

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 combined sewers through which sanitary sewage and stormwater 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 reduction of peak wet weather flows from any combined sewerage system is a benefit to both the local sewerage system and to the regional sewerage system because excess flows can unnecessarily decrease the conveyance capacity of the sewerage system and can surcharge or back sewage into building drains and basements; and

WHEREAS, combined 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 reduce peak wet weather flows in local

combined sewerage systems be tested to determine the means and methods likely to produce a cost-effective and efficient means to reduce peak flows in local combined 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 or 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. Shaver, P.E.  
Executive Director

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

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

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

Approved as to form: \_\_\_\_\_

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

\_\_\_\_\_  
District Legal Services

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  
(Downspout Disconnections & Catch Basin Flow Restrictors) (3/2005)

## **Value of the Project as a Demonstration:**

### **Project Objective:**

The objective of this project is to demonstrate the benefits of installing flow restrictors in street catch basins and disconnecting roof downspouts, as infiltration and inflow (I/I) reduction practices, to attenuate peak flow rates and flow volume in combined sewers.

### **Project Background:**

Combined sewers have been designed to convey the sanitary waste from homes and businesses as well as I/I from building roofs, yards, streets, and parking lots. During periods of heavy rain, the amount of I/I can overwhelm local combined sewers, metropolitan interceptor sewers, sewage storage facilities, and treatment plants. When this happens, combined sewage (sanitary wastewater and I/I) can overflow into watercourses, back up into basements, and overflow onto streets. These events, termed combined sewer overflows (CSOs), contain not only rainwater, but also untreated human and industrial waste, toxic materials, and debris. CSOs can degrade surface water quality and are a significant public health concern.

Combined sewers serve approximately one-third of the area of the City of Milwaukee. A delineation of the combined sewer area limits is included in this proposal as Attachment #1. Because the combined sewer area is such a large percentage of the City, any practice that can decrease the amount or rate of I/I entering combined sewers could potentially provide a significant reduction in CSOs if it can be applied to the entire area.

There are many different sources of I/I that contribute flow in combined sewers. Street drainage from catch basins, yard drains, roof downspouts, foundation drains, and sump pumps are some of the sources. A drawing showing a typical combined sewer, with various connections and associated I/I flowrates, is included in this proposal as Attachment #2.

The two largest sources of I/I in combined sewers are street drainage from catch basins and roof downspouts. Roof downspouts can be disconnected from the combined sewer system and directed to grass or garden areas for infiltration. This practice will reduce the peak I/I flow rate and flow volume in the combined sewers. Flow restrictors can be installed in street catch basins and cause rainwater to be detained on the street surface. This practice will also reduce the peak I/I flow rate in the combined sewers. When both practices are combined their I/I reduction capabilities are enhanced, as has been demonstrated in previously implemented projects in the Cities of Chicago and Evanston, Illinois.

The Environmental Engineering Section (EES) is proposing a similar project in which both flow restrictors will be installed in street catch basins and roof downspouts will be disconnected in two target areas of the City. These areas were selected for the study because the land uses and topography are amenable to the proposed Partnership project and the local political leadership is supportive. In general, the target areas are located within the area bounded by West Vliet Street, North 48<sup>th</sup> Street, West Washington Boulevard, and North 53<sup>rd</sup> Street (Target Area #1) and the area bounded by West Lloyd Street, North 55<sup>th</sup> Street, West Meinecke Avenue, and North 60<sup>th</sup> Street (Target Area #2). Delineations of the target areas are included in this proposal as Attachment #3.

Cost sharing by the Milwaukee Metropolitan Sewerage District (MMSD) is necessary to allow the City to conduct this project as well as fund other important sewer maintenance activities.

### **Project Sequence:**

The proposed sequence of this project is as follows:

1. The EES staff will send out a request for proposal (RFP), for professional sales and marketing firms, to develop and perform an intensive public outreach and involvement (O & I) program and a property owner participation solicitation campaign targeting the aforementioned areas. The City will select the proposal that it feels most effectively informs the public on the benefits of installing catch basin flow restrictors and disconnecting downspouts and will result in the greatest public involvement in this Partnership project. The O & I program will take a multi-media approach to communicating with the target area property owners and preparing them to become involved in the downspout disconnection portion of the project. Neighborhood literature drops, paid newspaper advertisements, television announcements on City Channel 25, displays and literature at local libraries, and community night meetings are examples of what may be used to reach property owners.
2. Public participation in the downspout disconnection portion of the project will be achieved through the aforementioned solicitation campaign, performed by the selected professional sales and marketing firm, under the supervision of the EES staff. Direct mailings, telephone solicitation, and door-to-door canvassing are examples of what may be used to achieve public participation. The property owners will be presented with two alternatives. The first alternative will be for property owners to perform the downspout disconnection work themselves and receive a \$50 per downspout rebate (with a maximum of \$100 per property). The second alternative will be for the City to hire a contractor to perform the disconnection work (estimated cost is \$100 per downspout).
3. While the solicitation campaign is being carried out, the EES staff will develop a flow monitoring plan to quantify the I/I reduction realized through the implementation of this project. The pre-project flow monitoring will begin upon approval of the monitoring plan by the MMSD and continue for approximately six months during the spring and summer of 2005. The monitoring data that is collected, before and after the catch basin flow restrictors are installed and the downspouts are disconnected, will be analyzed using the protocol developed for the MMSD.

The City has an existing rain gauge, at 3626 West Fond Du Lac Avenue, that is less than two miles from the target areas. The City will also install temporary rain gauges in each of the target areas, to ensure the rain data is specific to these areas, with the nearby existing rain gauge serving as a backup.

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 the project. The long-term simulations will be run on each model to determine two different sets of peak flows for each target area. The sets of peak flows will be compared to determine the effectiveness of installing the catch basin flow restrictors and disconnecting the downspouts.

The EES plans to perform the flow monitoring at two locations in the combined sewers within Target Area #1 and at one location in the combined sewers within Target Area #2. The monitoring locations, in Target Area #1, have a tributary area that is representative of the overall target area. As this tributary area is served by both of the sewers being monitored, the flow data from these locations will need to be combined for analysis. The monitoring location in Target Area #2 has a tributary area that is an isolated sub-basin and is representative of the overall target area. The flow monitor locations and corresponding tributary areas are shown on Attachment #3. These locations have already been surveyed for flow monitoring conditions and appear feasible for use. All backdoor connections will be plugged or monitored.

4. While the pre-project flow monitoring is being performed, City staff will perform field surveys of the target areas and perform hydrologic and hydraulic analyses to finalize the catch basin flow restrictor specification and placement. The City will determine the changes to pavement and grading (i.e., berm construction) that are needed to facilitate the desired street ponding and will design the modifications. Public safety concerns will be evaluated and addressed. Design plans will be produced for a construction contract to be let by the City's Department of Public Works and performed by a private contractor.

The contract will be executed in the late summer of 2005 and construction work will begin upon completion of the pre-project flow monitoring. The contract will include the supply and installation of the catch basin flow restrictors, preparatory basin cleaning, and pavement and grading modifications. All contract work will be inspected by City staff to ensure the construction conforms to the developed plans and specifications.

5. The EES staff will inspect the downspouts of properties in the target areas to ensure that disconnection is practical and reasonably safe for the property's physical constraints. Each downspout disconnection will be required to meet the criteria in Section 225-4 of the City's Code of Ordinance, which are summarized as follows:
  - a) The downspout must be able to be discharged at least two (2) feet from foundation walls and alley property lines.
  - b) The downspout must be able to be discharged at least five (5) feet from all other property lines.
  - c) The downspout must be able to be discharged parallel to or away from nearby property lines.
  - d) The downspout must be able to be directed so discharge does not cross into any street, alley, or other public way.
  - e) The downspout must be able to be directed so as not to create an icy condition on walkways within or adjacent to the property.

- f) The downspout must be able to be directed to a pervious area equivalent to the roof area being drained.
- g) The downspout must be able to be directed to a pervious area pitched between 2% and 5% away from structures.

These inspections will be performed while the public O & I program, property owner solicitation campaign, and pre-project flow monitoring are being performed.

- 6. At feasible properties where the owner's consent has been given, the downspouts will be disconnected by the property owners or a private contractor under City contract.
- 7. Following the disconnection of the downspouts, the EES staff will inspect the properties to document that the work was performed in a manner consistent with the criteria previously outlined.
- 8. The EES staff will perform post-project flow monitoring in the combined sewers. The flow monitors will be placed in the same location where the pre-project flow monitoring was performed. The sewers will again be monitored for six months during the spring and summer of 2006.
- 9. Following the inspections, rebates will be mailed to property owners who performed the work themselves.
- 10. A post-project report will be prepared by the EES staff and submitted to the MMSD. The report will include:
  - a) A detailed description of the implementation of the project.
  - b) Number and location of downspouts disconnected.
  - c) Number and location of catch basin flow restrictors installed.
  - d) Locations of any modifications to pavement and grading.
  - e) Results and analysis of the combined sewer flow monitoring.
  - f) Foreseeable maintenance issues regarding the catch basin flow restrictors and disconnected downspouts.
  - g) A cost-benefit analysis for the Partnership project.
  - h) Recommendations for increasing the effectiveness and public participation in future I/I reduction projects.

### **Project Timeline:**

It is anticipated that this project will be implemented over a two (2) year time span as explained in the following proposed timeline:

- 1. The RFP, for the O & I program and property owner participation solicitation campaign, will be sent out by the City in early 2005. The contract related to this RFP will be executed in

March 2005 (following the notice to proceed for this Partnership). The O & I program will begin immediately after the contract is executed and run through the summer of 2005.

2. The solicitation campaign will begin in April 2005 and continue, as needed, through October 2005.
3. Pre-project monitoring will be conducted from April 2005 through September 2005.
4. Analysis and design work for the catch basin flow restrictors and related pavement modifications will be performed during the spring of 2005. The construction contract will then be awarded, to a private contractor, in the late summer of 2005. Construction work will begin in October 2005 and be completed by the end of March 2006.
5. Feasibility inspections will begin early in 2005 and continue, as needed, through November 2005.
6. Downspout disconnection work will occur between October 2005 and March 2006.
7. Post-disconnection documentation inspections will lag the downspout disconnection work and occur between October 2005 and March 2006.
8. Post-project monitoring will be conducted from April 2006 through September 2006.
9. Rebates will be mailed to property owners, as documentation inspections are completed, between November 2005 and April 2006.
10. Data analysis and report preparation will occur between September 2006 and November 2006. Draft reports will be submitted on October 16, 2006; November 13, 2006; and December 4, 2006. The final report will be submitted on December 18, 2006.

#### **Anticipated Project Results:**

There are about 500 properties and 130 catch basins within the target areas. Based on the results of downspout disconnection projects previously performed, the City estimates that about 400 downspouts will be disconnected through this project. In addition, most of the catch basins are expected to be fitted with flow restrictors. The total project cost is estimated at \$275,000 and a cost breakdown is provided in the Compensation Requirement section of this proposal.

If the City believes continued efforts in downspout disconnection or catch basin flow restriction would be valuable in or near the target areas, we may extend or expand the project following the completion of the post-project report.



**Compensation Requirement:**

The City will contribute 50% of the project's estimated cost of \$275,000. This represents a City share of \$137,500 and an MMSD share of \$137,500. A summary of the costs is provided below. An itemized listing of expected costs for this project is included in this proposal as Attachment #8.

Work Tasks	City Labor Cost	Material Cost	Contract Cost	Total Cost
Project Coordination & Public O & I Program	\$15,000	-	\$15,000	\$30,000
Downspout Site Inspections by City Staff	\$20,000	-	-	\$20,000
Catch Basin Flow Restrictors	\$25,000	-	\$130,000*	\$155,000
Downspout Disconnections	-	-	\$40,000**	\$40,000
Combined Sewer Flow Monitoring	\$15,000	\$15,000	-	\$30,000
<b>Total Project Costs</b>	<b>\$75,000</b>	<b>\$15,000</b>	<b>\$185,000</b>	<b>\$275,000</b>

\* The "Contract Cost" for Catch Basin Flow Restrictors is for 130 catch basins and related pavement modifications (i.e., berm construction) to facilitate street ponding. For each flow restrictor, the estimated cost includes \$100 for purchasing the flow restrictor and related materials, \$250 for installation labor, and \$100 for preparatory catch basin cleaning. This totals \$450 for each flow restrictor to be installed. In addition, approximately \$70,000 is included in the estimate for pavement modifications.

\*\* The "Contract Cost" for Downspout Disconnection Work includes both the estimated cost of the contract to perform the downspout disconnections and the rebates to be mailed to homeowners who perform the downspout disconnections themselves. The percentage of rebates versus contracted disconnections will be determined by the individual requests of the property owners during the project implementation period.