Sent Via US-mail

January 9, 2019

Mr. Girma Daka, MSISE
Civil Engineer
St. Paul Public Works - Sewer Utility Division
700 City Hall Annex
25 W. 4th St.
St. Paul MN 55102-1660

Re: Inflow and Infiltration Demonstration Project Grant
Metropolitan Council Contract #18M123
Notice to Proceed

Dear Mr. Daka:

Enclosed, please find a fully signed original of the contract related to the Inflow and Infiltration Demonstration Project. You are authorized to proceed with the work consistent with the terms of the contract.

Mr. Marcus Bush is the Metropolitan Council's (Council) Project Manager for this project. Mr. Bush has full authority to act on behalf of the Council on all matters related to the contract, to the extent that these matters are within the terms of the contract. The Council's Project Manager does not have the authority to change the contract or, in any way, obligate the Council to adjust the contract price or the contract term.

It is your responsibility to monitor the work of this contract and identify, in advance, any circumstances that may later give rise to the contract price or the contract term being exceeded. Upon identification of such circumstances, you are to notify the Council's Project Manager.

If you have any questions, please contact Mr. Bush at Marcus.Bush@metc.state.mn.us.

Sincerely,

Mary L. Bogie
Chief Financial Officer

MLB/ljv

Enclosure

cc: Marcus Bush, Project Manager

Metropolitan Council
Inflow and Infiltration Demonstration Project Grant

Recipient: City of Saint Paul, Public Works	Grant No.: 1
Project: Inflow and Infiltration Demonstration Project	
Grant Period: Agreement Date through January 31, 2022	
Council Action: Complete – Guidelines approved July 11, 2018	
Estimated Project Amount: $1,000,000	
Maximum Grant Amount: $500,000	Recipient Match: $500,000

GRANT AGREEMENT

THIS AGREEMENT is made and entered into by and between the Metropolitan Council ("the Council") and Recipient named above.

RECITALS

1. The Council authorized its staff to enter into an inflow and infiltration demonstration project grant with a local unit of government. This grant is to support funding of a Project that adds to the knowledge base of technically effective and cost-effective I&I flow reduction strategies. This project supports the Metropolitan Council Thrive MSP 2040 outcomes of Sustainability and Stewardship. A sustainable and reliable regional wastewater system can be achieved with investments to local sewer systems to reduce excessive flows from I&I. The information and knowledge gained from this project will be shared with communities, making this a strategic investment that supports stewardship.

2. Recipient has expressed an interest in participating in the demonstration project grant.

3. Recipient represents that it has the technical capability and is duly qualified to implement and perform all services described in this grant agreement to the satisfaction of the Council.

NOW, THEREFORE, the Council and Recipient agree as follows:

Section 1. Definitions

1.01 "Project" means the entire work effort necessary to complete the Work Plan, including all of Recipient's obligations under this agreement.

1.02 "Work Plan" means the items of work identified in Exhibit A.

Section 2. Grant Amount, Match, Grant Period and Reimbursement Procedures

2.01 Maximum Grant Amount. The Council agrees to make available to Recipient during the grant period a grant of up to the Maximum Grant Amount. This amount is granted for reimbursing Recipient for a portion of the eligible costs of performing the Project.

The Council's obligations will not exceed the lesser of the following:

A. The Maximum Grant Amount; or

B. 50% of the total Project expenditures.

The Council is not responsible for cost overruns incurred by Recipient.

2.02 Recipient Match. Recipient must provide at least a 100% local match against the Maximum Grant Amount. If the final expenses for the Project exceed the Estimated Project Amount, Recipient is responsible for providing the funds to cover the final costs and expenses. The local match may be cash or an in-kind match.

2.03 Grant Period. The grant begins on the date that this Agreement is fully executed and expires on the earlier of January 31, 2022 or until Recipient satisfactorily fulfills all of its obligations this agreement except the final report required by Section 5.02. At the end of the Grant Period, all grant funds that Recipient has not spent revert to the Council. The Recipient may extend the length of the Grant Period up to twelve (12) months to collect sufficient rainfall data, if warranted. The written request for extension of the Grant Period must be received by the Council authorized representative three months before the end of the Grant Period. Any extension shall be pursuant to 6.05 of this grant agreement.

2.04 Retainage. The Council may retain up to 10% of the Maximum Grant Amount, payable upon receipt of the final report required by Section 5.02.

Section 3. Performance of the Project

3.01 Use of Funds. Recipient must use the funds for this grant only for eligible costs in Section 3.02.

3.02 Eligible Costs. Only the costs specified in this section are eligible for reimbursement out of the grant funds. Exhibit B to this Agreement provides the budget for the Project. Recipient may only use the grant funds to pay eligible line item costs in Exhibit B or for costs incurred in preparing the Work Plan in Exhibit A. If the actual cost of a line item in Exhibit B exceeds the budgeted amount by more than 10%, Recipient must notify the Council and Recipient may not use grant funds to pay for the portion that exceeds the budgeted amount by more than 10% without Council written approval.

Recipient may use grant and matching funds for direct staff and equipment costs for Work Plan activities. Recipient may use Grant and matching funds to purchase or lease equipment, machinery, supplies, or other personal property necessary for the grant project. Recipient will comply with the personal property management requirements in Section 3.04 of this agreement.

If the Council determines that Recipient made an unauthorized or undocumented use of grant funds, the Council may demand repayment and Recipient must promptly repay such amounts to the Council.

3.03 Administration, Supervision, Contractors, and MCUB. Recipient is responsible for the administration, supervision, management, and oversight of the Project. Recipient may employ any professional services and contractors it deems reasonable and necessary to complete the Project.

In employing professional services and contractors, the Council strongly encourages Recipient to solicit and include businesses that participate in the Metropolitan Council Underutilized Business Program ("MCUB") .A list of these firms is available on the Council's website.

3.04 Personal Property Management. Title to all personal property acquired with grant and matching funds remains with Recipient. Recipient must take reasonable measures to protect and defend its title interest and must keep the personal property free and clear of any liens, encumbrances, or other claims. Recipient must maintain property records that include, at a minimum, a description of the property, a serial or other identification number, the acquisition date and cost, and the location, use, and condition of the property. In the final report required by section 5.02, Recipient must

include a list of all personal property acquired with grant and matching funds that was not used in performance of the Project. At the end of the Grant Period, Recipient agrees to transfer title to all personal property that is not incorporated into the Project and was acquired in whole or in part with grant funds to the Council, at the Council's option, at no charge. The Council reserves the right to direct appropriate disposition of all personal property not used for the grant project which were acquired in whole or in part with grant funds.

During the Grant Period, Recipient bears the risk of loss of, damage to, or destruction of any personal property acquired with grant or matching funds. No such loss, damage, or destruction will relieve Recipient of its obligations under this agreement. Recipient will maintain personal property acquired with grant or matching funds in good operating order. If, during the Grant Period, any project personal property is not used in performing the project, whether by planned withdrawal, misuse, or casualty loss, Recipient must immediately notify the Council's Authorized Representative. Unless otherwise approved by the Council's Authorized Representative, Recipient must remit to the Council a proportional amount of the fair market value of any items that are not used, calculated on the basis of the proportion of Council grant funds used to acquire the items.

3.05 Educational Signs. Recipient will ensure that the completed project includes educational signs that mention the Council's contribution to the Project.

Section 4. Accounting, Record, and Audit Requirements

4.01 Accounting and Record-keeping. Recipient will establish and maintain a separate account for the Project and maintain accurate and complete books, records, documents, and other evidence of the costs and expenses of implementing this agreement in detail that accurately reflects the total cost of the Project and all net costs, direct and indirect, of labor, materials, equipment, supplies, services, and other costs and expenses. Recipient must use generally accepted accounting principles. Recipient must retain these records for at least 6 years after the end of the Grant Period.

4.02 Audit. Individuals designated or authorized by the Council may audit the accounts and records of Recipient related to this agreement in the same manner as other accounts and records of Recipient. The Council may conduct such audit and inspection on Recipient's premises or otherwise at any time following reasonable notification during the Grant Period and for a period of six years thereafter. Under Minnesota Statutes section 16C.05, subdivision 5,

Recipient's books, records, documents, and accounting procedures and practices relevant to this agreement are subject to examination by the State, its representatives, the State Auditor, and the Legislative Auditor for a minimum of 6 years from the end of this agreement. Recipient will make available at all reasonable times and before and during the period of records retention proper facilities for examination and audit.

Section 5. Reimbursement, Reporting and Monitoring

5.01 Reimbursement Request/Quarterly Progress Reports. To receive Reimbursement under this agreement, Recipient must submit a Reimbursement Request/Quarterly Report to the Council. The Council must receive the Report within 30 days after the end of each calendar quarter. In the Report, Recipient must provide a detailed summary of completed work activities and project expenditures, including a comparison of actual activities and expenditures against planned activities and projected expenditures, and MCUB inclusion efforts under Section 3.03. Recipient must provide sufficient documentation of grant eligible expenditures and any other information the Council's staff reasonably requests. Recipient must submit a Quarterly Report as outlined in this section even if Recipient is not submitting a Reimbursement Request.

The Council will make the final determination whether the expenditures are eligible for reimbursement under this agreement and verify the total amount requested from the Council. Reimbursement of any cost is not a waiver by the Council of any Recipient noncompliance with this agreement.

The Council will reimburse all eligible grant expenditures not in excess of the total amount of grant amount under this agreement within 60 days after receiving satisfactory documentation from Recipient. Recipient's documentation is subject to review and acceptance or rejection by the Council. The Council will be deemed to have accepted Recipient's documentation if the Council does not reject it in writing within 21 days of receipt.

The Council will not reimburse recipient for work done outside of the Grant Period.

5.02 Final Report. Within 60 days after the expiration of the Grant Period, the Council must receive from Recipient for Council review and approval a final report in a format determined by the Council, detailing total Project receipts and expenditures, summarizing all Project activity, describing MCUB inclusion efforts under Section 3.03, and containing a certification by Recipient's chief financial officer that all grant funds were expended in

accordance with this agreement. The final report must include a list of project personal property as required by paragraph 3.04. This Agreement remains in effect until the Council approves the Final Report.

5.03 Other Monitoring Activities. To assist the Council in monitoring compliance with the grant agreement, Recipient agrees to attend meetings as requested by Council staff and to permit site visits by Council staff, during business hours, upon reasonable notice.

Section 6. General Conditions

6.01 Compliance with Law. Recipient will comply with all applicable state and federal laws. Further, it is Recipient's obligation and responsibility, and not the Council's, to comply with all other laws, regulations, and rules relating to activities undertaken in performing the Project.

6.02 Maximum Use of Other Funds. If Recipient at any time receives funding or reimbursement from another source for amounts charged by Recipient against this grant, Recipient must immediately refund the funds charged against this grant to the Council.

6.03 Liability. Each party is responsible for its own acts and the results thereof to the extent authorized by law. The Council and Recipient's liability are governed by the Minnesota Municipal Tort Claims Act, Minnesota Statutes chapter 466, and other applicable law. Notwithstanding this provision, to the fullest extent permitted by law, Recipient will defend, hold harmless, and indemnify the Council and its members, employees, and agents from and against all claims, damages, losses, and expenses, including but not limited to attorney fees, arising out of or resulting from clean-up, removal, and disposal of contaminants related to the Project. This includes, without limitation, any claims asserted under the Minnesota Environmental Response and Liability Act (MERLA), Minnesota Statutes chapter 115B, the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended, 42 U.S.C. sections 9601 *et seq.*, and the federal Resource Conservation and Recovery Act of 1976 (RCRA) as amended, 42 U.S.C. sections 6901 *et seq.* This obligation will not be constructed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which otherwise would exist between the Council and Recipient. Recipient's obligation to indemnify the Council is not a waiver on the part of either Recipient or the Council of any immunities or limits on liability provided by Minnesota Statutes chapter 466, or other applicable state or federal law.

6.04 Changes in the Project. If Recipient, for any reason, determines that the Project or any portion of it should not be undertaken, or that there should be a change in the scope or costs of a portion of the Project, Recipient must submit to the Council a statement describing the situation and giving the reasons for Recipient's determination. Recipient may, simultaneously with the submission of the statement or within a reasonable time thereafter, recommend alternative projects, activities, uses, expenditures, or allocations of grant funds.

If the Council determines that Recipient's recommendations may be immediately approved, Recipient and the Council may execute a written amendment to this agreement as provided in section 6.05.

If the Council determines that Recipient's recommendations may not be immediately approved, Recipient and the Council may execute a written amendment to this agreement only after appropriate authorizations by the Council and Recipient.

The Council has the sole authority to deny the Recipient's recommendations.

6.05 Amendments. The terms of this agreement may be changed by mutual agreement of the parties. Changes will be effective only upon execution of a written amendment signed by both parties.

6.06 Equal Opportunity; Affirmative Action. Recipient will comply with all applicable laws, rules, and regulations relating to nondiscrimination and affirmative action in public purchase, involvement, and use. In particular, Recipient agrees not to discriminate against any employee or applicant for employment because of race, color, creed, religion, sex, sexual orientation, national origin, marital status, disability, status with regard to public assistance, membership or activity in a local civil rights commission, or age, and to take affirmative action to insure that applicants and employees are treated equally with respect to all aspects of employment, rates of pay and other forms of compensation, and selection for training. In addition, Recipient must include affirmative action and equal employment provisions in any written contract entered into after the date of execution of this agreement which involves the provision of work or services which will be paid for in whole or in part out of the grant funds.

6.07 Permits, Bonds, and Approvals. Recipient is responsible for obtaining and complying with all applicable local, state, and federal licenses, permits, bonds, approvals, inspections, and authorizations necessary for the Project.

6.08 Termination for Cause. This agreement may be terminated by the Council for cause at any time with 7 days' written notice to Recipient. Cause means a material breach of this agreement and any supplemental agreements or amendments to this agreement. If the Council terminates the agreement for cause, it may require Recipient to repay the grant funds in full or in a portion determined by the Council. Nothing in this section limits the Council's legal remedies to recover grant funds.

6.09 Termination for Convenience. Either party may terminate this grant agreement at any time by giving the other party written notice of termination at least 30 days before the effective date of the termination. On termination, the Council will compensate Recipient on a pro rata basis for work plan activities that were satisfactorily performed in accordance with this agreement.

6.10 Intellectual Property. Recipient agrees that the results of the grant project, the reports submitted, and any new information or technology that are developed with the assistance of this grant are in the public domain and may not be copyrighted, patented, trademarked or designated as trade secret.

6.11 Government Data Practices. Recipient and Council must comply with the Minnesota Government Data Practices Act, Minn. Stat. ch. 13, as it applies to all data provided by the Council under this agreement, and as it applies to all data created, collected, received, stored, used, maintained, or disseminated by Recipient under this agreement. The civil remedies of Minn. Stat. § 13.08 apply to the release of the data referred to in this clause by either Recipient or the Council. If Recipient receives a request to release the data referred to in this section, Recipient must promptly notify the Council.

6.12 Promotional Materials. Recipient will submit to the Council a copy of any promotional information regarding the grant project disseminated by Recipient during the Grant Period. Recipient will acknowledge the grant assistance made by the Council in any promotional materials, reports, and publications relating to the grant project.

6.13 Jurisdiction and Venue. Venue for all legal proceedings arising out of this grant agreement, or breach of this grant agreement, will in the state or federal court with competent jurisdiction in Ramsey County, Minnesota.

6.14 Authorized Representatives.
The Council's Authorized Representative is:

Marcus Bush
Principal Engineer, Environmental Services

RECIPIENT'S Authorized Representative is:

[NAME] Marcus Bush, PE
[TITLE] Principal Engineer

All written communication under this agreement must be sent electronically or by United States Mail to the Authorized Representative. Either party may change its Authorized Representative by notifying the other party in writing. When possible, communications between the parties concerning this agreement will be directed through the authorized representatives.

6.15 Survival. Sections. 4.01, 4.02, 6.03, 6.10, 6.12, and 6.13 of this Agreement, and the rights, duties and obligations of the Council and Recipient created in those Sections, survive termination or expiration of this Agreement.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized representatives on the dates below.

METROPOLITAN COUNCIL

By: _____
Weston Kooistra
Regional Administrator

Date: 01/07/2019

RECIPIENT

The Recipient certifies that the appropriate persons have executed this agreement on behalf of the Recipient as required by applicable articles, bylaws, resolutions and ordinances.

CITY OF SAINT PAUL

RJB 12-14-18

By Kathy Lantry
Director of Public Works

Date: 12-20-18

Approved as to Form:

By
City Attorney

By
Director of Finance

Approved:

By Jaime Rae Tincher
for Mayor

City of Saint Paul

Signature Copy

Resolution: RES 18-1951

City Hall and Court House
15 West Kellogg Boulevard
Phone: 651-266-8560

File Number: RES 18-1951

Authorizing the Department of Public Works to accept the Metropolitan Council Environmental Services 2018 MCES I&I Demonstration Project Grant.

WHEREAS, the Metropolitan Council Environmental Services (MCES) has identified the City of Saint Paul (City) as one of the many metro cities having excessive quantities of stormwater and groundwater, commonly referred to as Inflow and Infiltration (I&I), entering the public sanitary sewer system; and

WHEREAS, To further measure the impact of I&I reduction in local sanitary systems, MCES has designated grant funding for quantifying the I&I from private sources and adding to the knowledge base of effective flow reduction strategies; and

WHEREAS, The Public Works Sewer Utility has identified private services requiring rehabilitation to minimize or eliminate excessive I&I entering the public sanitary sewer system; and

WHEREAS, The demonstration project could guide the creation of another city program geared to help private property owners repair defective services; and

WHEREAS, The Public Works Sewer Utility has applied for and received the grant from MCES of up to $500,000 and as part of accepting this grant funding, will match the grant amount for inspecting and repairing private services; and

WHEREAS, MCES requires City indemnification as a condition of accepting the grant;

Now therefore, be it RESOLVED, by the City Council that the Department of Public Works is authorized to accept this grant; and

Be it FURTHER RESOLVED, by the City Council that Bruce Elder, Sewer Utility Manager, or his designee be authorized to submit the applications and to serve as the contact person; and

Be it FURTHER RESOLVED, that the City agrees to use this grant money towards the continued minimization and elimination of excessive I&I from private sources per the scope of the grant; and

Be it FINALLY RESOLVED, that the City will secure and retain receipts for all eligible repairs and that MCES will have reasonable access to audit these records upon request.

At a meeting of the City Council on 12/5/2018, this Resolution was Passed.

Yea: 7 Councilmember Bostrom, Councilmember Brendmoen, Councilmember Thao, Councilmember Tolbert, Councilmember Noecker, Councilmember Prince, and Councilmember Jalali Nelson

Nay: 0

Vote Attested by Council Secretary Trudy Moloney — **Date** 12/5/2018

Approved by the Mayor Melvin Carter III — **Date** 12/10/2018

Clerk Shari Moore **Date** _____

Shari Moore

EXHIBIT A
Work Plan

City of Saint Paul Application

Inflow and Infiltration Demonstration Project Grant

Metropolitan Council Environmental Services | August 31, 2018

SAINT PAUL

The Most Livable City in America

In partnership with

METROPOLITAN COUNCIL

SEH

DEPARTMENT OF PUBLIC WORKS
Kathy Lantry, Director

CITY OF SAINT PAUL
Melvin Carter, Mayor

Bruce Elder, Manager
Sewer Utility Division
700 City Hall Annex
25 W. Fourth Street
Saint Paul, MN 55102-1660

Telephone: 651-266-6234
Fax: 651-298-5621

August 31, 2018

RE: City of Saint Paul Application
Inflow and Infiltration Demonstration
Project Grant

Mr. Marcus Bush, PE
Principal Engineer
Metropolitan Council Environmental Services
390 Robert Street North
Saint Paul, MN 55101-1805

Dear Mr. Bush,

Thank you for the opportunity to submit a proposal for the I&I Demonstration Project Grant. The Saint Paul Sewer Utility and SEH have collaborated to prepare this proposal. We are pleased to present this proposal as we believe the I&I Demonstration Grant Project can support the City of Saint Paul establish another city program geared to help private property owners repair defective sanitary sewer services. In addition, by performing this study and documenting the process/I&I removal effectiveness, this I&I Demonstration Project can be used as a tool to facilitate and guide additional programs in other metro area communities.

For some time now Saint Paul's I&I program has included:

- Sewer service repair and inflow disconnection programs. These programs are supported by existing Sewer Utility permitting practices, inspection protocols, and existing City ordinances.
- System wide sanitary sewer flow monitoring and sewer safety testing,
- System wide sanitary sewer modeling and analyses (PCSWMM),
- Programmed sewer cleaning and inspection projects,
- Public and private sewer repairs via City, County, and State Roadway Reconstruction Projects, and Rehabilitation (lining) of sanitary sewers and manholes.

We recognize implementing an I&I Demonstration Project in Saint Paul will require close collaboration with MCES staff, other City Departments and City Officials. The final details of the I&I Demonstration Project will require Saint Paul City Council approval.

Designated Project Representative

The designated project representative and project manager for the City of Saint Paul will be Mr. Girma Daka. His contact information is the following:

Girma Daka, MSISE | Civil Engineer
Saint Paul Public Works | Sewer Utility Division
25 W. 4th St. 700 CHA
Saint Paul, MN 55102
P: 651-266-6189 | E: girma.daka@ci.stpaul.mn.us

Expected Project Cost

The following table summarizes the estimated total cost for the proposed project. The City anticipates having the highest costs during Year 2 (2020), when the bulk of the sewer repairs are expected to be completed.

MCES Demonstration Project Grant – Total Project Cost Estimate

Year	Project Activities	Estimated Cost
2019	Pre-Analysis – I&I Investigation/Engineering	$150,000.00
2020	Repairing Private Connections – Removing I&I Sources	$750,000.00
2021	Post Analysis – Flow Data Analysis/Reporting	$100,000.00
	Total Project Estimate	**$1,000,000.00**

Requested Grant Amount

The City of Saint Paul is requesting a total grant amount of $500,000, which will cover one half of the estimated total cost of the proposed project.

The City of Saint Paul appreciates this generous opportunity provided by MCES and looks forward to continuing to improve wastewater service reliability and sustainability within the community.

Sincerely,

Aaron Hass

Aaron Hass, PE
Civil Engineer
Saint Paul Public Works
Sewer Utility Division

Girma Daka

Girma Daka, MSISE
Civil Engineer
Saint Paul Public Works
Sewer Utility Division

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Value of the Project

Background Investigations

Since the late-1980s, the City of Saint Paul has been working on the separation of storm water runoff and groundwater sources from their sanitary sewer collection system. It started with a ten year combined sewer separation program to remove storm water runoff collection system piping from their sanitary sewer collection system. With the implementation of the Metropolitan Council Environmental Services (MCES) inflow/infiltration (I&I) program in the mid-2000s, the City began an extensive program to locate and remove I&I sources from their sanitary sewer infrastructure.

Up to this point, Saint Paul's I&I program has been focused on public infrastructure with an extensive program consisting of a system-wide flow monitoring, sewer safety testing and dye water flooding investigations, targeted sewer pipe and manhole rehabilitation and public and private property sewer repairs. The City of Saint Paul has been successful in identifying and removing I&I sources, but understands that a significant portion of I&I entering its sanitary sewer collection system is due to private property sources.

Evidence of this was recently discovered through sewer safety testing and follow up additional dye testing on the west side of Saint Paul which identified storm sewer transference to sanitary sewer laterals. In addition, the City is currently working on a large I&I investigation involving flow monitoring and sewer system modeling to reduce I&I locally and increase pipe capacity for future land development on the west side. The project is part of an agreement with the MCES to help protect their infrastructure as well as the Saint Paul sewer collection system.

Regional Benefits

The City would propose investigating a small area identified as Sewershed D-15-2 located on the west side of the City of Saint Paul. The proposed project area covering a three by ten block area between George Street West and Annapolis Street West as depicted in Figure 1. The Saint Paul west side area is largely residential area consisting of approximately 452 properties, 423 of which are residential. This sewershed area was selected for the following reasons:

- Isolated area for ease of continuous flow monitoring
- Public property field investigations completed, including sewer safety testing and closed circuit television inspection (parcels highlighted were found to have service lateral issues and warrant further investigation)
- Repairs completed on sewer safety testing defects from public and a few private property sources
- Historical flow monitoring data available

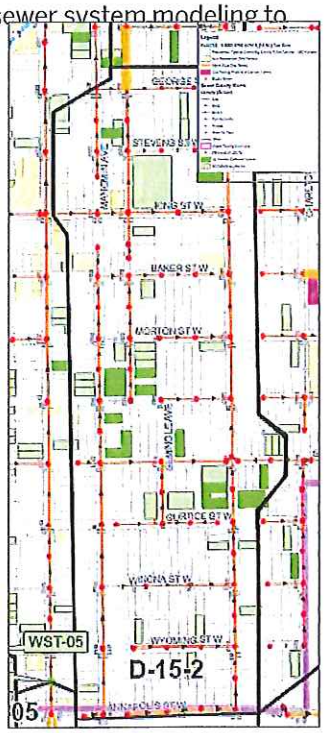


Figure 1

Because this area has already been investigated thoroughly and public property repairs have been completed, the project moving forward will strictly be focused on private property sources. Saint Paul's strategy will be to investigate and remove private property I&I sources including improper sump pump and/or foundation drain connections to the sanitary sewer or potential service lateral defects. Continuous flow monitoring will be conducted during the project to set baseline conditions and determine removal effectiveness of private property repairs. The benefit will be establishing I&I removal estimates from private property sources from an area which has already undergone extensive infrastructure sewer rehabilitation to remove public property sources. Thus, quantifiable results attributed to private property sources can be documented through controlled wastewater flow monitoring with already established flow monitoring history. This approach can be documented and used in other locations within the City of Saint Paul and transferred to other metro communities.

Figure 2 highlights the results from a storm event which occurred on July 4 of this year in the proposed study area. Hourly rainfall totals ranged from 0.7 to 1.4 inches during this event which produced a typical I&I response for private property sources. A typical dry weather response has been included in the hydrograph along with the wet weather flow response from the July 4, 2018 wastewater data. The chart in Figure 2 reflects a quick response to the initial rainfall but the wastewater flow rates remain above normal for days after the event, typical for sump pumps and foundation drain

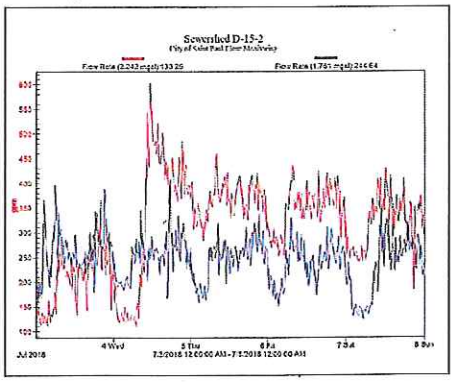


Figure 2

private property I&I sources. The City of Saint Paul's goal for this grant will be to continue to monitor this area and record the changes in wastewater rates as private property sources are located and rehabilitated in order to quantify the I&I removal effectiveness in the project area. Additional flow monitoring is also in place at multiple locations prior to discharge into the MCES interceptor system.

Program Description and Objectives

The following work tasks will be incorporated to meet the goals and objectives of this project. The goal of this project will be to involve all stakeholders (MCES, City of Saint Paul staff, property owners, lateral repair contractors, SEH) during many of the tasks necessary to be completed during this project.

- Compile and review proposed grant agreement documents to be reviewed by the City Council and MCES
- Work with all stakeholders to review and implement a project approach
- Identify flow meter locations and parameters for long term flow monitoring quality data evaluation including continuous rainfall event recording.
- Review proposed flow monitoring approach with MCES, City staff and SEH to establish location(s) for future installations and long term data evaluation.
- Evaluate the project inspection and sewer rehabilitation objectives and develop a list of potential changes necessary to implement an effective private property program. Work with City staff to develop acceptable program objectives.
- Review and incorporate private property changes to city sewer ordinance. Draft new language.
- Work through City staff to incorporate revisions to city ordinance
- Conduct public education campaign to educate property owners within the project area
- Review qualifications to develop a short list of acceptable service lateral/plumbing repair contractors, preferably MCUB contractors
- Prepare property mailing list and contact owners to schedule sump pump/service lateral inspections
- Review data collection requirements with stakeholders and conduct property inspections for each property identified in the project area
- Send out the final inspection results to property owners with recommendation for repair as necessary.
- Work with property owners to coordinate a qualified contractor to make any necessary repairs. Coordinate property repairs with owners based on the requirements of the revised sewer ordinance, and share in the cost of the repair with the homeowner.
- Conduct post inspection to confirm the repairs have been completed as recommended.
- Document all sump pump/foundation drain connection, service lateral or other private property repairs for evaluation in the final technical memorandum of all activities.
- Review and evaluate all flow monitoring and rainfall data during the project to document I&I pre and post sewer repairs
- Develop a draft/final technical memorandum for review and completion of the project

Program Implementation

For the flow monitoring, the City of Saint Paul utilizes SEH to track and manage their data through a separate server under a Teledyne Isco Flowlink software. The server has stored all of the City's flow monitoring data since 2008 and currently stores all flow meter data collected during the past year for the current West Side Flats project which includes the meter data for Sewershed D-15-2. The City will extend the current flow meter and continuously recording rain gauge through the project schedule (2021) and evaluate the need to install additional flow meter equipment within the study area to collect additional data and/or isolate smaller sub-sewersheds for the project. Teledyne Isco flow meters, Model 2150 will be used to record depth and velocity measurements from a pressure transducer mounted at the invert of the pipe where the flow is to be determined. The City of Saint Paul owns the meter equipment necessary to monitor additional locations.

Over the past ten years, the City has not lost any flow meter data as a result of downloading and data storage during the monitoring periods. All meter equipment is calibrated during installation and routine maintenance is performed every two weeks to make sure the data recorded is within the accepted level of accuracy for the equipment. Every two weeks the data is transferred to the SEH server but a duplicate record of the data is still maintained within the original flow meter box. Rainfall gage equipment is handled in a similar manner. All data is reviewed upon uploading the information into the server and any necessary adjustments required in the field due to any significant changes in recorded depths and velocities are scheduled for equipment review in the field.

I&I Abatement Documentation

For all storm events recorded prior to the completion of private property repairs, the amount of I&I will be determined based on the peak hour rate and daily volume recorded with each rainfall hourly and daily rainfall totals during each event. The goal will be to capture enough storm events over the first three years (2018 through 2020) to develop a graph of I&I peak hour rates verses rainfall intensity. I&I contribution from each sewershed or sub-sewershed will be determined based on the amount

of I&I generated by inch of rainfall. To accomplish this, a significant number of rainfall events will be required to determine I&I volume and to correlate this value with rainfall intensity.

By statistically calculating a number of rainfall events it will be easier to develop an I&I baseline value to use in determining future I&I abatement measures. Unfortunately, individual storm events can and frequently do produce different results. The same relationship will be tracked for annual rainfall data during each event. After the private property repairs have been completed, additional storm events will be evaluated to determine I&I contributions based on peak hour rates and annual volume. The goal will be to evaluate the results to determine measured reductions in I&I due to private property repairs. Since the rainfall conditions typically vary from event to event and season to season, it is crucial to use a modeling tool. The model can be calibrated to data prior to improvements and again following improvements. The calibrated models then be used to project flow from a common design storm to measure the reduction that may be evident.

The I&I removal efficiency can also be tracked by the flow monitoring and hydraulic modeling which is currently being used to evaluate I&I reduction for the West Side Flats project. The city is in the process of updating its PC-SWMM model for use in determining how the Saint Paul collection system responds and the peak hour rates anticipated during wet weather periods as well as I&I removal effectiveness in the area. In addition, the entire area has been monitored since 2015 through a temporary MCES Station M706 location on Wabasha Street in downtown Saint Paul established to isolate wastewater flow through the MCES 1-SP-230 interceptor.

There are always issues which could impact our ability to develop a process to track public property I&I removal effectiveness. We have selected this particular area to mitigate most of these factors by already addressing public infrastructure rehabilitation in this area and selecting an area which has limited influence from other sewersheds on the west side. Water conservation will be monitored and taken into account by tracking water sales in the area during the summer months throughout the flow monitoring periods.

As stated previously, the proposed project area is isolated from other sewersheds in the west side area of Saint Paul and is ideal for flow monitoring without influence from the City of West Saint Paul or the regional MCES interceptor system. The sewershed can be monitoring as one area or has the potential to be split up into smaller sub-sewershed districts for more isolated flow meter analysis.

Historical Program Benefit

In the past, the west side area of Saint Paul has had its share of flooding issues due to a number of reasons. Sanitary sewer collection system impacts from I&I contributions are currently reducing pipe capacity in the area which restricts future growth and area redevelopment. This private property program in Saint Paul could be the start of a long-range repeatable I&I reduction program. The documented results from this program could be the model for other sewersheds in Saint Paul with flow meter locations recording high peak hour to average flow ratios. The proposed area in the west side of Saint Paul is believed to have private property I&I sources and could represent any neighborhood in the metro area capable of addressing and implementing private property investigations to produce similar results.

Program Schedule

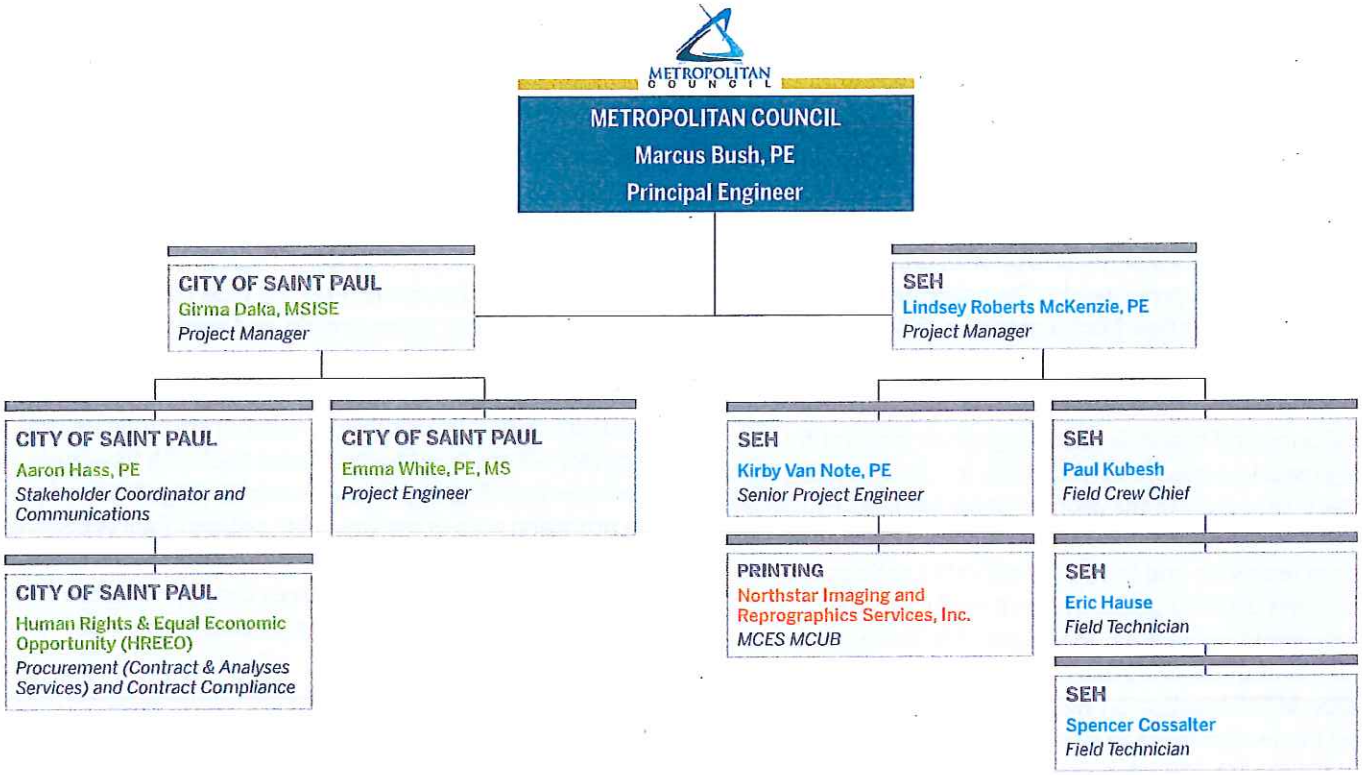
A preliminary schedule based on an anticipated project start date award date in early January, 2019. The following project schedule provides specific milestones for completion of individual tasks and project coordination with project stakeholders.

Grant Agreement to be Reviewed and Approved by City and MCES	October – December 2018
Notice to Proceed	January 2019
Identify Flow Monitoring Program	January – March 2019
Project Approach Review with Stakeholders	March 2019
Finalize/Implement Flow Monitoring Approach	April 2019 – September 2021
Determine Private Property Strategy	March – April 2019
Review City Sewer Ordinance/Draft Revisions	April – May 2019
Finalize/Implement City Sewer Ordinance Revisions	May – July 2019
Conduct Public Education Program	August – September 2019
Develop List of Qualified Contractors	September – October 2019
Contact Property Owners/Schedule Appointments	October – March 2019
Conduct Private Property Inspections	October 2019 – April 2020
Work With Property Owners To Facilitate Repairs	March – October 2020
Complete Property Repairs	October – November 2020
Perform Post Repair Inspections	November – March 2021
Review and Evaluate Flow Meter Data	September – October 2021
Prepare Draft/Final Technical Report	October – November 2021

Ability to Complete and Manage the Project

INTRODUCTION TO PROJECT TEAM

The City of Saint Paul has assembled a highly skilled project team with the expertise, creativity, resources and availability to successfully complete all aspects of this Inflow and Infiltration Demonstration Project Grant Application.



Girma Daka EIT, MSISE

Mr. Daka is a project manager on sewer inspections projects for the last 21 years and a project manager on I&I analysis and sewer testing projects for the last eight (8) years. Mr. Daka has been actively engaged with City of Saint Paul's Programmed Sewer Inspection projects, city-wide flow monitoring projects, city-wide sewer testing projects, The City's Residential Street Vitality Project (RSVP) and numerous sewer lining projects. Mr. Daka is an advocate for I&I reduction and an active leader within the City regarding sanitary sewer projects.

Aaron Hass PE

Mr. Hass has over 24 years of experience, with the last 12 years as a project manager with the Saint Paul Sewer Utility. His experience includes sewer flow monitoring and sewer safety testing programs, major sewer repairs, sewer and tunnel rehabilitation, and helping to facilitate private sewer repairs via city and county roadway reconstruction projects. Previous consulting experience includes design, rehabilitation, and construction of sewer systems; and water resources planning and engineering for public and private entities.

Emma White PE, MS

Ms. White is a project engineer on citywide major sewer repair projects and actively engaged in private development projects that impact public storm and sanitary sewer infrastructure. Ms. White has prior experience working for local and regional government entities in both Minnesota and Texas. Her previous experience includes sanitary sewer modeling, flow monitoring, dye testing, and GIS and data analysis.

Human Rights & Equal Economic Opportunity

HREEO was created to improve the inclusive contracting practices and workforce development strategies of the City of Saint Paul. The department consolidated existing

City resources to better serve, monitor, and enforce polices designed to expand economic opportunities and produce a more economically inclusive Saint Paul. For this project, HREEO will be responsible for procurement and compliance of contracts with lateral repair contractors, with an emphasis on engaging qualified MCUB contractors.

Short Elliott Hendrickson Inc. (SEH®)

SEH has been an active consultant and partner with the City of Saint Paul in regards to its sanitary sewer and I&I reduction projects for more than 10 years. SEH has been the City's consultant and field inspection staff for its city-wide sewer testing and flow monitoring projects since 2007, and is currently its consultant for the West Side Flats flow monitoring program. SEH brings experienced technical and field staff to this project, including Kirby Van Note's 39 years of experience as a technical leader on I&I projects involving flow monitoring program development and data analysis, manhole and sewer safety testing/dye water investigations, private property inspections, sanitary sewer system evaluation surveys to isolate and identify I&I, and the implementation of sewer rehabilitation alternatives. Paul Kubesh brings 20 years of experience as a lead technician on sewer system evaluations and I&I studies, with his responsibilities including flow metering, sewer safety and dye testing, and sewer system evaluation surveys. Spencer Cossalter and Eric Hause bring a combined 10 years of experience as project technicians on I&I projects, with their responsibilities including
the installation of flow meter equipment, performing sewer safety and dye testing, and conducting infrastructure assessments and I&I investigations through a number of different methods including: operating PANORAMO SI manhole inspection system, confined space entry visual inspection, sewer safety testing and flow monitoring. They have also performed private property inspections using a push camera to video sanitary sewer laterals for potential sump pump and foundation drain connections. Finally, Lindsey Roberts McKenzie brings 12 years of experience to the team, which includes time as the project manager for the City of Saint Paul's sanitary sewer testing projects for the past three years. She is currently the project manager for the City's West Side Flats flow monitoring program.

Project Assumptions

Since the goal of this project is to measure the reductions in I&I due to private property repairs, it is assumed that all the public sewer lines in the selected area are repaired prior to the project. Based on this assumption, once private property defects are identified and I&I sources are repaired then pre and post flows could be compared to determine a percent reduction due to repairs made to private connections. In order to justify that the reduction is due to the repairs made to the private connections, there will be no public sewer line repairs in the selected area during the life-span of this project.

Local Ordinances or Project-Specific Approvals

Saint Paul's sewer ordinance already has provisions which allow for the city to work with local property owners in order to coordinate work accomplished on private property. Specific changes related to private property inspections will need to be added to the current sewer ordinance as required to meet the overall objectives of this and future private property programs. The process for completion of this effort has been outlined in the program description and objectives section (Value of the Project) section of this grant application.

Long-Term Saint Paul I&I Strategy

Saint Paul's I&I program over the past ten years has been focused on public infrastructure with a program consisting of system-wide flow monitoring, sewer safety testing and dye water flooding investigations, targeted sewer pipe and manhole rehabilitation and public and private property sewer repairs. In order for the City to meet the MCES I&I program goals and reduce their allowable peak hour requirements, the City of Saint Paul understands that a significant portion of I&I entering its sanitary sewer collection system is due to private property sources. By modifying its program objectives, the City can incorporate private property components with potential I&I issues into the overall plan.

Long-Term Monitoring Plan

The City is presently working on a pipe capacity analysis and an update of their existing PC-SWMM model for the west side area of Saint Paul. Part of this project is to perform flow monitoring at twenty-five meter locations in the area which includes our proposed study area for this grant. The model will be calibrated with the flow monitoring to better understand pipe capacity within the area and use to measure effectiveness for future I&I abatement. In addition, the MCES Meter Station M706 data provides a source for long term flow monitoring for the area which can also be used to identify I&I effectiveness and wastewater trends over future years. The City does own flow monitoring equipment and has the flexibility to extend data collection efforts in the proposed project area (Sewershed D-15-2).

Age of Housing

The City of Saint Paul has experienced firsthand the increased inflow and infiltration rates within its system due to aging wastewater infrastructure. Approximately 85% of the parcels within the City (residential and commercial) were developed prior to 1970, with a median year built of 1926. This leaves a large portion of the City with sewer service laterals initially constructed of clay tile pipe, and most likely remain clay tile pipe to this day.

As stated previously in this proposal, for this project the City would like to focus on the reduction of inflow and infiltration contributions from private residential properties. Within the proposed project study area, there are approximately 423 residential parcels, consisting of single and multi-family dwellings. This value does not include multi-unit complexes (i.e. – apartment buildings). Nearly all of the residential structures within the proposed project area were built prior to 1970, with a median year built of 1912.

The following provides a summary of the percent of residential structures built prior to 1970 for the proposed project area. The data used for the calculations was obtained from the Ramsey County Tax Assessor GIS data layer, for Tax Year 2019.

412 Residential Homes Built Before 1970 within Study Area

+ 11 Residential Homes Built After 1970 within Study Area

= 423 Total Residential Homes

Residential Homes Built Before 1970

Residential Homes Built After 1970

Financial Need

The City of Saint Paul has approximately 71,000 residential properties within its boundaries, consisting of single and multi-family homes, condominiums, and townhouses. This total does not include apartment buildings. The total Estimated Market Value (EMV) for these properties is approximately $16.3 Billion, ranging from $25,000 to $3.5 million per property, and with a median EMV of $184,600.

Within the proposed project study area, there are approximately 423 residential parcels, consisting of single and multi-family dwellings. This value does not include apartment buildings, and there are no condominium or townhouse complexes within the proposed project area. The total EMV for these properties is approximately $70.5 Million, ranging from approximately $70,000 to $380,000 per property, and with a median EMV of $159,800. This is less than the city-wide median EMV.

The following provides a summary of the EMV estimates of residential structures both citywide and within the proposed project area. The data used for the calculations was obtained from the Ramsey County Tax Assessor GIS data layer, for Tax Year 2019.

$16,341,228,300

Total City-Wide Residential EMV

$184,600

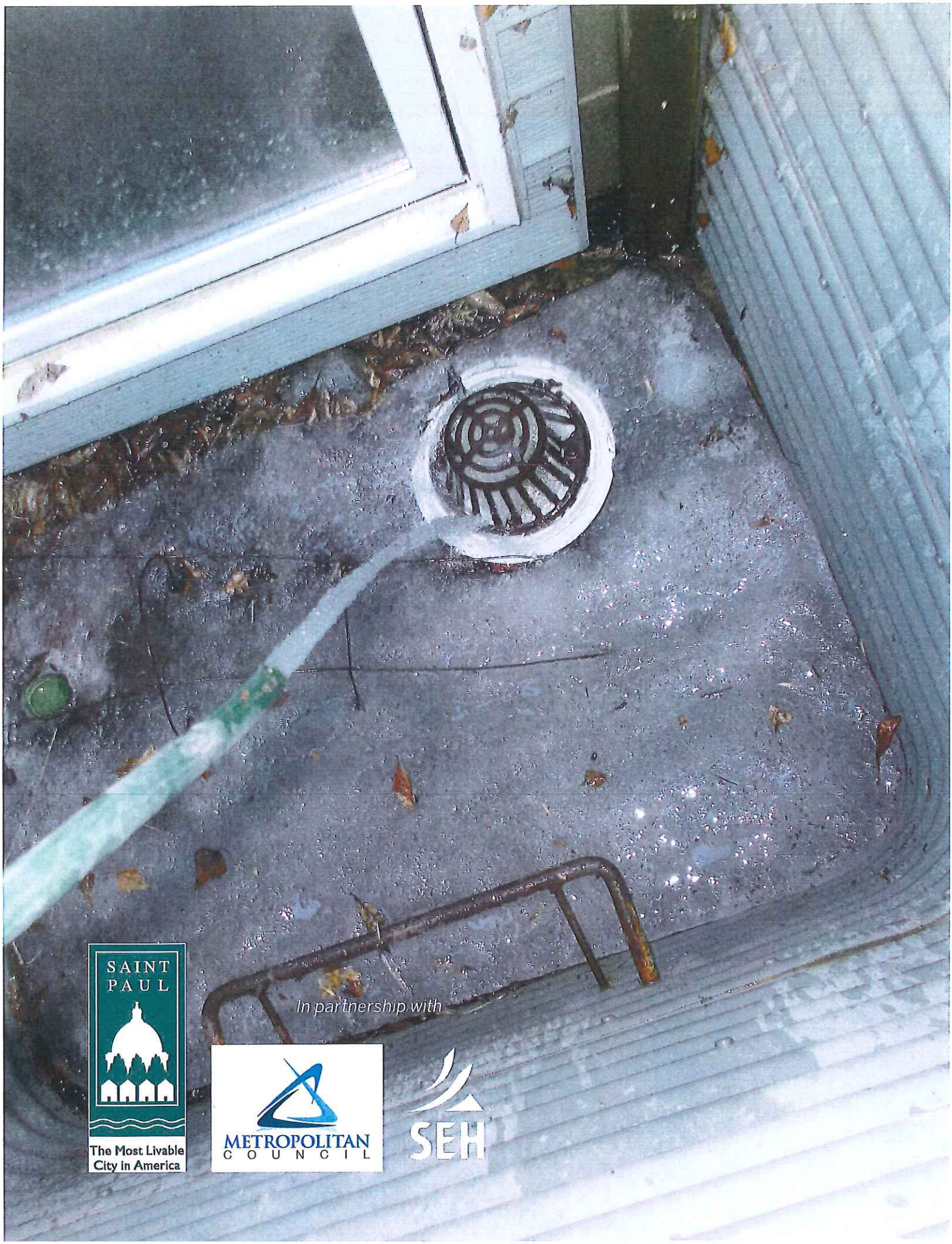
Median City-Wide Residential EMV

$70,529,200

Total Project Area Residential EMV

$159,800

Median Project Area Residential EMV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