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Technical Memorandum

Prepared for: King County

Project title: Evaluation of Inflow and Infiltration Reduction Concepts

Project no.: 150258

Technical Memorandum

Subject: Task 600 Private Side Sewer Programs Scope Revision Recommendations

Date: June 28, 2017

To: Steve Tolzman

From: Steffran Neff

Copy to: Nicole Smith

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Reviewed by: Andy Lukas, Laurie Chase, Bob Jacobsen, and Art Griffith

Limitations:

This is a draft memorandum and is not intended to be a final representation of the work done or recommendations made by Brown and Caldwell. It should not be relied upon; consult the final report.

This document was prepared solely for King County in accordance with professional standards at the time the services were performed and in accordance with the contract between King County and Brown and Caldwell dated January 17, 2017. This document is governed by the specific scope of work authorized by King County; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by King County and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

The purpose of this technical memorandum is to present recommended changes to the Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC) Engineering and Planning (E&P) subcommittee for Task 600 private side sewer programs in the scope of work for Contract P00208P16, Professional Services for Evaluation of Inflow and Infiltration (I/I) Reduction Concepts.

The original scope of work for Contract P00208P16 required the Brown and Caldwell (BC) team to assess the existing sewer and side sewer standards and inspection programs under Tasks 400 and 500, respectively. Part of the assessment included onsite interviews at the 34 cities and sewer districts in the King County regional wastewater service area. Under the original scope, the Task 600 private side sewer programs were envisioned to be presented to the cities and sewer districts after Tasks 400 and 500 were complete. During project kickoff, the BC team and King County Wastewater Treatment Division (WTD) agreed to include questions for discussion during the site visits on potential side sewer programs outlined in Task 600 that could be considered for implementation throughout the King County regional wastewater service area.

The main driver for including the Task 600 questions in the interviews was to maximize the effectiveness of the site visits and gain the opinions and insight of each city and sewer district on the possibility of implementing side sewer programs originally outlined in Subtasks 620, 630, 640, and 650 for inspection and certification, insurance, maintenance, and grant or loans, respectively. At each onsite interview, side sewer programs for inspection and certification, insurance, maintenance, and grant or loans were discussed including the potential benefits and challenges of adopting the programs.

Subtasks 620 through 650 in the original scope called for a framework to be developed to explore the application of the side sewer programs in the King County regional service area. As a result of the discussions with the cities and sewer districts, it was determined that performing the full scope of services for several of the programs listed in the original scope—specifically, Subtask 630, insurance programs, and Subtask 640, maintenance programs—was unnecessary. In addition, input from the cities and sewer districts brought forth programmatic ideas outside the four listed in the original scope. This included providing an I/I toolkit for the cities and sewer districts and/or procuring an on-call roster for the cities and sewer districts to use to access vendors of I/I services.

Based on this input, several scope changes are recommended. Below is a summary of the suggested changes in the Task 600 scope and a full annotated scope is included in Attachment A. These suggested changes should require only a reallocation of the current budget and are not expected to change the overall budget or schedule for the project.

Subtask 610: Identification of the Types of Private Side Sewer Programs

No significant changes are recommended for this subtask. It is recommended that the memorandum include the following information:

- An overview of the city and sewer district interview discussions on private side sewer programs.
- An overview of insurance side sewer programs and a discussion on why this framework was not further evaluated for King County. However, a list of items for individuals to review when reviewing side sewer insurance will be included under Subtask 630.
- An overview of maintenance side sewer programs and a discussion on why this framework was not further evaluated for King County.

Subtask 620: Evaluation of and a Framework for Side Sewer Inspection and Certification Program

No changes are recommended for this subtask.



Subtask 630: Evaluation of and a Framework for Private Side Sewer Insurance Programs

Based on the input received from the cities and sewer districts, King County and MWPAAC do not wish to consider a program for side sewer insurance as a part of the scope of work. The cities and sewer districts strongly stated a lack of interest in such programs, and insurance programs do not directly reduce I/I.

It is recommended that the development of a framework for private side sewer insurance programs be removed from the scope. A full summary of the rationale for this removal will be provided in the Subtask 610 memorandum. The Subtask 630 scope will include only development of a list of items to consider when obtaining third-party side sewer insurance.

Subtask 640: Evaluation of and a Framework for Private Side Sewer Maintenance Program

Based on the input received from the cities and sewer districts, King County and MWPAAC do not wish to consider a program for side sewer maintenance as a part of the scope of work. The cities and sewer districts strongly stated a lack of interest in such programs, primarily because of liability issues with performing work on private property.

It is recommended that the development of a framework for private side sewer maintenance programs be removed from the scope. An overview of the rationale for the removal will be provided in the Subtask 610 memorandum. The Subtask 630 scope would be removed from the project.

Subtask 650: Evaluation of and a Framework for Grant or Loan Programs for Private Side Sewers

No changes are recommended for this subtask.

Subtask 660: Evaluation of and a Framework for Private Side Sewer Regional I/I Support Program (NEW)

It is recommended that a subtask be included to evaluate and develop a framework for I/I regional support programs. The type of support programs discussed included providing a prequalified roster of I/I service vendors for items such as closed-circuit television inspections and/or spot repairs and developing an I/I toolkit providing artificial rainfall generation equipment, smoke testing, and flow meters. These services would be a regional resource available to the cities and sewer districts as needed.



Attachment A: Annotated Scope of Work



EXHIBIT A
SCOPE OF WORK

CONTRACT NO. P00208P16

**PROFESSIONAL SERVICES FOR EVALUATION OF INFLOW AND INFILTRATION REDUCTION
CONCEPTS**

Introduction

This scope of work is to provide services to the King County Wastewater Treatment Division (WTD) to assist in exploration of new elements for the Regional Inflow and Infiltration (I/I) Control Program. This scope of work shall build on the work that WTD has done previously and explore more comprehensive and system wide I/I reduction. The products of this scope of work will inform the region about potential new elements for the I/I Control Program, present possible frameworks for implementation of potential programs, and include an implementation plan for moving forward with new program elements.

Project Background

I/I is excess water that flows into sewer pipes from groundwater and stormwater. I/I in the separated regional wastewater system impacts both capital and operational costs.

WTD's Conveyance System Improvement (CSI) Program assesses capacity in the regional wastewater system and plans future projects. Capacity is assessed against a 20 year peak flow. Findings from CSI Program analysis show that about 70% of the peak flow in the separated system is I/I. The I/I results in higher capital program costs by accelerating the need for capacity improvement projects and increasing their size. Annually it is estimated that 27% of the average wastewater system flow is I/I. Transporting and treating I/I increases operation costs related to pumping, treating, and disposing of the total wastewater volume. The extra cost to build additional capacity for I/I flows, convey flows through the system, and treat the excess flows are currently spread across all customers, through WTD's utility rates.

WTD has had an I/I Control Program since 1999. The program was established as part of the Regional Wastewater Services Plan. Currently the I/I program focuses on portions of the system that have wastewater flow capacity shortages. Specifically the I/I program has developed data to assess where I/I reduction might be a more cost effective solution than increase pipe and/or pump station capacity. The program has been effective in some areas of the regional wastewater system. Currently, there is no comprehensive program to address I/I throughout the regional wastewater system.

Objective of Scope of Work

Evaluate concepts for I/I reduction programs to comprehensively reduce I/I through the separated sewer portion of the regional wastewater system to inform the region on future steps for the program. The concepts to be evaluated were identified by Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC) and the King County Wastewater Treatment Division (WTD) in 2015. The programs identified are related to sewer standards, sewer inspection requirements, and private side sewers.

MWPAAC, via the Engineering and Planning (E&P) subcommittee shall have a role in guiding the evaluation and reviewing the products of the evaluation. Ultimately the evaluation seeks to recommend a program or programs for implementation.

Estimated Project Schedule

Notice to Proceed	December 2016
1 Project Planning	January 2017 – February 2017
2 Review of Sewer and Side Sewer Standards	March 2017 – November 2017
3 Standardized Regional Sewer and Side Sewer Inspection Program	March 2017 – November 2017
4 Private Side Sewer Programs	March 2017 – June 2018

Reference Documents Available To Proposers

1. King County in cooperation with cities and sewer districts developed proposed Engineering Standards/Procedures, Guidelines, and Standard Design Details for the design, construction, inspection and testing of sanitary sewers in 2004 (for a copy see Appendix B of the 2005 Executives Recommended Regional Infiltration and Inflow Control Program at: http://www.kingcounty.gov/~media/services/environment/wastewater/i-i/docs/Reports/0512_II_Control_Program_Recommendations.ashx?la=en)
2. [The County posted to the P00208P16 web site a summary of two 2015 MWPAAC I&I Task Force meetings under P00208P16 - Task Force Meeting Compilation.](#)

Scope of Work

Consultant Deliverable Standards

1. For all deliverables, the Consultant shall provide the following unless otherwise specified in a particular task:
 - A. Draft and final of any plan, report, and technical memos
 - B. One electronic copy of all deliverables
 - C. One bound printed copy (for reports, technical memoranda and design documents)
 - D. One unbound printed copy (for monthly reports/invoices and for bound documents)
 - E. One electronic copy of draft agenda 3 business days before scheduled meetings or workshops
 - F. One electronic copy of draft meeting/workshop notes within 5 business days following the event
 - G. One electronic copy of updated Action/Decision Logs after each team meeting.
2. Wastewater Treatment Division will review the draft submittals and transmit review comments via email to the Consultant using Wastewater Treatment Division standard comment tracking form. The Consultant shall provide a written response to the County for each comment within a mutually agreed timeframe for receipt of the comments; timeframe to be determined during negotiations. Each comment response shall describe how the comment will be incorporated into the final document. Each comment response will be reviewed with the County's Project Representative (PR) to reach consensus on resolution.

PHASE 1 – Evaluation of Concepts

The purpose of Phase I is to explore and evaluate new elements for the Regional (I/I) Control Program. The products of Phase 1 tasks will present the results of the exploration and evaluation so that potential new elements for the I/I Control Program can be fully discussed by regional stakeholders. King County will provide an attorney to support these items in the scope. The attorney will interface with policy and technical members of the team.

Task 100 - Project Management

This task includes all work related to the management, administration, and coordination of Consultant activities in accordance with the Project Management Institute's standards.

Subtask 110 – Project Management Plan

Prepare a Project Management Plan addressing Scope of Work.

1. Prepare a draft Project Management Plan ("PMP") within 30 working days of the Notice to Proceed ("NTP") that document the Project Management Institute method that shall be used for managing the project. The PMP shall include:
 - a. A work breakdown structure ("WBS") that identifies resources and responsibilities necessary to respond to WTD-approved work scope.
 - b. A project schedule.
 - c. A quality assurance program, communication protocols, invoicing requirements, and project procedures, such as filing systems, charge numbers, change management, and document format.
2. Following review by WTD of the draft PMP and within 10 working days of receipt of WTD's review comments, prepare and submit a final PMP to WTD for review and approval.
3. Distribute final WTD-approved PMP to all subconsultants.
4. Update the PMP and submit to WTD if required by changes in project schedule, budget, or scope of work, or as requested by WTD.

Deliverables:

1. Draft and final initial PMP.
2. At least two (2) and up to four (4) updates of the PMP.

Assumptions:

1. Consultant will rely on the County's legal counsel and/or legal consultant for the legal-related aspects of this scope. The Project Management Plan will assume that the participation of the County's legal consultant and/or legal council is available.

Subtask 120 – Progress Reports

Prepare monthly progress reports to document project progress.

1. Submit a monthly progress report to WTD by the 10th of each month, or other mutually agreed-upon date in advance of the monthly meetings called for in Subtask 130.

2. Progress reports shall be one (1) to two (2) pages in length and include:
 - a. Work completed for prior month, schedule of work for the next month, any changes in staffing, schedule updates, identification of issues that impact schedule, and proposed means to address critical issues.
 - b. A listing of all costs to date and a revised cost-to-complete estimate tracked at task level (not subtask level).

Deliverables

1. Up to 24 monthly progress reports over two years.

Subtask 130 – Monthly Progress Meetings

The Consultant shall hold monthly meetings to discuss project progress, activities may include the following:

1. Conduct monthly one-hour progress meetings with WTD PR and/or WTD PM and members of the County's Project Team, as necessary and appropriate to review:
 - c. Project tasks underway.
 - d. Time and budget tracking.
 - e. Work elements accomplished.
 - f. Work items planned for the next period.
 - g. Scope changes.
 - h. A log of decisions, time, and budget needed to complete specified portions of the project.
2. At least three (3) working days prior to each meeting, prepare and distribute draft meeting agenda (one-hour effort for one person per meeting).
3. Within three (3) working days following each meeting, prepare brief meeting notes with decision log and action items list (two-hour effort for one person per meeting). Meeting notes include:
 - a. Summary of each agenda item discussed.
 - b. Action items that have been resolved.
 - c. Items which require a response by a specific Consultant or subconsultant team member, King County, or others.
 - d. Changes to deliverables or schedules.
 - e. Updates to decision log.
 - f. Updates to action items list.

Deliverables:

1. Meeting agenda distributed electronically to participants at least three (3) working days before each meeting.
2. Meeting Notes (see Consultant Deliverable)

Assumptions:

1. It is assumed that King County will come to the Consultant Offices for the Progress Meetings.

Task 200 – MWPAAC Involvement Support

The Consultant shall Work with the MWPAAC to develop a plan for collecting and sharing information as this scope of work is completed. MWPAAC and King County are in agreement to move forward with this evaluation to explore options. Actions beyond exploration have not been agreed to at this time.

The scope of work requires cooperative efforts with MWPAAC agencies to collect and evaluate local agency standards and inspection programs. The county Project manager will be the point person to initiate communication and foster the cooperation of MWPAAC members with the Consultant. The consultant will be responsible for collecting and evaluating the information once the county Project Manager has established the contact.

Subtask 210 – MWPAAC Involvement Plan

Consultant shall develop a MWPAAC Involvement Plan.

Deliverables:

1. MWPAAC Involvement Plan that presents strategies and process for involving MWPAAC in the Evaluation of Inflow and Infiltration Reduction Concepts.

Assumptions:

1. MWPAAC Engineering and Planning Subcommittee is likely to be the venue for involvement, however, an alternate venue such as a specifically formed task force is possible.
2. The MWPAAC Involvement Plan shall outline a process for MWPAAC to make recommendations to WTD Director on which types of I/I programs explored in Task 400, Task 500, and Task 600 should be carried forward and further developed in an implementation plan during a second phase of this work. A detailed scope for a second phase will be developed based on the recommendations.
3. The MWPAAC Involvement Plan shall define roles and responsibilities of the Consultant, King County and MWPAAC for the evaluation.

Subtask 220 – Support to King County Staff during MWPAAC Meetings

WTD will meet with MWPAAC at least monthly to provide project briefings. The consultant shall provide support to WTD during these meetings.

Deliverables:

1. Materials for and presentation at up to 8 MWPAAC meetings.

Assumptions:

1. A total of 8 individual trips for out of town experts have been budgeted for attending MWPAAC meetings. More than one individual trip could occur for the same meeting.

2. Two-hour meeting shall be held to present the draft framework to the cities and sewer districts for subtasks 620, 630, 640, and 650. The focus of the meetings shall be focused on information sharing and education.
3. One hour travel time was included for each MWPAAC meeting.
4. Two hours of meeting preparation were included for Consultant PM and Leads to develop materials and two hours for meeting notes were allocated for each meeting.

Task 300 Meeting and Briefings Participation

The Consultant shall attend and participate in meeting and briefings with WTD staff and decision makers on an as needed basis.

Subtask 310 – Meeting and Briefings Participation

Deliverables:

1. Presentation materials for meetings and briefings.

Assumptions:

1. Eight meetings shall be conducted during the project.
2. Meetings shall be 2 hours long and include 1 hour for transit to King County or another location in the Seattle metropolitan area. Assumed remote Leads will call in for WTD meetings.
3. One hour of preparation was included for Consultant PM and Leads.

Task 400 Review of Sewer and Side Sewer Standards

The Consultant shall determine the extent to which existing sewer and side sewer standards meet the industry best management practices. The review shall note where existing standards are not being fully enforced. If the review shows areas where existing standards can be improved or more fully implemented they will be noted.

Subtask 410 – Verify 2004 King County Final Draft Regional I/I Control Standards, Procedures, and Policies

Consultant shall verify that the 2004 standards are still accurate and can be used as a benchmark for assessing standards and procedures in place at the cities and sewer districts that discharge wastewater to King County's regional system (see Reference Document). Other key references to consult in this process are the American Public Works Association standard specifications, EPA Capacity, Management, Operation, and Maintenance (CMOM) program, and applicable WEF Manuals of Practice.

Deliverables:

1. Technical memorandum summarizing assessment and update of 2004 King County Final Draft Regional I/I Control Standards, Procedures, and Policies.
2. If needed, propose changes and update the 2004 King County Final Draft Regional I/I Control Standards, Procedures, and Policies.

Assumptions:

1. The County shall provide their standards, procedures and policies to the Consultant.
2. The purpose of the review is to determine if 2004 Standards are still relevant and appropriate per industry best practices based on Consultant expertise.

Subtask 420 – Assessment of Existing Local Agency Sewer and Side Sewer Standards

The Consultant shall assess local agency sewer and side sewer standards as compared to recognized best management practices established in subtask 410. This subtask shall include the use of phone or in person interviews to collect information on the standards, specifications, and practices in place at each of the cities and sewer districts that discharge wastewater to King County's regional system. To the extent practical, information on city and sewer district standards available on the internet or in sewer comprehensive plans shall be reviewed to collect information prior to sending questionnaires or scheduling interviews with cities and sewer districts. Activities may include the following:

1. Interview 34 cities and sewer districts to collect information on and acquire sewer and side sewer standards.
2. Assess standards in place at cities and sewer districts to determine if they meet the best management practices established in subtask 410. The questions below will be used as a starting point to guide the assessment and the results will be responsive to them.
 - a. Are sewer and side sewer standards consistent throughout the regional wastewater service area?
 - b. Do the standards being applied in the regional wastewater service area meet industry wide best management practices?
 - c. What improvements could be made to sewer and side sewer standards through the regional wastewater service area to reduce I/I to reduce I/I?
 - d. Are there sewer and side sewer standards in place at city's and sewer districts (e.g., installations in the field do not meet specifications)?
 - e. Are there specific practices being implemented that are resulting in a disproportionately high risk of I/I?
 - f. Does the agency have a local sewer rehabilitation/replacement program? What is the extent of the program?
 - g. Does the agency have a private side sewer programs or any mechanisms in place to inspect, maintain, or replace private side sewers?

Deliverables:

1. Technical memorandum that presents the findings of assessing of existing local agency sewer and side sewer standards as compared to best management practices.

Assumptions:

1. Task 400 to be completed simultaneously with Task 500 as they both require collecting information from cities and sewer districts.

2. The Consultant shall plan to visit each of the MWPAAC cities or sewer districts, where possible, with King County staff. King County shall assist in arranging site visits. If a visit is not possible, the Consultant shall call the city or sewer district.
3. The technical memorandum shall present information in a consolidated manner and not individually call out deficiencies or good practices of any one city or sewer district. The documentation of each city and sewer district standards will be summarized on a standardized form, organized into a report appendix, and be available for reference so that any agency specific corrective actions needed can be identified and addressed.
4. Visits will be used to conduct staff interviews and will not involve field visits of active sewer construction. As such, the determination of how well any local standards are being enforced will depend solely upon information gained in these interviews.
5. Consultant will rely on information provided by the Cities and Districts. Information will not be verified.
6. Budget includes travel time and mileage to visit each MWPAAC city and sewer district.

Subtask 430 – Develop an Approach to Achieve Common Sewer and Side Sewer Standards

The Consultant shall develop an approach to achieve common sewer and side sewer standards that significantly conforms with the standards identified in Task 410 throughout the regional wastewater service area. If the result of subtask 420 show irregularities in sewer and side sewer standards amongst the cities and sewer districts the Consultant shall explore and identify approaches to addressing those irregularities. Activities may include:

1. Research policy and legal issues associated with achieving common side sewer and side sewer standards in place throughout the regional wastewater service area.
2. If needed, develop template tools, practices, procedures or other materials to assist cities and sewer districts in addressing any irregularities in sewer and side sewer standards amongst the cities and sewer districts.

Deliverables:

1. Draft and Final documentation that present the approach to achieving common sewer and side sewer standards.

Assumptions:

1. The purpose of the regional evaluation approach is for education, and as such the format and content shall be at a level to provide information for the cities and sewer districts. Example checklist, tracking forms, or other illustrative tools to support the outline will be included as appropriate.

Task 500 - Standardized Regional Sewer and Side Sewer Inspection Program

The Consultant shall assess sewer and side sewer inspection programs in the cities and sewer districts in the regional wastewater service area. The assessment shall examine the potential for a standardized regional inspection program. The consultant shall collect information on current sewer and side sewer

inspection programs at 34 cities and sewer districts in the King County regional wastewater service area. The inspection programs shall be evaluated against industry standard programs. Based on the evaluation areas where inspection programs can be improved shall be noted. The findings of the evaluation shall be used to develop an outline for a regional sewer and side sewer inspection training program.

Subtask 510 - Evaluation of Current Inspection Programs at Cities and Sewer Districts

The Consultant shall evaluate sewer and side sewer inspection programs throughout the regional wastewater service area. This evaluation shall occur simultaneously with Subtask 410. As is the case for Subtask 410, the evaluation shall be done using phone or in person interviews.

Utilizing a variety of references, the Consultant shall identify best practices for a sewer and side sewer inspection program. The references shall include American Public Works Association standard specifications, EPA CMOM, and others identified as examples of best management practices. Activities may include:

1. Identify best practices for a sewer and side sewer inspection program.
2. Acquire details on inspection programs at 34 cities and sewer districts.
3. Work with WTD and the cities and sewer districts to develop a series of questions to guide the evaluation of inspections programs. The questions below will be used as a starting point to guide the evaluation and the results will be responsive to them.
 - a. Do inspection programs meet industry standards?
 - b. Are there consistent inspection programs at the cities and sewer districts in the Regional Wastewater Service Area that comply with King County Code? At a minimum, the following questions shall be explored with each city or sewer district in addressing inspection program consistency:
 - o How many inspectors are there per capita or per sewer account in the city or sewer district service areas?
 - o On average how many building permits are issued?
 - o On average how many side sewer permits are issued?
 - o Are side sewer permits part of or separate from building permits?
 - o Is there a formal training program for inspectors?
 - o What is the range of experience amongst inspectors?
 - o What is the extent of side sewer inspections (e.g., is the entire length of side sewer inspected)?
 - o Are inspections done upon completion or throughout construction?
 - o What type of inspection (e.g. pressure test) is done?
4. Work with WTD to assess WTD review of inspection data that is submitted by the cities and sewer districts.
5. Provide a written summary of the findings of the evaluation.

Deliverables:

1. Technical memorandum that presents the findings of evaluating current inspection programs in place at the cities and sewer districts that are part of the regional wastewater treatment system.

Assumptions:

1. Task 500 to be completed simultaneously with Task 400 as they both require collecting information from cities and sewer districts.
2. The Consultant shall plan to visit each of the MWPAAC cities or sewer districts where possible, with King County staff. King County shall assist in arranging site visits. If a visit is not possible, the Consultant shall call the city or sewer district.
3. The technical memorandum shall present information in a consolidated manner and not individually call out deficiencies or good practices of any one city or sewer district. The documentation of each city and sewer district inspection program will be summarized on a standardized form, organized in a report appendix and be available for reference so that any agency specific corrective actions needed can be identified and addressed.
4. Visits will be used to conduct staff interviews and will not involve field visits of active sewer inspection. As such, the determination of how well any local standards are being enforced will depend solely upon information gained in these interviews.
5. Consultant will rely on information provided by the Cities and Districts. Information will not be verified.
6. Travel budget for subtask 510 included in subtask 420.

Subtask 520 – Outline for a Standardized Regional Inspection Training Program

If the results of Subtask 510 show the need for a standardized regional inspection program, the Consultant shall prepare outline for a program to train staff conducting sewer and side sewer inspections in the regional wastewater service area. The outline shall include the following elements:

1. Identification of improvements needed to inspection programs in the regional wastewater service area.
2. Identification of improvements needed in training of inspectors.
3. Content for inspector training.
4. Entity conducting the training.
5. Requirements to complete the training.
6. Funding sources for the training.
7. Methods to assess effectiveness of the program at reducing I/I.

Deliverables:

1. Draft and Final documentation that presents the outline for a standardized regional inspection program.

Assumptions:

1. The purpose of the outline is for education, the format and content shall be at a level to provide information to cities and sewer districts. Example checklist, tracking forms, or other illustrative tools to support the outline will be included as appropriate.
2. No actual training shall be provided.

Task 600 – Private Side Sewer Programs

Private side sewer programs could be established to create conditions where private side sewers are routinely inspected, maintained, or replaced so that I/I is minimized or reduced. The Consultant shall identify the types of programs that are utilized by other utilities across the nation and examine the potential for use of those programs in the King County regional wastewater service area. Should new concepts for private side sewer programs be identified those concepts could be explored as well.

Task 600 shall summarize the program types in order to orient WTD and the cities and sewer districts to them. With the program types summarized a framework for implementation of each type of program shall be prepared. Some of the greatest challenges to establishing a private side sewer program are legal and policy issues. Therefore, it is critical that the consultant team identify legal and policy issues as well as technical and financial during all Task 400 work.

Subtask 610 – Identification of the Types of Private Side Sewer Programs

The Consultant shall summarize the types of programs so that they can be evaluated in subtasks 620 to 650. WTD has identified inspection, insurance, enforcement, and financial aid side sewer programs to be included in the summary. Other programs identified by the Consultant shall include:

1. Research private side sewer programs.
2. Work with WTD and the cities and sewer districts to develop a series of questions to guide the private side sewer programs research. The questions below will be used as a starting point to guide the evaluation and the results will be responsive to them.
 - a. What are the strengths of each program?
 - b. What are the weaknesses of each program?
 - c. Have any programs been determined to be more successful (i.e., effective) in reducing I/I than others? What were the conditions that contribute to success? How was success determined?
 - d. What was the property owner's participation rate, and what factors maximized property owner's willingness to participate?
 - e. Were there unintended consequences or impacts from implementing the program, and how were they addressed?
 - f. What methods are available to determine the costs and benefits of these programs?

Deliverables:

1. Written summary of the research that addresses the key questions.
2. Technical memorandum that summarizes the types of private side sewer programs.

Assumptions:

1. The purpose of the summary is for education, the format and content shall be at a level to provide information to MWPAAC and the public.
2. The evaluation shall rely on published assessments.
3. The Consultant shall use up to 8 case studies from sources such as the WEF Private Property Virtual Library.
4. The summary shall include an overview of the city and sewer district interview discussions.
5. The summary shall include an overview of insurance side sewer programs and a discussion on why this framework was not further evaluated for King County. A list of items for individuals to review when reviewing side sewer insurance shall be included under subtask 630.
6. The summary shall include an overview of maintenance side sewer programs and a discussion on why this framework was not further evaluated for King County.

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Subtask 620 – Evaluation of and a Framework for Side Sewer Inspection and Certification Program

The Consultant shall evaluate and explore the application of a side sewer inspection and certification program in the King County regional wastewater service area. Activities may include:

1. Work with WTD and the cities and sewer districts to develop a series of questions to guide the evaluation of a private side sewer inspection and certification program. The questions below will be used as a starting point to guide the evaluation and the results will be responsive to them.
 - a. What mechanism (e.g. real estate transaction) triggers a side sewer inspection?
 - b. What action(s) (e.g. documentation of results, documentation of results and repair of defects) are taken based on the result of the inspection?
 - c. What is the legal authority to implement the program in a City and Sewer District local government setting?
 - d. What regulatory/legislative changes at local, county, and state level would be needed to implement the program?
 - e. What is the potential for the program to be effective in reducing I/I in the regional wastewater system?
 - f. Are there any anticipated impacts to operations (e.g., pipes with substandard slopes lack flushing velocity) of wastewater collection systems?
 - g. Are there any positive or negative impacts (environmental, groundwater/stormwater, safety, infrastructure, or other) associated with the program? What methods are available to avoid, address or mitigate negative impacts?
 - h. What are the potential costs and funding mechanisms of the program?
 - i. What entity or individual is responsible for the paying the costs and administering the funding mechanisms?

- j. Are there affordability or other potential financial impacts, positive or negative? What methods are available to avoid, address or mitigate negative impacts?
 - k. What methods are available to assess effectiveness of the program at reducing I/I?
 - l. What private sector entities would be involved in the program? What type of outreach to these entities is needed?
2. Based on the findings of the evaluation, the consultant shall develop a framework for implementation of a private side sewer inspection program in the King County regional wastewater service area. The framework shall include optional features for consideration. The framework shall include:
 - a. Description of the program.
 - b. Identification of legal authority for program.
 - c. Complete list of program procedures.
 - d. Program incentives and penalties.
 - e. Partners for implementing the program.
 - f. Estimate costs for the program and potential funding sources.
 - g. Method for assessing program effectiveness over time.

Deliverables:

1. Technical memorandum that summarizes evaluation of the side sewer inspection and certification program.
2. Draft and Final documentation that presents the framework for a standardized regional inspection program.

Assumptions:

1. The Consultant shall develop a draft framework based on the questions above and at a minimum include the elements listed above so that cities and sewer districts can adequately understand the proposed program. The framework is not intended to be of sufficient detail to be immediately implemented.
2. Where applicable, social justice and equity energy, and sustainability considerations consistent with King County priorities shall be applied to the framework.
3. The final framework shall incorporate comments from the cities and sewer districts.
4. MWPAAC meeting and travel time is included in Task 200.
5. The framework is not intended to be of sufficient detail to be immediately implemented. Further, extensive outreach to the providers of side sewer inspection and certification services is not included in this scope to establish standardized inspection procedures and equipment.
6. The final framework optimally would include a comparison of the estimated unit cost to remove I&I under this proposed program with other I&I programs that are currently being evaluated and/or implemented.
7. The final framework optimally would include a summary of downstream separated conveyance system capital improvements to address I&I and/or CSOs that would not be needed if this program were implemented. WTD will provide avoided costs so that a comparison between I/I programs and conveyance system/CSO capital projects can be made.

Subtask 630 – Evaluation of and a Framework for Private Side Sewer Insurance Programs

~~A full evaluation and framework development shall not be developed for private side sewer insurance programs. A summary overview of why the program was not considered shall be provided in the subtask 610 memorandum. The Consultant shall develop a list of items to be reviewed when an individual is considering obtaining a side sewer insurance policy. evaluate and explore the application of a side sewer insurance program in the King County regional wastewater service area. Activities may include:~~

~~1. Work with WTD and the cities and sewer districts to develop a series of questions to guide the evaluation of a private side sewer insurance program. The questions in the evaluation may include but not be limited to:~~

~~a. What are the options for making private side sewer insurance available to property owners?~~

~~b. What is the legal authority to implement insurance programs in a City and Sewer District local government setting?~~

~~c. What is the potential for the program to be effective in reducing I/I in the regional wastewater system?~~

~~d. Are there any anticipated impacts to operations (e.g., pipes with substandard slopes lack flushing velocity) of wastewater collection systems?~~

~~e. Are there any positive or negative impacts (environmental, groundwater/stormwater, safety, infrastructure, or other) associated with the program? What methods are available to avoid, address or mitigate negative impacts?~~

~~f. What are the potential costs and funding mechanisms of the program?~~

~~g. What entity or individual is responsible for the paying the costs and administering the funding mechanisms?~~

~~h. Are there affordability or other potential financial impacts, positive or negative? What methods are available to avoid, address or mitigate negative impacts?~~

~~i. Does the program need public funding/staffing to be effective?~~

~~j. What methods are available to assess effectiveness of the program at reducing I/I?~~

~~2. Based on the findings of the evaluation the consultant shall develop a framework for implementation of a private side sewer insurance program in the King County regional wastewater service area. The framework shall include:~~

~~a. Description of the program.~~

~~b. Identification of legal authority for program.~~

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- ~~e. Complete list of program procedures.~~
- ~~d. Identification of insurance provider(s) (e.g. utility, private company).~~
- ~~e. Identification of funding mechanism(s).~~
- ~~f. Program incentives and penalties.~~
- ~~g. Method for assessing program effectiveness over time.~~

Deliverables:

- 1. Technical memorandum that summarizes items to be considered when obtaining a evaluation of the side sewer insurance program policy.
- 2. ~~Draft and Final documentation that presents the framework for a standardized regional insurance program.~~

Assumptions:

- 1. MWPPAC does not wish to consider a program for side sewer insurance. Formatted: Font: Bold
- 2. A short one or two page list of considerations shall be developed for cities and sewer districts to provide to their customers for informational purposes only on the what items to look for in an insurance policy. Formatted: Font: Bold
- 4. ~~The Consultant shall develop a draft framework based on the questions above and at a minimum include the elements listed above so that cities and sewer districts can adequately understand the proposed program. The framework is not intended to be of sufficient detail to be immediately implemented.~~
- 2. ~~Where applicable, social justice and equity energy, and sustainability considerations consistent with King County priorities shall be applied to the framework.~~
- 3. ~~MWPAAC meeting and travel time is included in Task 200.~~
- 4. ~~The final framework shall incorporate comments from the cities and sewer districts.~~
- 5. ~~The framework is not intended to be of sufficient detail to be immediately implemented. Further, extensive outreach to the providers of private side sewer insurance is not included in this scope to establish standardized inspection procedures and equipment.~~
- 6. ~~The final framework optimally would include a comparison of the estimated unit cost to remove I&I under this proposed program with other I&I programs that are currently being evaluated and/or implemented.~~
- 7.3. The final framework optimally would include a summary of downstream separated conveyance system capital improvements to address I&I and/or CSOs that would not be needed if this program were implemented. WTD will provide avoided costs so that a comparison between I/I programs and conveyance system/CSO capital projects can be made.

Subtask 640 – Evaluation of and a Framework for Private Side Sewer Maintenance Program

The A full evaluation and framework development shall not be developed for private side sewer maintenance programs. This task shall be removed and a summary overview of why the

~~program was not considered shall be provided in the subtask 610 memorandum. Consultant shall evaluate and explore the application of a side sewer maintenance program in the King County regional wastewater service area. Activities may include:~~

~~1. Work with WTD and the cities and sewer districts to develop a series of questions to guide the evaluation of a private side sewer maintenance programs. The questions in the evaluation may include but not be limited to:~~

~~a. What are the options for implementing private side sewer maintenance programs?~~

~~b. What is the legal authority to implement maintenance programs in a City and Sewer District local government setting?~~

~~c. What is the potential for the program to be effective in reducing I/I in the regional wastewater system?~~

~~d. Are there any anticipated impacts to operations (e.g., pipes with substandard slopes lack flushing velocity) of wastewater collection systems?~~

~~e. Are there any positive or negative impacts (environmental, groundwater/stormwater, safety, infrastructure, or other) associated with the program? What methods are available to avoid, address or mitigate negative impacts?~~

~~f. What are the potential costs and funding mechanisms of the program?~~

~~g. What entity or individual is responsible for the paying the costs and administering the funding mechanisms?~~

~~h. Are there affordability or other potential financial impacts, positive or negative? What methods are available to avoid, address or mitigate negative impacts?~~

~~i. Does the program need public funding/staffing to be effective?~~

~~j. What methods are available to assess effectiveness of the program at reducing I/I?~~

~~2. Based on the findings of the evaluation the consultant shall develop a framework for implementation of a private side sewer maintenance program in the King County regional wastewater service area. The framework shall include:~~

~~a. Description of the program.~~

~~b. Identification of legal authority for program.~~

~~c. Complete list of program procedures.~~

~~d. Identification of maintenance provider(s) (e.g. utility, private company).~~

~~e. Identification of funding mechanism(s).~~

~~f. Program incentives and penalties.~~

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g. ~~Method for assessing program effectiveness over time.~~

Deliverables:

1. ~~Technical memorandum that summarizes evaluation of the side sewer maintenance program.~~
2. ~~Draft and Final documentation that presents the framework for a standardized regional maintenance program.~~

Assumptions:

1. ~~MWPPAC does not wish to consider a program for side sewer maintenance.~~
2. ~~A summary of why this program was removed shall be provided the memorandum in subtask 610.~~
1. ~~The Consultant shall develop a draft framework based on the questions above and at a minimum include the elements listed above so that cities and sewer districts can adequately understand the proposed program.~~
2. ~~Where applicable, social justice and equity, energy, and sustainability considerations consistent with King County priorities shall be applied to the framework.~~
3. ~~MWPAAC meeting and travel time is included in Task 200.~~
4. ~~The final framework shall incorporate comments from the cities and sewer districts.~~
5. ~~The framework is not intended to be of sufficient detail to be immediately implemented. Further, extensive outreach to the providers of private side sewer inspection services and repair services is not included in this scope to establish standardized inspection procedures and equipment.~~
6. ~~The final framework optimally would include a comparison of the estimated unit cost to remove I&I under this proposed program with other I&I programs that are currently being evaluated and/or implemented.~~
7. ~~The final framework optimally would include a summary of downstream separated conveyance system capital improvements to address I&I and/or CSOs that would not be needed if this program were implemented. WTD will provide avoided costs so that a comparison between I/I programs and conveyance system/CSO capital projects can be made.~~

Subtask 650 – Evaluation of and a Framework for Grant or Loan Programs for Private Side Sewers

The Consultant shall evaluate and explore the application of a side sewer grant or loan programs in the King County regional wastewater service area. Activities may include:

1. Work with WTD and the cities and sewer districts to develop a series of questions to guide the evaluation of private side sewer grant or loan programs. The questions in the evaluation may include but not be limited to:
 - a. What are the options for making private side sewer grants or loans available to property owners?

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- b. What is the legal authority to implement the program in a City and Sewer District local government setting?
 - c. What is the potential for the program to be effective in reducing I/I in the regional wastewater system?
 - d. What levels of property owner participation in the program could be expected?
 - e. Are there any anticipated impacts to operations (e.g., pipes with substandard slopes lack flushing velocity) of wastewater collection systems?
 - f. Are there any positive or negative impacts (environmental, groundwater/stormwater, safety, infrastructure, or other) associated with the program? What methods are available to avoid, address or mitigate negative impacts?
 - g. What are the costs and funding mechanisms of the program?
 - h. What entity or individual is responsible for the paying the costs and administering the funding mechanisms?
 - i. Are there affordability or other potential financial impacts, positive or negative? What methods are available to avoid, address or mitigate negative impacts?
 - j. What criteria should be established for funding eligibility?
 - k. What methods are available to assess effectiveness of the program at reducing I/I?
2. Based on the findings of the evaluation the consultant shall develop a framework for implementation of a private side sewer grant or loan programs in the King County regional wastewater service area. The framework shall include:
- a. Description of the program.
 - b. Identification of legal authority for program.
 - c. Complete list of program procedures.
 - d. Identification of grant or loan providers.
 - e. Program incentives and penalties.
 - f. Method for assessing program effectiveness over time.

Deliverables:

- 1. Technical memorandum that summarizes evaluation of the side sewer grant or loan program.
- 2. Draft and Final documentation that presents the framework for a standardized regional side sewer grant or loan program.

Assumptions:

- 1. The Consultant shall develop a draft framework based on the questions above for distribution to the cities and sewer districts. The framework is not intended to be of sufficient detail to be immediately implemented.
- 2. Where applicable, social justice and equity energy, and sustainability considerations consistent with King County priorities shall be applied to the framework.
- 3. MWPAAC meeting and travel time is included in Task 200.
- 4. The final framework shall incorporate comments from the cities and sewer districts.
- 5. The framework is not intended to be of sufficient detail to be immediately implemented. Further, extensive outreach to the providers of grant or loan programs

for private side sewers is not included in this scope to establish standardized inspection procedures and equipment.

6. The final framework optimally would include a comparison of the estimated unit cost to remove I&I under this proposed program with other I&I programs that are currently being evaluated and/or implemented.
7. The final framework optimally would include a summary of downstream separated conveyance system capital improvements to address I&I and/or CSOs that would not be needed if this program were implemented. WTD will provide avoided costs so that a comparison between I/I programs and conveyance system/CSO capital projects can be made.

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Subtask 660 – Evaluation of and a Framework for I/I Regional Support Programs for Private Side Sewers

The Consultant shall evaluate and explore the application of a side sewer regional support programs such as providing a pre-qualified roster of I/I service vendors for items such as TV inspections and/or spot repairs and developing an I/I tool kit providing artificial rainfall generation equipment, smoke testing and flow meters in the King County regional wastewater service area. Activities may include:

1. Work with WTD and the cities and sewer districts to develop a series of questions to guide the evaluation of private side sewer I/I regional support programs. The questions in the evaluation may include but not be limited to:
 - a. What are the options for making private I/I support programs available to property owners?
 - b. What is the legal authority to implement the program in a City and Sewer District local government setting?
 - c. What is the potential for the program to be effective in preventing and/or reducing I/I entering in the regional wastewater system?
 - d. What levels of property owner participation in the program could be expected?
 - e. Are there any anticipated impacts to operations (e.g., pipes with substandard slopes lack flushing velocity) of wastewater collection systems?
 - f. Are there any positive or negative impacts (environmental, groundwater/stormwater, safety, infrastructure, or other) associated with the program? What methods are available to avoid, address or mitigate negative impacts?
 - g. What are the costs and funding mechanisms of the program?
 - h. What entity or individual is responsible for the paying the costs and administering the funding mechanisms?
 - i. Are there affordability or other potential financial impacts, positive or negative? What methods are available to avoid, address or mitigate negative impacts?
 - j. What criteria should be established for funding eligibility?
 - k. What methods are available to assess effectiveness of the program at reducing I/I?

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2. Based on the findings of the evaluation the consultant shall develop a framework for implementation of a private side sewer regional I/I support programs in the King County regional wastewater service area. The framework shall include:

- a. Description of the program.
- b. Identification of legal authority for program.
- c. Complete list of program procedures.
- d. Identification of grant or loan providers.
- e. Program incentives and penalties.
- f. Method for assessing program effectiveness over time.

Deliverables:

- 1. Technical memorandum that summarizes evaluation of the side sewer regional I/I support programs.
- 2. Draft and Final documentation that presents the framework for a standardized regional side sewer regional I/I support program.

Assumptions:

- 1. The Consultant shall develop a draft framework based on the questions above for distribution to the cities and sewer districts. The framework is not intended to be of sufficient detail to be immediately implemented.
- 2. Where applicable, social justice and equity energy, and sustainability considerations consistent with King County priorities shall be applied to the framework.
- 3. MWPAAC meeting and travel time is included in Task 200.
- 4. The final framework shall incorporate comments from the cities and sewer districts.
- 5. The framework is not intended to be of sufficient detail to be immediately implemented. Further, extensive outreach to the providers of grant or loan programs for private side sewers is not included in this scope to establish standardized inspection procedures and equipment.
- 6. The final framework optimally would include a comparison of the estimated unit cost to remove I&I under this proposed program with other I&I programs that are currently being evaluated and/or implemented.
- 7. The final framework optimally would include a summary of downstream separated conveyance system capital improvements to address I&I and/or CSOs that would not be needed if this program were implemented. WTD will provide avoided costs so that a comparison between I/I programs and conveyance system/CSO capital projects can be made.
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Task – 700 Unplanned, Urgent and/or Critical Work

The Consultant shall provide services which are unplanned, urgent and/or critical to maintaining the project schedule and progress of the work. The work of this task must be specifically scoped, agreed to, and authorized in writing by the County prior to performing the work. Work areas may include but not be limited to supplemental:

1. Technical;
2. Policy;
3. Financial; and
4. Legal Research.

Subtask 710 – Unplanned, Urgent and/or Critical Work

Deliverables:

1. No deliverables are defined at this time. Deliverables associated with the respective additional activities that arise will be defined for each respective subtask.