

INTERGOVERNMENTAL COOPERATION AGREEMENT  
BETWEEN THE CITY OF MILWAUKEE AND  
THE MILWAUKEE METROPOLITAN SEWERAGE DISTRICT  
CONCERNING IMPLEMENTATION OF THE CITY OF MILWAUKEE'S  
2005 INFILTRATION AND INFLOW DEMONSTRATION PARTNERSHIP PROJECT

The City of Milwaukee, a general purpose municipal corporation, organized and operating pursuant to special charter, hereafter "City," and the Milwaukee Metropolitan Sewerage District, a municipal body corporate, organized and operating pursuant to secs. 200.21 through 200.65, Stats., hereafter "District," enter into this Intergovernmental Cooperation Agreement, pursuant to sec. 66.0301, Stats., on the date last appearing below on the signature page, for the purpose of implementing the City's proposed 2005 Infiltration and Inflow Demonstration Partnership Project, and to otherwise establish the terms and conditions of this agreement:

WHEREAS, the City provides sanitary sewers through which sanitary sewage from City residences, commercial facilities, and industries is collected and transported to the sewerage system of the District; and

WHEREAS, the District has established a sewerage system for the collection, transportation, treatment and disposal of sewage generated within the District's sewerage service area, including the area served by the City; and

WHEREAS, the City and the District agree that removal of excess infiltration and inflow, hereafter "I/I," from any sanitary sewerage system is a benefit to both the local sewerage system and to the regional sewerage system because excess I/I can unnecessarily decrease the conveyance capacity of the sewerage system and can surcharge or back sewage into building drains and basements; and

WHEREAS, sanitary sewers that surcharge and back sewage into residential, commercial, and industrial drains and basements create a risk to public health and well-being; and

WHEREAS, the parties believe it is in the best interest of the City and of the District that different means and methods to remove unnecessary levels of I/I from local

sanitary sewerage systems be tested to determine the means and methods likely to produce a cost-effective and efficient means to remove excess I/I from local sanitary sewerage systems; and

WHEREAS, the City proposed a 2005 Infiltration and Inflow Demonstration Partnership Project that the Milwaukee Metropolitan Sewerage Commission agreed to fund in Commission Resolution 05-020-2, adopted on February 28, 2005; and

WHEREAS, the City has already begun work in furtherance of its proposed 2005 Infiltration and Inflow Demonstration Partnership Project;

NOW, THEREFORE, in light of the above and foregoing declarations, the City and the District agree that in consideration of the mutual promises made by them in this Agreement:

1. The City has submitted, and the District has approved, a written work plan attached as Exhibit A. This plan includes the work proposed, the schedule for when the work will be performed, the estimated cost of the work, and the desired deliverables. The parties hereto recognize that this work plan is subject to change in the event conditions change on the project or new ideas or new methods are developed as a result of the project.
2. The City will conduct either competitive bidding or request proposals to select the contractor or contractors to perform the various elements of the City's 2005 Infiltration and Inflow Demonstration Partnership Project. The City will certify to the District that the City has approved and made payment to a contractor after the reports on other deliverables are actually received by the City or, in the case of a contract that provides for progress payments, the City will certify that the work necessary to qualify the contractor for a progress payment has been performed and the City has approved and made such a payment. Upon receipt of such certification, the District will reimburse the City.
3. The City agrees to share all information garnered or developed by the contractor regardless of whether the information is a deliverable of the contract.
4. In the event any item of the proposed work of the 2005 Infiltration and Inflow Demonstration Partnership Project requires access to or work upon private

property, the City agrees to use its best efforts and good will with its residents to obtain permission for access to or work upon private property.

5. The District has prepared a model agreement for access to, or investigative work upon, private property for any affected properties. An example agreement is attached as Exhibit B.
6. The District agrees to reimburse the City for amounts of the City's internal staff time as estimated in Exhibit A only after the District has an accepted copy of the related deliverable. The time expended and the expenses incurred must be reasonable and must have been reasonably necessary for the completion of the 2005 Infiltration and Inflow Demonstration Partnership Project.

WHEREFORE, authorized representatives of the parties to this Intergovernmental Cooperation Agreement affix their signatures, being duly authorized to do so.

**MILWAUKEE METROPOLITAN SEWERAGE  
DISTRICT**

**CITY OF MILWAUKEE**

By: \_\_\_\_\_  
Kevin L. Shaffer, P.E.  
Executive Director

By: \_\_\_\_\_  
Jeffrey J. Mantes  
Commissioner of Public Works

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Approved as to form:  
\_\_\_\_\_  
District Legal Services

By: \_\_\_\_\_  
W. Martin Morics  
City Comptroller

Date: \_\_\_\_\_

This Intergovernmental Cooperation Agreement was drafted by James H. Petersen, State Bar No. 01014389, who is a senior staff attorney in the Division of Legal Services of the Milwaukee Metropolitan Sewerage District.

Intergovernmental Cooperation Agreement Between  
The City of Milwaukee And The Milwaukee Metropolitan Sewerage District  
Concerning Implementation of The City of Milwaukee's  
2005 Infiltration and Inflow Demonstration Partnership Project  
(Foundation Drain Disconnections) (3/2005)

## Proposed Project

In order to reduce infiltration and inflow (I/I), the City is proposing to conduct a project of disconnecting the foundation drains in a single sanitary system. The City is proposing to perform this work in the sanitary system (1220) that is generally bounded by North Milwaukee River Parkway on the east, North Green Bay Road on the west, West Custer Avenue on the north and Lincoln Park on the south (see Figure 1.) Disconnection of foundation drains from the sanitary system will be done in conjunction with the installation of sump pumps to discharge the water to the storm sewer.

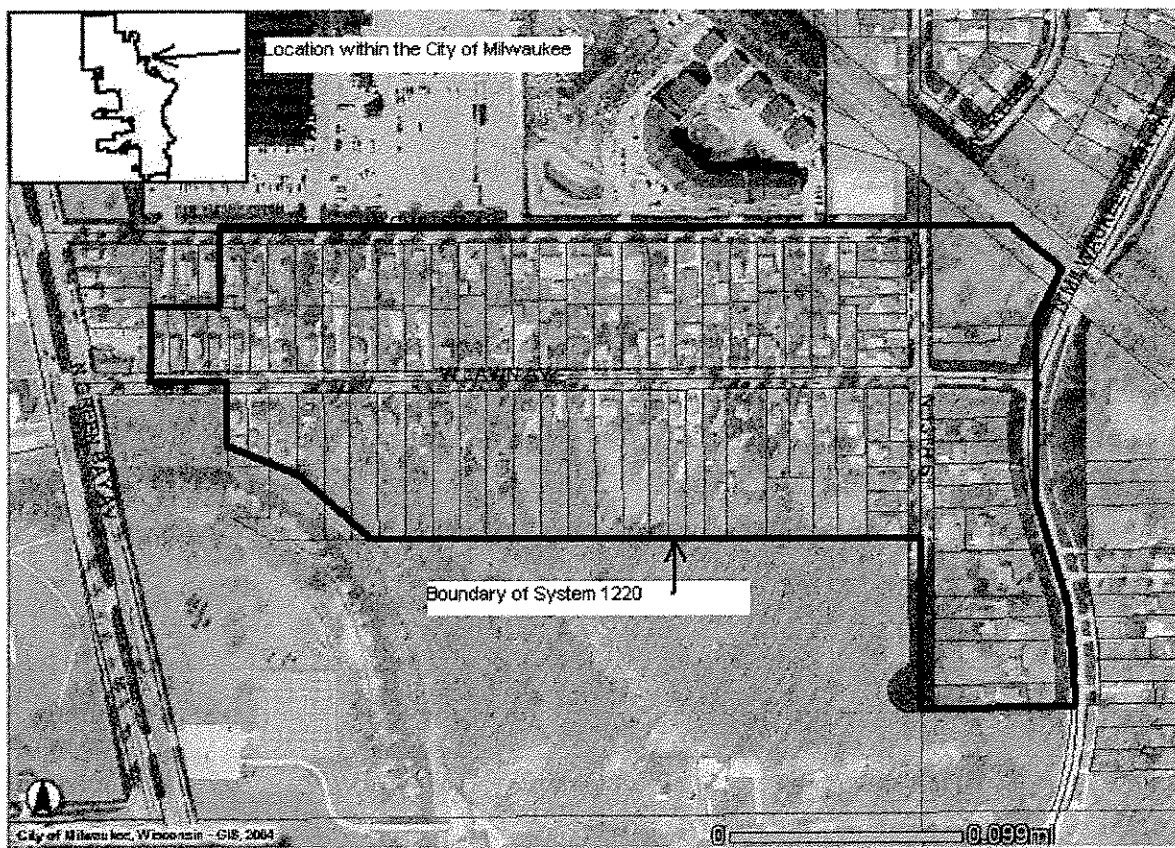


Figure 1: Sanitary System 1220

## Background

Footing and foundation drains constructed to relieve pore water pressure in the soil around sub-grade structures have been used since the early part of the 1900's. Because of their depth and the thought that they contributed small amounts of flow, these drains could legally be connected to the sanitary sewer in Milwaukee until January 1, 1954.

Studies conducted in the 1970's and 1980's showed that the contribution of flow from footing drains varies widely from building to building, but can be very high, with

measurements of 16 gallons per minute (gpm) from a residential building. An average contribution from a residential foundation drain is estimated to be 2 gpm. The flow contribution from an individual drain depends on the amount of water on the surface (due to water from downspouts and the surrounding grade) and in the soil (from groundwater and natural soil moisture content).

Clear water entering sanitary sewers through various means is collectively termed infiltration and inflow (I/I). Excessive I/I uses up sewer capacity and causes problems such as basement backups and sewage bypassing. The contribution from foundation drains into sanitary sewer systems has been identified as a portion of I/I.

### **Basin Characteristics**

The area where system 1220 is located is near the confluence of the Milwaukee River and Lincoln Creek and is partially in the 100-year flood plain, partially in the 500-year flood plain and partially out of the flood plain. The soils are silty clays overlying a sand seam. The groundwater is near the surface (7 to 10 feet below grade) and flows in the sand seam towards the Milwaukee River. Areas where groundwater is frequently high generally will cause footing drains to contribute more I/I than where the groundwater is low.

The majority (65 of 100) of the homes in system 1220 were built before 1954, for which the foundation drains would have been allowed to be connected to the sanitary sewer. The other 35 homes were built after 1954 and should have their foundation drains connected to a sump pump that discharges to the storm sewer.

This system has a bypass pump in it at the intersection of North Milwaukee River Parkway and West Lawn Avenue (see Appendix A.) The pump has operated in several severe rainstorms in the past, but did not run in any of the May, 2004 rain events.

This area has a history of basement backups and did experience several basement backups during the May rains. In addition, the Metropolitan Interceptor Sewer (MIS), was observed overflowing into North Milwaukee River Parkway on the evening of May 14<sup>th</sup>, 2004. This overflow was at the point where system 1220 connects to the MIS.

If this project were to be successful, it will not only reduce I/I into local sewers and the MIS, it will also reduce the possibility of basement backups in the system. In addition, the project will provide information for future decision making regarding the costs and benefits of implementing foundation drain disconnection programs.

### **Monitoring Plan**

Flow monitoring will need to be conducted prior to beginning the removal of foundation drains, as well as after the work is completed. The monitoring is needed to provide data

for comparing pre- and post-construction flows. The flow monitor will be installed in the manhole that is immediately upstream from the MIS in North Milwaukee River Parkway. A location map where the flow monitor will be installed is shown in Figure 2. This manhole has been surveyed for flow monitoring conditions already. A picture showing the upstream sewer is shown in Figure 3. The flow is uniform and steady upstream of the first joint in this sewer. The monitor will be installed past this joint to enable accurate reading of level and velocity.

The monitoring data that is collected before and after the foundation drains are disconnected will be analyzed using the protocol developed for MMSD. The City has an existing rain gauge at 5335 North Teutonia Avenue (WS 1202) that is slightly more than one (1) mile from this system. The City will install a temporary rain gauge in Milwaukee River Parkway to ensure the rain data is specific to this basin, with the nearby rain gauge serving as a backup.

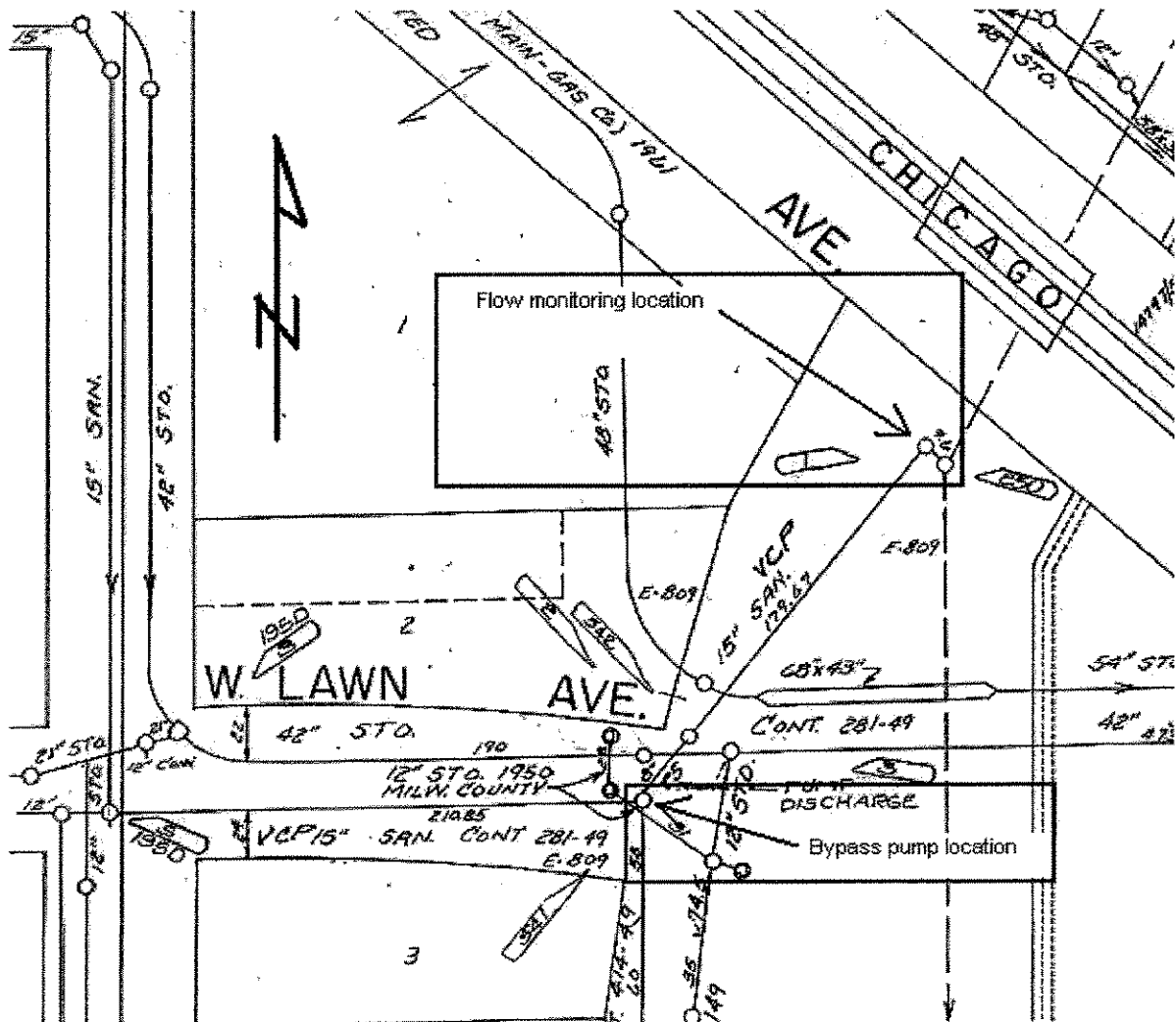


Figure 2 : Flow monitoring and bypass pump locations in system 1220

The flow data will be analyzed to determine a statistical 5-year peak hour and peak day flow rate. This will be accomplished by creating a model and calibrating the model to the data collected. The model must be able to predict peak hourly flows and total volume that match the measured flows within the tolerance specified by the protocol. In addition, the shape of the predicted hydrograph must closely match the actual data. A long-term simulation using Mitchell rainfall data will then be run on the model to determine a series of peak hourly and peak day flows. This series will then be statistically analyzed to determine the predicted 5-year peak hour and peak day flows.

Separate calibrations of the model will be completed for conditions before and after foundation drain disconnections. The long-term simulations will be run on each model to determine two different sets of peak flows. The sets of peak flows can be compared to determine the effectiveness of disconnecting the foundation drains.



**Figure 3 : Proposed location of flow monitor in system 1220**

## **Marketing Plan**

While the initial monitoring is being completed, the marketing campaign will be conducted. The marketing campaign will involve initially distributing flyers and/or mailers to each homeowner. Then, an attempt will be made to contact all homeowners by



phone, whether they responded to the mailer or not, for solicitation and/or follow up questioning. Finally, a field visit will be conducted at each site to solicit the homeowner for participation. The City intends to contract with a marketing or public relations firm to carry out the marketing portion of the project.

After homeowners have signed up for the project, detailed surveys will be conducted and plans will be prepared showing the work to be completed at individual locations. When the plans are finished and checked, bids will be solicited for construction.

The City intends to pay for all of the construction costs, with no expenses to the homeowner. As such, this is an expensive project for the City. MMSD cost sharing will allow the City to conduct this project as well as maintain commitments to existing maintenance programs.

## **Timeline**

This project is anticipated to cover a two-year time span. The initial monitoring will be conducted in 2005 for six months (April through September.) Construction activity will occur between October 2005 and March 2006. The second monitoring phase will be conducted for six more months in 2006. Data analysis and report preparation will be completed during October and November of 2006. Draft reports will be submitted on October 16, November 13, and December 4, 2006. The final report will be submitted on December 18, 2006.

A detailed timeline of the anticipated project schedule is attached as Appendix C.

## **Project Value**

This project will provide information on two fronts. The first will be the willingness of property owners to participate in projects that reduce I/I from private property. There will be a marketing campaign to educate property owners on the types of I/I from private property. Since infiltration from foundation drains is one of the types, the City will see the reaction of property owners to this method of addressing private property I/I.

The second information front will be on the actual effectiveness of the project. Analysis of the flow monitoring data will provide us with an answer on the amount of I/I that is removed from the system with this method.

Much of the City of Milwaukee was constructed with foundation drain connections to the sanitary sewer. If this project is successful, it will present an opportunity to apply this method of I/I reduction to a large portion of the MMSD service area.



## Compensation requirement

The City of Milwaukee will contribute 50% of the estimated \$500,000 cost of the project. This represents a City share of \$250,000 and MMSD share of \$250,000. A summary of the costs is provided below.

### Flow monitoring (pre- and post-construction)

Devices (logger and rain gauge)	\$6,000
Installation	10 hours @ \$40/hr
Downloading & Maintenance	70 hours @ \$40/hr
Batteries & Desiccants	\$520
Removal	7 hours @ \$40/hr
<b>Total</b>	<b>\$10,000</b>

### Marketing

Create & mail brochure	\$7,000
Telephone calls	\$8,000
Field visits	\$8,000
<b>Total</b>	<b>\$23,000</b>

### Coordination

Public meetings	\$1,000
Mayor, alderman, MMSD meeting	\$1,000
<b>Total</b>	<b>\$2,000</b>

### Initial survey

Survey of house for suitability, dimensions	4 hours @ \$40/hr
Preparation of plan showing details of work	7 hours @ \$40/hr
	1 hour @ \$60/hr
<b>Total</b>	<b>\$500/disconnection</b>

### Construction

Installation of sump, sealing connection points to sanitary	\$1,800
Extension of storm lateral through basement wall	\$1,800
Installation of sump pump and discharge piping	\$700
Electrical connection of pump to service, installation of backup battery	\$350
Test basement for radon	\$100
Seal sump area, vent radon (if required)	\$750
Removal of palmer valve, installation of backwater valve	\$500
<b>Total</b>	<b>\$6,000/disconnection</b>

**Communication**

Coordinating work	1 hour @ \$55/hr
	1 hour @ \$60/hr
Addressing each homeowner concern	4 hours @ \$55/hr
Final inspection	2 hours @ \$55/hr
Satisfaction survey	1 hour @ \$55/hr
Total	\$500/disconnection

**Analysis and Report**

Analysis of data	69 hours @ \$55/hr
Report preparation	100 hours @ \$55/hr
	9 hours @ \$70/hr
	1 hour @ \$75/hr
Total	\$10,000

Project total = \$500,000 (assuming 65 disconnections)

**TEMPORARY RIGHT OF ENTRY  
And INVESTIGATIVE SURVEY EASEMENT**

THIS EASEMENT, by PROPERTY OWNER & SPOUSE (or other title interest) GRANTOR, hereby voluntarily conveys the below described temporary property rights to the following GRANTEE, Municipality Name, a municipal corporation, (or their designee), for the sum of ONE and no/100 Dollars and other good and valuable consideration (\$1.00) for the purpose of investigating inflow or infiltration of clear water from private property into the existing sanitary sewer system and its appurtenances, hereinafter referred to as facilities, in, upon, across, under, over, through and along certain lands owned by GRANTOR and as described below.

**2345 N. Humboldt Ave.  
Milwaukee, Wisconsin  
Tax Key number: 302-9999-000**

This Temporary Easement is granted to provide mutual benefits for both parties. The GRANTEE hereby waives the exercise of his authority under Wisconsin law to acquire the above described easement by eminent domain for the duration of this easement. The terms of the easement are further described below:

1. The right (following provision of a 5-day written notice of the commencement of work on the property) to enter above described property with personnel and necessary testing equipment to investigate, test and gather all pertinent data regarding the inflow or infiltration of clearwater from the subject premises into the public sanitary sewer system. The data gathered shall be made available to the GRANTOR upon request.
2. The granting of this easement in no way obligates the GRANTOR to correct any inflow or infiltration deficiencies without full reimbursement from GRANTEE. GRANTEE shall have the option to correct said deficiencies at its own direct expense under a separate Temporary Construction Easement or to reimburse GRANTOR for reasonable expenses to do the same. (This temporary right of entry and investigative survey easement is intended to address the inflow or infiltration of clearwater and is not intended for inspection or enforcement of any other code).
3. Testing and the investigative survey shall consist of, but not be limited to: dye and smoke testing of existing private latrine and sewer mains, video and camera recordings, soil test borings, etc. It may be necessary to gain access to the improvements on the described property to investigate and test floor, roof, sump pump, foundation drain tile and other drains or connections thereto. GRANTOR will cooperate with GRANTEE for reasonable access to said improvements. Any return visits to complete the above work need not to be preceded by a 5-day notice.
4. All testing and investigative work will be done in a professional manner and any disturbed areas will be restored "in kind" at GRANTEE's sole expense. GRANTOR's sewer and water service and appurtenant facilities will remain reasonably functional during the anticipated (2) two-day testing and investigative period.
5. The actual work and entry onto the property may be performed by agents of the local municipality. To achieve that end, the right granted herein to the GRANTEE may be assigned or re-assigned to such agents without further notice to the GRANTOR.

NOT TO BE RECORDED  
NOT TO BE RECORDED  
NOT TO BE RECORDED  
NOT TO BE RECORDED  
NOT TO BE RECORDED

This space is reserved for recording data  
Return to: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Parcel Identification Number/Tax Key Number  
Tax Key Number 302-9999-000

NOW, THEREFORE, it is further agreed that the           Municipality Name           in consideration of the temporary easement so granted to it, its contractors and assigns through all the land previously described, hereby covenants and agrees with the GRANTOR(s) that it will conduct said Investigative Survey in such a manner as to have minimal effect on the GRANTOR(s) property and that, in and during the Investigative Survey of said facilities will indemnify and save harmless the GRANTOR(s), its successors and assigns, from all loss or injury to its property due to such testing and survey work. This easement will expire within six (6) months of the date of acceptance unless extended by mutual agreement.

IN WITNESS WHEREOF, the authorized representatives of the above named parties, have caused their hands and seals to be hereunto affixed.

**PROPERTY OWNER(S)**

\_\_\_\_\_  
 (Signature)  
 \_\_\_\_\_  
 (Print Name-Title)  
 \_\_\_\_\_  
 (Signature)  
 \_\_\_\_\_  
 (Print Name-Title)

\_\_\_\_\_  
 (Date)  
 \_\_\_\_\_  
 State of Wisconsin )  
 ) ss.  
 \_\_\_\_\_ County )  
 On the above date, this instrument was acknowledged before me by the above named authorized officer(s) who acknowledged that (they)(he)(she) executed the forgoing instrument on behalf of the owner for the purpose aforesaid.  
 \_\_\_\_\_  
 (Signature, Notary Public, State of Wisconsin)  
 \_\_\_\_\_  
 (Print or Type Name, Notary Public, State of Wisconsin)  
 \_\_\_\_\_  
 (Date Commission Expires)

\_\_\_\_\_  
 (Municipality Name)  
 \_\_\_\_\_  
 (Signature)  
 \_\_\_\_\_  
 (Print Name and Title)

\_\_\_\_\_  
 (Date)

\_\_\_\_\_  
 State of Wisconsin )  
 ) ss.  
 \_\_\_\_\_ County )  
 On the above date, this instrument was acknowledged before me by the above named Executive Director of the Milwaukee Metropolitan Sewerage District, known to me to be such officer, and who acknowledged that she executed the forgoing instrument on its behalf for the purpose aforesaid and by its authority as such officer.  
 \_\_\_\_\_  
 (Signature, Notary Public, State of Wisconsin)  
 \_\_\_\_\_  
 (Print or Type Name, Notary Public, State of Wisconsin)  
 \_\_\_\_\_  
 (Date Commission Expires)

Approved as to form \_\_\_\_\_ Legal Dept