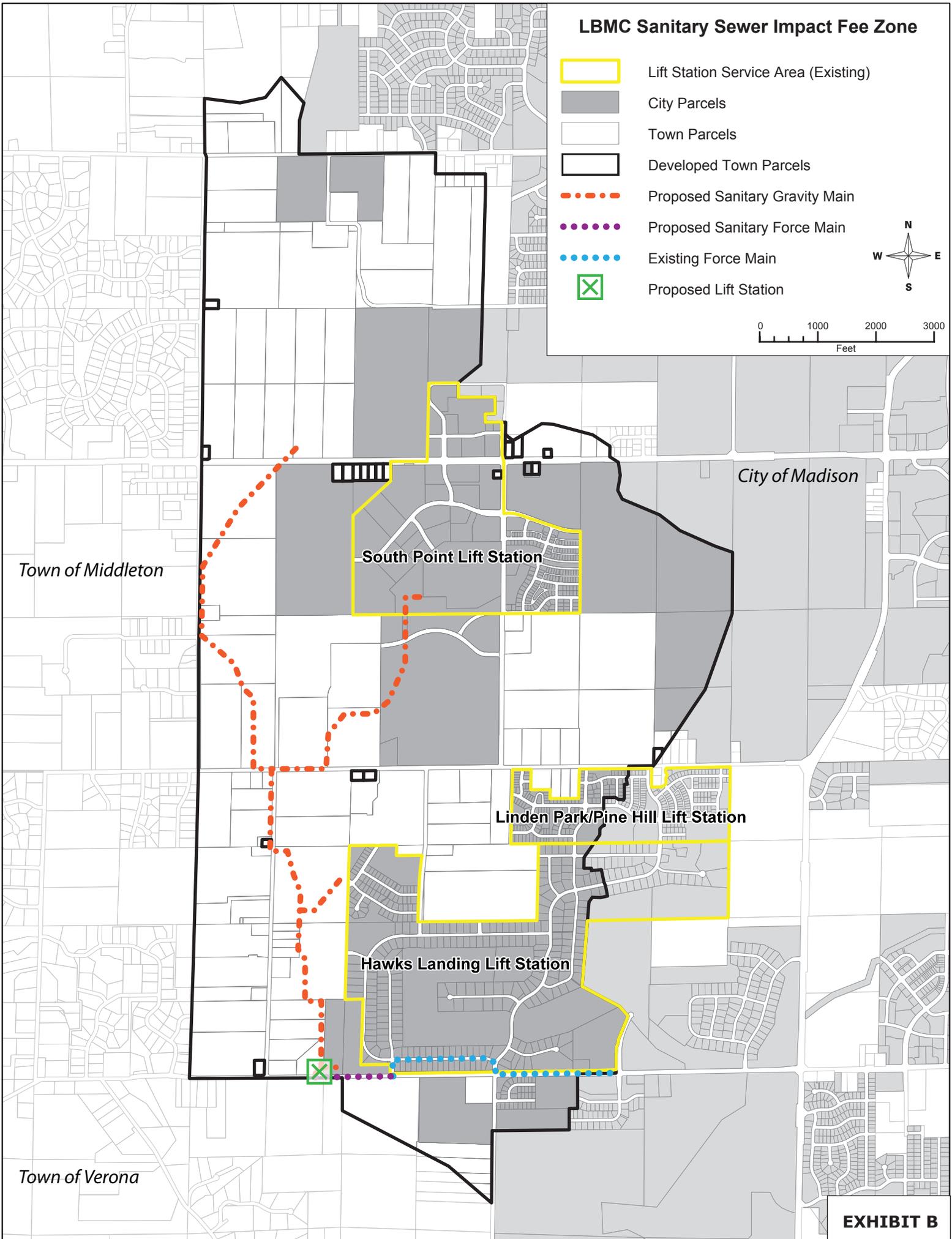
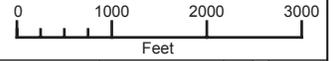
**Lower Badger Mill Creek  
(LBMC)  
Sewer and Drainage  
Improvement  
Impact Fee District**

-  LBMC Stormwater Impact Fee Zone
-  LBMC Sanitary Sewer Impact Fee Zone



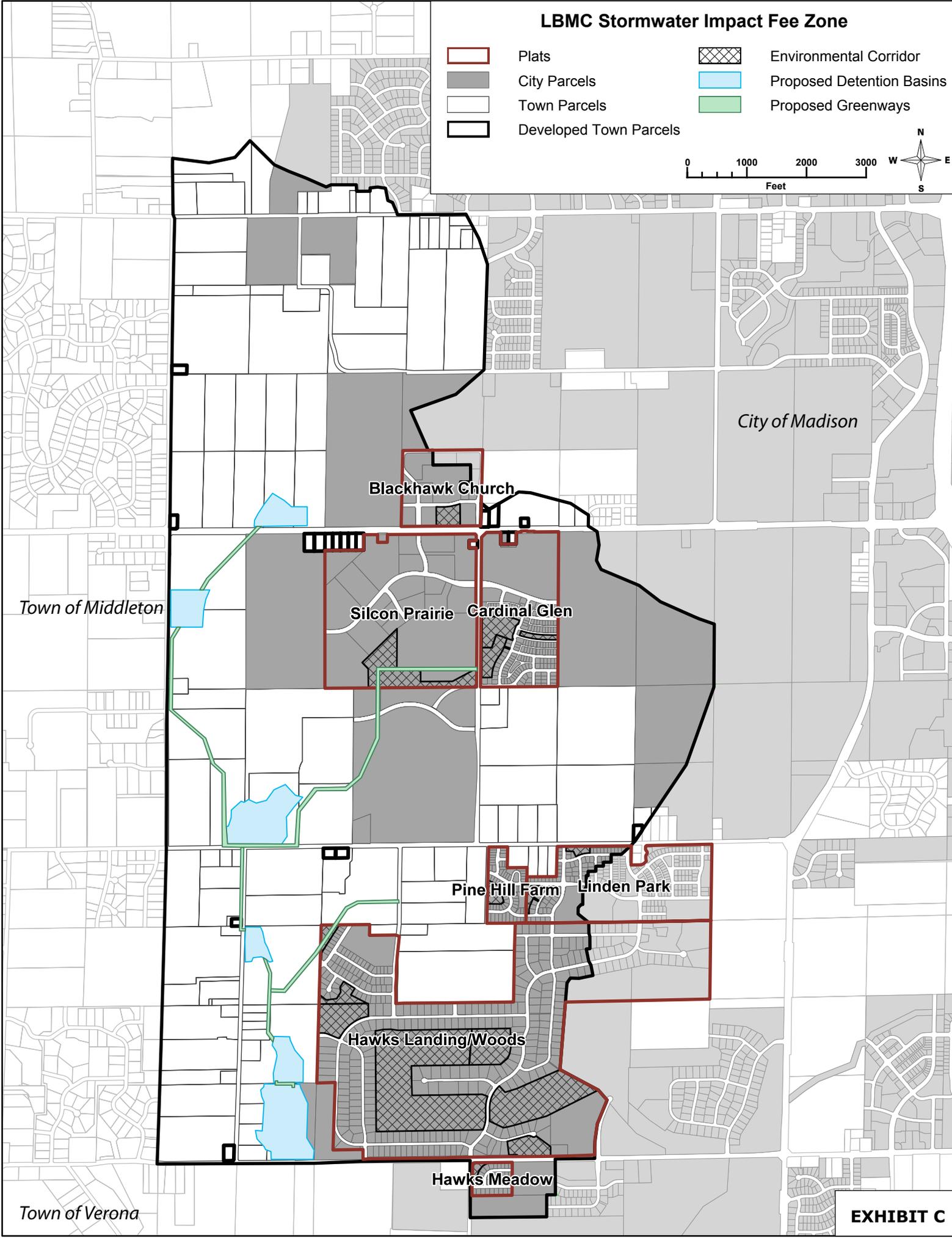
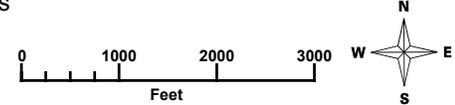
# LBMC Sanitary Sewer Impact Fee Zone

-  Lift Station Service Area (Existing)
-  City Parcels
-  Town Parcels
-  Developed Town Parcels
-  Proposed Sanitary Gravity Main
-  Proposed Sanitary Force Main
-  Existing Force Main
-  Proposed Lift Station



# LBMC Stormwater Impact Fee Zone

-  Plats
-  City Parcels
-  Town Parcels
-  Developed Town Parcels
-  Environmental Corridor
-  Proposed Detention Basins
-  Proposed Greenways



Town of Middleton

City of Madison

Town of Verona

**EXHIBIT C**

SANITARY SEWER COST ESTIMATES FOR NEW PUBLIC FACILITIES REQUIRED FOR DEVELOPMENT IN  
THE LOWER BADGER MILL CREEK WATERSHED  
(IN 2009 DOLLARS)

<b>SANITARY MAIN COST</b>					
Item	Quantity	Unit	Unit Cost	Total Cost	
12" Sanitary Sewer	151	LF	\$90.00	\$13,590.00	
12" Gravity Main on Mid Town Road				\$150,000.00	
15" Sanitary Sewer	4,049	LF	\$100.00	\$404,900.00	
18" Sanitary Sewer	3,060	LF	\$110.00	\$336,600.00	
21" Sanitary Sewer	4,562	LF	\$110.00	\$501,820.00	
27" Sanitary Sewer	6,329	LF	\$125.00	\$791,125.00	
4' Diameter SAS	32	EACH	\$2,000.00	\$64,000.00	
5' Diameter SAS	12	EACH	\$2,000.00	\$24,000.00	
6' Diameter SAS	4	EACH	\$2,000.00	\$8,000.00	
Pavement Patch Type III	2,426	TF	\$35.00	\$84,910.00	
30" Steel Casing	75	L.F.	\$200.00	\$15,000.00	
Trench Restoration	18,151	TF	\$10.00	\$181,510.00	
			Subtotal	\$2,575,455.00	
			Engineering & Contingencies (20%)	\$515,091.00	
			<b>Interceptor Total</b>	<b>\$3,090,546.00</b>	
<b>SANITARY LAND COST</b>					
Easement Acquisition Gravity Mains	Length (ft)	Width (ft)	Easement	Total Acres	Cost/Acre
	18,151	25	50%	5.21	\$110,000.00
				Sanitary Interceptor Land Costs	\$572,948.23
				TLE's, Appraisals, Legal Fees	\$143,250.00
				<b>Total Land Costs</b>	<b>\$716,198.23</b>
				<b>Total Sewer Interceptor Costs \$3,806,744.23</b>	

<b>MIDTOWN PUMPING STATION</b>				
Item	Quantity	Unit	Unit Cost	Total Cost
Lift Station Construction	1	EACH	\$210,000.00	\$210,000.00
Other Mechanical Equipment & Piping	1	EACH	\$70,000.00	\$70,000.00
Site Work	1	EACH	\$40,000.00	\$40,000.00
Electrical Work	1	EACH	\$15,000.00	\$25,000.00
Telemetry	1	EACH	\$25,000.00	\$25,000.00
Dewatering	1	EACH	\$10,000.00	\$10,000.00
			Subtotal	\$380,000.00
			Engineering & Contingencies (20%)	\$76,000.00
			<b>Pumping Station Total</b>	<b>\$456,000.00</b>
<b>FORCE MAINS</b>				
<b>Force Main from Permanent Midtown Pumping Station to Shady Point Lift Station</b>				
Item	Quantity	Unit	Unit Cost	Total Cost
10" PVC Force Main	1,143	LF	\$60.00	\$68,580.00
Pavement Patch Type III	1,143	TF	\$35.00	\$40,005.00
			Subtotal	\$108,585.00
			Engineering & Contingencies (20%)	\$21,717.00
			<b>Force Main Total</b>	<b>\$130,302.00</b>
<b>Lift Station Land Costs</b>				<b>\$8,750.00</b>
<b>Total for Pumping Station Installation</b>				<b>\$595,052.00</b>

**Project Cost Total (Sanitary Only) \$4,401,796.23**

STORM SEWER COST ESTIMATES FOR NEW PUBLIC FACILITIES REQUIRED FOR DEVELOPMENT IN  
THE LOWER BADGER MILL CREEK WATERSHED  
(2009 DOLLARS)

<b>MIDTOWN ROAD CULVERT</b>				
<b>BID ITEM</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>UNIT COST</b>	<b>TOTAL COSTS</b>
Outlet Structure (8'x5' Box Culvert)	175	LF	\$300.00	\$52,500
Extend 3 Existing Box Culverts	300	LF	\$300.00	\$90,000
Remove Existing Wingwalls	2	Each	\$5,000.00	\$10,000
New Wingwall Structures	2	Each	\$25,000.00	\$50,000
Paving & Misc. (Est.)				\$20,000
			Subtotal	\$222,500
			Engineering (20%)	\$44,500
			Total	\$267,000

<b>VALLEY VIEW ROAD CULVERT</b>				
<b>BID ITEM</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>UNIT COST</b>	<b>TOTAL COSTS</b>
Outlet Structure (10'x5' Box Culvert)	125	LF	\$450.00	\$56,250
New Wingwall Structures	2	Each	\$25,000.00	\$50,000
Paving & Misc. (Est.)				\$20,000
			Subtotal	\$126,250
			Engineering (20%)	\$25,250
			Total	\$151,500

<b>CULVERT FROM Pn-1 TO TUMBLEDOWN TRAILS CULVERT (UNDER PIONEER ROAD)</b>				
<b>BID ITEM</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>UNIT COST</b>	<b>TOTAL COSTS</b>
1 - 48" RCP (inc. backfill)	1000	LF	\$150.00	\$150,000
OUTLET STRUCTURE POND Pn-1	1	Each	\$25,000.00	\$25,000
APRON END & GATE	1	Each	\$4,000.00	\$4,000
			Subtotal	\$179,000
			Engineering (20%)	\$35,800
			Total	\$214,800

<b>PP-2 BASIN</b>				
<b>BID ITEM</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>UNIT COST</b>	<b>TOTAL COSTS</b>
Excavation Cut	129,067	CY	\$3.00	\$387,201
Erosion Matting	7,000	SY	\$3.50	\$24,500
Outlet Structure	1	Each	\$25,000.00	\$25,000
Seeding	13,611	SY	\$1.50	\$20,417
Land Acquisition	4	Acre	\$110,000.00	\$440,000
			Subtotal	\$897,118
			Engineering (20%)	\$91,424
			Total	\$988,541

STORM SEWER COST ESTIMATES FOR NEW PUBLIC FACILITIES REQUIRED FOR DEVELOPMENT IN  
THE LOWER BADGER MILL CREEK WATERSHED  
(2009 DOLLARS)

<b>PN-1 BASIN</b>				
<b>BID ITEM</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>UNIT COST</b>	<b>TOTAL COSTS</b>
Excavation Cut	92,605	CY	\$3.00	\$277,815
Erosion Matting	6,222	SY	\$3.50	\$21,777
Outlet Structure	1	Each	\$25,000.00	\$25,000
Seeding	12,222	SY	\$1.50	\$18,333
Land Acquisition	4.1	Acre	\$110,000.00	\$451,000
			Subtotal	\$793,925
			Engineering (20%)	\$68,585
			Total	\$862,510

<b>EP-1 BASIN</b>				
<b>BID ITEM</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>UNIT COST</b>	<b>TOTAL COSTS</b>
Excavation Cut	228,126	CY	\$3.00	\$684,378
Erosion Matting	7,155	SY	\$3.50	\$25,043
Outlet Structure	1	Each	\$25,000.00	\$25,000
Seeding	13,889	SY	\$1.50	\$20,834
Land Acquisition	10.1	Acre	\$110,000.00	\$1,111,000
			Subtotal	\$1,866,254
			Engineering (20%)	\$151,051
			Total	\$2,017,305

<b>EP-5 BASIN</b>				
<b>BID ITEM</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>UNIT COST</b>	<b>TOTAL COSTS</b>
Excavation Cut	29,000	CY	\$3.00	\$87,000
Erosion Matting	4,231	SY	\$3.50	\$14,809
Outlet Structure	1	Each	\$25,000.00	\$25,000
Seeding	8,667	SY	\$1.50	\$13,001
Land Acquisition	1.1	Acre	\$110,000.00	\$121,000
			Subtotal	\$260,809
			Engineering (20%)	\$27,962
			Total	\$288,771

<b>EP-6 BASIN</b>				
<b>BID ITEM</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>UNIT COST</b>	<b>TOTAL COSTS</b>
Excavation Cut	118,742	CY	\$3.00	\$356,226
Erosion Matting	6,533	SY	\$3.50	\$22,866
Outlet Structure	1	Each	\$25,000.00	\$25,000
Seeding	12,777	SY	\$1.50	\$19,166
Land Acquisition	4.6	Acre	\$110,000.00	\$506,000
			Subtotal	\$929,257
			Engineering (20%)	\$84,651
			Total	\$1,013,908

STORM SEWER COST ESTIMATES FOR NEW PUBLIC FACILITIES REQUIRED FOR DEVELOPMENT IN  
THE LOWER BADGER MILL CREEK WATERSHED  
(2009 DOLLARS)

<b>EP-7 BASIN</b>				
<b>BID ITEM</b>	<b>QUANTITY</b>	<b>UNIT</b>	<b>UNIT COST</b>	<b>TOTAL COSTS</b>
Excavation Cut	260,150	CY	\$3.00	\$780,450
Erosion Matting	11,200	SY	\$3.50	\$39,200
Outlet Structure	1	Each	\$25,000.00	\$25,000
Seeding	21,111	SY	\$1.50	\$31,667
Land Acquisition	10.75	Acre	\$110,000.00	\$1,182,500
			Subtotal	\$2,058,817
			Engineering (20%)	\$175,263
			<b>Total</b>	<b>\$2,234,080</b>

<b>GREENWAY COST ESTIMATES</b>				
<b>GREENWAY</b>	<b>STRETCH</b>	<b>LENGTH</b>	<b>COST PER FT</b>	<b>TOTAL COST</b>
A	PP-2 TO PN-1	1,500	\$21.50	\$32,250
B	PN-1 TO EP-1	3,400	\$21.50	\$73,100
C	EP-1 TO EP-5	1,500	\$21.50	\$32,250
D	EP-5 TO EP-6	1,500	\$21.50	\$32,250
E	EP-6 TO EP-7	500	\$21.50	\$10,750
F	EP-1 TO EAST (South Point)	3,800	\$21.50	\$81,700
G	EP-5/EP-6 TO HAWKS LANDING	2,600	\$21.50	\$55,900
			<b>Total</b>	<b>\$318,200</b>

<b>GREENWAY LAND COST</b>				
<b>GREENWAY</b>	<b>STRETCH</b>	<b>LENGTH</b>	<b>COST PER FT</b>	<b>TOTAL COST</b>
A	PP-2 TO PN-1	1,500	\$91.83	\$137,745
B	PN-1 TO EP-1	3,400	\$91.83	\$312,222
C	EP-1 TO EP-5	1,500	\$91.83	\$137,745
D	EP-5 TO EP-6	1,500	\$91.83	\$137,745
E	EP-6 TO EP-7	500	\$91.83	\$45,915
F	EP-1 TO EAST (South Point)	4,500	\$91.83	\$413,235
G	EP-5/EP-6 TO HAWKS LANDING	2,600	\$91.83	\$238,758
(Assume all dedicated)			<b>Total Stormwater Land Cost</b>	<b>\$0</b>

<b>TOTAL COST OF STORMWATER IMPROVEMENTS</b>	
<b>IMPROVEMENT</b>	<b>COST</b>
<b>Stormwater Planning Study</b>	<b>\$119,704</b>
<b>Major Culvert Crossings</b>	<b>\$633,300</b>
<i>Stormwater Basins (Land)</i>	\$3,811,500
<i>Stormwater Basins (Construction)</i>	\$3,593,615
<b>Stormwater Basins Total</b>	<b>\$7,405,115</b>
<b>Greenways</b>	<b>\$318,200</b>
<hr/>	
<b>Project Cost Total (Storm Only)</b>	<b>\$8,476,319</b>