King County

Department of Natural Resources and Parks

Wastewater Treatment Division

Contract P00208P16

Professional Services for Evaluation of Inflow and Infiltration Reduction Concepts

Phase 1: Evaluation of Concepts

I/I Program

Frameworks and Initial Evaluation Criteria Briefing

May 3, 2018

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Frameworks and Evaluation Criteria Briefing

The purpose of this briefing is to facilitate discussion with the MWPAAC Engineering and Planning (E&P) Committee on determining which, if any, inflow and infiltration (I/I) program frameworks should be developed into implementation plans for I/I reduction in the region. The following have been developed for the discussion:

- Summary of Framework Options
- Frameworks for Potential Regional Private Side Sewer Programs
- Summary of Evaluation Criteria
- Initial Application of the Evaluation Criteria to the Frameworks

The goal of the discussion is to gain consensus on recommended program(s), if any, for potential implementation in the region.

Summary of Framework Options

Attachment 1 is a summary of 10 framework options for implementation that were agreed upon in the April 12, 2018, E&P meeting to move forward into framework development.

Frameworks for Regional Side Sewer Programs

Attachment 2 in this briefing package provides frameworks for the 10 programs. The categories are based on the considerations listed in the I/I study scope of work. The frameworks are built on assumptions to allow the comparison of options for implementation as this evaluation continues.

Summary of Evaluation Criteria

Attachment 3 in this briefing package provides a summary of the evaluation criteria for comparing the I/I study framework options for implementation. The evaluation criteria has been developed based on feedback from the E&P Committee through the previous project briefings and is purposefully qualitative. The scoring criteria includes a description of the measurement of the criteria and the rating definition.

Initial Application of the Evaluation Criteria to the Frameworks

Attachment 4 is an initial application of the evaluation criteria to the 10 framework options. This initial rating was developed based on the Consultant's judgement. The purpose is to provide guidance to the E&P Committee and is subject to the E&P Committee's review and agreement.

In reviewing the draft ratings, please consider the following:

- What are your initial observations on results?
- Are there any surprises in the ratings?
- Are there criterion that are more important/higher priority?
- Do you have suggestions for combining options into packages to move forward into implementation plan development?

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Attachment 1: Summary of Framework Options

Summary of Framework Options		
Implementation Option	Framework	Short Description
Approach to Common Side Sewer Standards		
Option 1	Focused regional BMP standardization	• Identify 3–5 BMPs that all agencies agree should be a regional standard; document on the regional website. Agencies voluntarily implement BMPs.
Option 2	Scalable BMP program	• Develop a full list of best-in-class BMPs, perform a gap analysis at individual agencies, and develop plans for BMP adoption and implementation at each agency.
Standard Regional Inspection Training		
Option 3	Voluntary regional inspection training program	• Develop inspector training modules comprising slides and a materials handout posted on WTD's website as a regional resource; develop videos and hands-on training materials. Conduct a live training session within the region (attendance voluntary).
Option 4	Develop regional inspection training program with certification	• In addition to Option 3, provide a certification for attendees; conduct training annually at various locations, consider coordinating with an outside organization to implement the program.
Regional I/I Support		
Option 5	Regional I/I support by WTD	• WTD acts as a regional resource providing rainfall simulation toolkits, smoke testing kits, flow monitors, and rain gauges. WTD administers preferred vendor contracts to help agencies perform services (e.g., manhole and CCTV inspection, etc.).
Regional Side Sewer General Inspection Program		
Option 6	Local-agency-mandated inspection program	• The program is administered by the local agencies, which requires that all properties be inspected within a certain time frame (e.g., 10 years). • The actual testing (exfiltration) and inspection (internal CCTV) will be completed by a contractor hired by the property owner in the presence of the inspector. Certifications will be provided to inspected properties, and will remain valid for a specified time frame (e.g., 20 years).
Point of Sale Side Sewer Inspection Program		
Option 7	Local-agency-driven inspection program triggered by property transfer	• Side sewer inspection includes an exfiltration test and internal inspection completed by the property owner's contractor in the presence of the inspector. • The program is overseen by the local agencies. Certifications will be provided to inspected properties, and will remain valid for a specified time frame (e.g., 20 years). • Local agencies administer the program and conduct inspections.
Option 8	WTD-driven inspection program triggered by property transfer	• Side sewer inspection includes an exfiltration test and internal inspection completed by the property owner's contractor in the presence of the inspector. • The program is overseen by WTD. Certifications will be provided to inspected properties, and will remain valid for a specified time frame (e.g., 20 years). • WTD administers the program and conducts inspections.
Grant/Loan Program		
Option 9	Grant/loan program with inspection	• This grant and loan program will help implement other side sewer programs, such as the general inspection and point-of-sale programs. • A grant or loan program will help manage equity and social justice concerns. We assume that a grant or loan program will be administered regionally by WTD in conjunction with a private side sewer and point-of-sale inspection program.
Option 10	Grant/loan program without inspection	• This grant and loan program is administered regionally by WTD, and is available for property owners to use to voluntarily inspect, replace, and/or repair their private side sewers.

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Attachment 2: Frameworks for Potential Regional Private Side Sewer Programs

Option 1. Focused Regional BMP Standardization Framework	
Framework Category	**Program Assumptions and Features**
Description	• Identify 3–5 BMPs that all agencies agree should be a regional standard; document on the regional website. Agencies voluntarily implement BMPs. • The BMPs are based on the general categories set up in the 2004 standards, but reflect current best practices. These include construction practices and materials, inspection standards, maintenance standards, and enforcement. • The BMPs do not require private property access outside of existing inspection practices.
Case studies	• BMPs from each local agency were reviewed and compared to both local and national BMPs. (The results are documented in the Task 420 Assessment of Existing Local Agency Sewer and Side Sewer Standards document).
Program benefits	• Consistent regional construction, repair, rehabilitation, and demolition BMPs that meet local and national best practices can—over time—tighten the overall system and potentially reduce I/I.
Program risks/constraints	• As a voluntary program, there is no guarantee that all local agencies will follow BMPs.
Legal authorities required	• No ordinances and agreements are anticipated to develop regional BMPs • No state-level action is anticipated for the program.
Procedures required	• List of standard BMPs. • Procedures to implement BMPs, including local agency and WTD responsibilities.
Program costs	• Depending on the list of standard BMPs, some additional local agency staff may be required to implement the program; we expect this cost to be relatively low.
Incentives	• No external incentives are assumed for local agency participation.
Penalties	• No penalties are assumed if a local agency fails to develop this program.
Required partners	• No specific partners (other than WTD) are anticipated. We assume that local agencies will administrate the BMPs.
Potential funding sources	• Local agency rates. Depending on BMPs selected, additional rates may be required for local agency administration.
Method for assessing effectiveness	• WTD's decennial flow monitoring program and conveyance system capacity planning will ultimately inform regional effectiveness. We do not expect standard BMP implementation without a strategy for long-term private side sewer replacement to reduce I/I significantly.

Option 2. Scalable BMP Program Framework	
Framework Category	**Program Assumptions and Features**
Description	• Develop full list of best-in-class BMPs, perform a gap analysis at individual agencies, and develop plans for BMP adoption and implementation at each agency. • This approach includes defining minimum regional standard BMPs (similar to Option 1). • The program is not mandatory, and local agencies should agree to implement the minimum standard BMPs. • WTD periodically assesses local agencies for program compliance.
Case studies	• BMPs from each local agency were reviewed and compared to both local and national BMPs. (The results are documented in the *Task 420 Assessment of Existing Local Agency Sewer and Side Sewer Standards* document).
Program benefits	• Consistent regional construction, repair, rehabilitation, and demolition BMPs that meet local and national best practices can—over time—tighten the overall system and potentially reduce I/I.
Program risks/constraints	• As a mandatory program, the risk of non-compliance is reduced. • An assessment program must be developed to ensure compliance.
Legal authorities required	• No ordinances and agreements are anticipated to develop regional BMPs. • State-level action is not anticipated for program development.
Procedures required	• Gap analysis approach. • List of standard BMPs. • Procedures to implement BMPs, including local agency and WTD responsibilities.
Program costs	• Depending on the list of standard BMPs, some additional local agency staff may be required to implement the program; we expect this cost to be relatively low. • WTD may require resources to assess program compliance.
Incentives	• No external incentives are assumed for local agency participation.
Penalties	• As a mandatory program, financial penalties will be considered if a local agency fails to develop this program.
Required partners	• Local agencies are assumed to be administrating the BMPs. No specific partners other than WTD are anticipated.
Potential funding sources	• Depending on the list of standard BMPs, some additional local agency staff may be required to implement the program.
Method for assessing effectiveness	• Ongoing WTD long-term flow monitoring program and conveyance system capacity planning would ultimately inform effectiveness. Having mandatory standard BMP being implementing at the various local agencies without a strategy of long term private side sewer replacement is not expected to reduce I/I significantly.

Option 3. Voluntary Regional Inspection Training Program Framework	
Framework Category	**Program Assumptions and Features**
Description	• Develop inspector training modules comprising slides and a materials handout posted on WTD's website as a regional resource; develop videos and hands-on training materials. Conduct a live training session within the region (attendance voluntary). • WTD administers the inspection training.
Case studies	• Current inspection programs from each local agency were reviewed and compared to both local and national inspection programs. (The results are documented in the *Task 510 Evaluation of Current Inspection Programs at Cities and Districts* document.)
Program benefits	• Assist in ensuring regional construction, repair, rehabilitation, and demolition inspections that meet minimum BMPs.
Program risks/constraints	• As a voluntary program, there is no guarantee that all local agencies will be in compliance with the inspection practices.
Legal authorities required	• No ordinances and agreements are anticipated to develop a regional inspection training program. • State-level action is not anticipated for program development.
Procedures required	• Minimum requirements for inspectors. • Methods and content for inspector training. • Local agency responsibilities. • WTD responsibilities.
Program costs	• Additional WTD resources may be required to administer the program.
Incentives	• No external incentives are assumed for local agency participation.
Penalties	• No penalties are assumed if a local agency fails to develop this program.
Required partners	• No specific partners (other than local agencies) working with WTD are anticipated.
Potential funding sources	• Additional rates may be required for WTD program administration.
Method for assessing effectiveness	• Ongoing WTD long-term flow monitoring program and conveyance system capacity planning will ultimately inform effectiveness. We anticipate a gradual reduction of I/I sources over many years where inspections occur; however, this program requires that inspectors train to certain standards only—it does not drive inspections, just ensures quality.

Option 4. Regional Inspection Training Program with Certification Framework	
Framework Category	**Program Assumptions and Features**
Description	• In addition to Option 3, provide a certification for attendees; conduct training annually at various locations, consider coordinating with an outside organization to implement the program. • WTD administers the inspection training.
Case studies	• Current inspection programs from each local agency were reviewed and compared to both local and national inspection programs. (The results are documented in the *Task 510 Evaluation of Current Inspection Programs at Cities and Districts* document.)
Program benefits	• Assist in ensuring regional construction, repair, rehabilitation, and demolition inspections that meet minimum BMPs.
Program risks/constraints	• As a mandatory program, the risk of non-compliance is reduced. • A regional tracking program is required to ensure inspector attendance.
Legal authorities required	• No ordinances and agreements are anticipated to develop a regional inspection training program. • State-level action is not anticipated for program development.
Procedures required	• Minimum requirements for inspectors. • Methods and content for inspector training. • Certification requirements. • Local agency responsibilities. • WTD responsibilities.
Program costs	• Additional WTD resources may be required to administer the program.
Incentives	• No external incentives are assumed for local agency participation.
Penalties	• As a mandatory program, financial penalties will be considered if a local agency fails to participate in inspector training.
Required partners	• No specific partners (other than local agencies) working with WTD are anticipated.
Potential funding sources	• Additional rates may be required for WTD program administration.
Method for assessing effectiveness	• Ongoing WTD long-term flow monitoring program and conveyance system capacity planning will ultimately inform effectiveness. We anticipate a gradual reduction of I/I sources over many years where inspections occur; however, this program requires that inspectors train to certain standards only—it does not drive inspections, just ensures quality.

Option 5. Regional I/I Support by WTD Framework	
Framework Category	**Program Assumptions and Features**
Description	• WTD acts as a regional resource providing rainfall simulation toolkits, smoke testing kits, flow monitors, and rain gauges. WTD administers preferred vendor contracts to help agencies perform services (e.g., manhole and CCTV inspection, etc.).
Case studies	• Case studies from Milwaukee Metropolitan Sewer District, East Bay Municipal Utility District, and Metropolitan Council Environmental Services include regional support programs. • The programs include sharing information, flow monitoring, modeling, I/I testing standards, regional contracts for inspections, public education, and toolkits.
Program benefits	• Resource sharing could allow agencies to expand services and therefore limiting impact on budgets.
Program risks/constraints	• Prioritizing local agency needs will be difficult with the regional diversity. • There may be equity and social justice concerns if the program is not seen as fairly distributed in the region.
Legal authorities required	• Legal considerations are required to administer preferred vendor contracts amongst the local agencies. • State-level action is not anticipated for program development.
Procedures required	• Standards and procedures for accessing regional resources. • Standards and procedures for utilizing preferred vendor contracts. • Local agency responsibilities. • WTD responsibilities.
Program costs	• WTD must acquire equipment (e.g., flow monitors and rain gauges). • Additional WTD staff may be expected to administer the program.
Incentives	• Local agencies can offset the costs of I/I program implementation.
Penalties	• No penalties are assumed if a local agency does not want to participate in this program
Required partners	• Local vendors.
Potential funding sources	• Additional rates may be required to buy equipment and administer the program.
Method for assessing effectiveness	• Ongoing WTD long-term flow monitoring program and conveyance system capacity planning will ultimately inform effectiveness. This program provides a variety of resources, some of which identify only sources of I/I, and not necessarily those that reduce it. It will be difficult to assess the impact of implementing this program; however, we do not anticipate it to reduce I/I significantly in the region.

Option 6. Local-Agency-Mandated Inspection Program Framework	
Framework Category	**Program Assumptions and Features**
Description	• The program is administered by the local agencies, which requires that all properties be inspected within a certain time frame (e.g., 10 years). • The actual testing (exfiltration) and inspection (internal CCTV) will be completed by a contractor hired by the property owner in the presence of the inspector. Certifications will be provided to inspected properties, and will remain valid for a specified time frame (e.g., 20 years).
Case studies	• Case studies from Milwaukee Metropolitan Sewer District, Costa Mesa Sanitary District, and the City of McMinnville, include a general inspection program. • The Milwaukee program was developed with a primary goal to reduce basement backups. (Overall flow reduction has not been monitored to date.)
Program benefits	• Regional construction, repair, rehabilitation, and demolition inspections that meet minimum BMPs. • CCTV inspections and exfiltration testing can identify structural defects and I/I sources.
Program risks/constraints	• Once illicit connections have been identified, the local agency must keep track of the location and status of the connection. • Disconnecting/redirecting illicit sources may be mandated at some point by a regulatory agency, if not addressed at the time they are identified.
Legal authorities required	• Access to private property for proactive inspections requires new ordinances or agreements. • Property owners' rights and responsibilities to repair defects require legal review, potential changes to ordinances, and consideration of penalties for property owners. • State-level action is not anticipated for program development.
Procedures required	• Regional inspection standards, including enforcement and penalty procedures. • Standard for repair triggers (type of defect, repair required, responsible party). • Community outreach for inspection program. • Site access procedures. • Local agency responsibilities. • Sewer contractor responsibilities. • Property owner responsibilities.
Program costs	• No additional equipment is required, because contractors will perform testing. • Some agencies require additional staffing for inspectors and program administrators. • No additional WTD staff are expected to be needed.
Incentives	• No external incentives are assumed for local agency participation.
Penalties	• No penalties are assumed if a local agency fails to develop this program. • Property owners will potentially be fined for not complying with program requirements.
Required partners	• Local agencies are assumed to administer inspection program. • No specific partners (other than WTD) are anticipated.
Potential funding sources	• Additional rates may be required for local agency administration. • Property owners will pay for contractors and repairs.
Method for assessing effectiveness	• Ongoing WTD long-term flow monitoring program and conveyance system capacity planning will ultimately inform effectiveness. Based on the program strategy of long-term private side sewer replacement, it will take 20+ years to confirm results.

Option 7. Local-Agency-Driven Inspection Program (Property Transfer) Framework	
Framework Category	**Program Assumptions and Features**
Description	• Side sewer inspection includes an exfiltration test and internal inspection completed by the property owner's contractor in the presence of the inspector. • The program is overseen by the local agencies. Certifications will be provided to inspected properties, and will remain valid for a specified time frame (e.g., 20 years). • Local agencies administer the program and conduct inspections.
Case studies	• Communities currently performing point-of-sale programs are primarily in California and Minnesota, and are prescribed via ordinance. • The largest case study for point of sale is with East Bay Municipal Utility District. • Long-term results for these programs are not yet available.
Program benefits	• Side sewers are systematically inspected and repaired as properties are transferred. • Assuming an annual 5% transfer rate, most side sewers within the service area can be inspected within a 20–25-year time frame. Eliminating or reducing I/I from the largest source: private side sewers.
Program risks/constraints	• Depending on the general condition of side sewers in certain areas, the property transfer process can be slowed if side sewers are in poor shape. • The program must confirm plumber/sewer utility contractor capacity to handle the workload. • Requires a willingness and level of acceptance from the realty industry. • Economic/social justice issues may arise if the condition of side sewers in certain areas creates a hardship on buyers/sellers and precludes property sales.
Legal authorities required	• Sewer ordinances must be revised, and development standards and building codes may need to be changed. • Real estate practices and regulations must be revised. • State-level action is not anticipated for program development.
Procedures required	• Regional inspection standards, including enforcement and penalty procedures. • Standard for repair triggers (type of defect, repair required, responsible party). • Community outreach for inspection program. • Real estate procedures to include side sewer inspections. • Sewer contractor responsibilities. • Real estate industry responsibilities. • Local agency responsibilities. • Property owner responsibilities.
Program costs	• No additional equipment is required because contractors will perform testing. • Software and other tracking tools are required to administer the program. • Agencies will require additional staffing for inspections and program administration. • No additional WTD staff are expected to be needed.
Incentives	• The incentive for the local agencies is potential long-term I/I reduction to delay or reduce the size of capacity improvements. • Property owners will be motivated to request inspections (via the ordinance requiring one to transfer property).
Penalties	• No direct penalties are assumed for the local agencies to develop this program. • The inability to transfer property will be a potential property owner penalty if there is a sewer defect without some level of repair.
Required partners	• Local agencies are assumed to be administrating the inspection program. • Program partners include WTD, the real estate industry, sewer contractors, and property owners.
Potential funding sources	• Additional rates may be required for local agency administration. • Most funding will be private through real estate transactions with property buyers/sellers.
Method for assessing effectiveness	• Ongoing WTD long-term flow monitoring program and conveyance system capacity planning will ultimately inform effectiveness. Based on the program strategy of long-term private side sewer replacement, it will take 20+ years to confirm results.

| Option 8. WTD-Driven Inspection Program (Property Transfer) Framework ||
Framework Category	Program Assumptions and Features
Description	• Side sewer inspection includes an exfiltration test and internal inspection completed by the property owner's contractor in the presence of the inspector. • The program is overseen by WTD. Certifications will be provided to inspected properties, and will remain valid for a specified time frame (e.g., 20 years). • WTD administers the program and conducts inspections.
Case studies	• Communities currently performing point-of-sale programs are primarily in California and Minnesota, and are prescribed via ordinance. • The largest case study for point of sale is with East Bay Municipal Utility District. • Long-term results for these programs are not yet available.
Program benefits	• Side sewers are systematically inspected and repaired as properties are transferred. • Assuming an annual 5% transfer rate, most side sewers within the service area can be inspected within a 20–25-year time frame. Eliminating or reducing I/I from the largest source: private side sewers.
Program risks/constraints	• Depending on the general condition of side sewers in certain areas, the property transfer process can be slowed if side sewers are in poor shape. • The program must confirm plumber/sewer utility contractor capacity to handle the workload. • Requires a willingness and level of acceptance from the realty industry. • Economic/social justice issues may arise if the condition of side sewers in certain areas creates a hardship on buyers/sellers and precludes property sales.
Legal authorities required	• Sewer ordinances must be revised, and development standards and building codes may need to be changed. • Real estate practices and regulations must be revised. • State-level action is not anticipated for program development.
Procedures required	• Regional inspection standards, including enforcement and penalty procedures. • Standard for repair triggers (type of defect, repair required, responsible party). • Community outreach for inspection program. • Real estate procedures to include side sewer inspections. • Sewer contractor responsibilities. • Real estate industry responsibilities. • Local agency responsibilities. • Property owner responsibilities.
Program costs	• No additional equipment is required because contractors will perform testing. • Software and other tracking tools are required to administer the program. • WTD will require additional staffing for inspections and program administration. • No additional local agency staff are expected to be needed.
Incentives	• The incentive is potential long-term I/I reduction to delay or reduce the size of capacity improvements. • Property owners will be motivated to request inspections (via the ordinance requiring one to transfer property).
Penalties	• No direct penalties are assumed for the local agencies to develop this program. • The inability to transfer property will be a potential property owner penalty if there is a sewer defect without some level of repair.
Required partners	• We assume that WTD will administer the inspection program. • Program partners will include local agencies, the real estate industry, sewer contractors, and property owners.
Potential funding sources	• Additional rates may be required for WTD administration. • Most funding will be private through real estate transactions with property buyers/sellers.
Method for assessing effectiveness	• Ongoing WTD long-term flow monitoring program and conveyance system capacity planning will ultimately inform effectiveness. Based on the program strategy of long-term private side sewer replacement, it will take 20+ years to confirm results.

Option 9. Grant/Loan Program With Inspection Framework	
Framework Category	**Program Assumptions and Features**
Description	• This grant and loan program will help implement other side sewer programs, such as the general inspection and point-of-sale programs. • A grant or loan program will help manage equity and social justice concerns. We assume that a grant or loan program will be administered regionally by WTD in conjunction with a private side sewer and point-of-sale inspection program.
Case studies	• Case studies from Milwaukee Metropolitan Sewer District, Costa Mesa Sanitary District, and the City of McMinnville include a grant and loan program. • Many of the local agencies within the King County Service District already have grant and/or loan programs.
Program benefits	• The financial impact to eligible customers is reduced, making it easier for property owners to participate in inspection programs.
Program risks/constraints	• We assume that this grant/loan program will be in conjunction with a private side sewer and point-of-sale inspection program to ease the burden of unanticipated repairs or replacements. • No major risks are anticipated.
Legal authorities required	• Items (e.g., eligibility) must be determined. • No new ordinances are anticipated. • State-level action is not anticipated to be needed for program development.
Procedures required	• Application requirements. • Eligibility definitions.
Program costs	• No additional staff are expected to be required at local agencies. • WTD will require additional staff to administer the program.
Incentives	• Financial support will be available to property owners to offset repair and replacement costs.
Penalties	• No penalties are assumed for either the local agencies or property owners to develop or implement this program.
Required partners	• Lending agencies.
Potential funding sources	• Rate funding.
Method for assessing effectiveness	• Ongoing WTD long-term flow monitoring program and conveyance system capacity planning will ultimately inform effectiveness. A grant/loan program is more likely to assist in the overall success of a general inspection or point-of-sale program. The program's impact on I/I reduction alone is not anticipated to be significant.

Option 10. Grant/Loan Program Without Inspection Framework	
Framework Category	**Program Assumptions and Features**
Description	• This grant and loan program is administered regionally by WTD, and is available for property owners to use to voluntarily inspect, replace, and/or repair their private side sewers.
Case studies	• Many of the local agencies within the King County Service District already have grant and/or loan programs.
Program benefits	• The financial impact to eligible customers is reduced, making it easier for property owners to correct private side sewer issues.
Program risks/constraints	• Unless the financial assistance per customer is large, a grant/loan program alone will not be enough to significantly increase the number of side sewer repairs/replacements.
Legal authorities required	• Items (e.g., eligibility) must be determined. • No new ordinances are anticipated. • State-level action is not anticipated to be needed for program development.
Procedures required	• Application requirements. • Eligibility definitions.
Program costs	• No additional staff are expected to be required at local agencies. • WTD will require additional staff to administer the program.
Incentives	• Financial support will be available to property owners to offset repair and replacement costs.
Penalties	• No penalties are assumed for either the local agencies or property owners to develop or implement this program.
Required partners	• Lending agencies.
Potential funding sources	• Rate funding.
Method for assessing effectiveness	• Ongoing WTD long-term flow monitoring program and conveyance system capacity planning will ultimately inform effectiveness. This framework is likely to have little to no impact on I/I reduction if developed independently from other private side sewer inspection programs.

Attachment 3: Summary of Evaluation Criteria

Summary of Evaluation Criteria		
Key Considerations/Criteria	**Measure**	**Rating Scale**
Criterion 1: Regional Effectiveness		
Potential effectiveness — The program's long-term ability to reduce I/I regionally	• Case studies can indicate potential effectiveness; however, each geography, age, and construction of individual side sewers is different. Thus, an apples-to-apples comparison cannot be performed. Several case studies also have significant measured data to date. • To measure program effectiveness in King County, pre- and post-program flow monitoring should be performed over several decades. • Effectiveness is measured on a 20+ year time frame, because prior experience shows that a fair amount of penetration is required in any area to see improvements.	Potential for little to no I/I reduction Potential for some I/I reduction that may be low and over time Potential for significant I/I reduction
Criterion 2: Legal and Political Implications		
Legal implications — Legal implication complexity, including new ordinances, private property access, and differences between cities and districts	• Legal implications are different for each agency. For the purposes of this comparison, general assumptions for the type of program were developed and overall legal implications were based on those assumptions. • This consideration was measured in terms of actions relating to ordinances and agreements.	High: Requires enacting new or amended ordinances at all cities and districts Medium: Requires new or amended agreements between King County and cities/districts Low: No ordinances or agreements are required
Political implications — Political implication complexity, such as the public accepting the program	• Political implications are different for each agency. For the purposes of this comparison, general assumptions for the type of program were developed and overall political implications were based on those assumptions. • This consideration was measured in terms of public resistance and acceptance.	High: Cities and districts can expect political resistance from implementing the program Medium: There may be some citizen groups that disagree with program implementation, but general political acceptance is expected Low: No political concerns are expected
Criterion 3: Property Owner Impacts		
General impact — Additional actions and responsibilities placed on property owners	• This consideration was measured based on the action required, if any, by the property owner.	High: Property owner is responsible for actions for the program to be successful Medium: Component agency is responsible for actions and property owner must coordinate activities Low: No action required by the property owner
Affordability — Financial impacts to property owners	• This consideration was measured based on whether the program has a direct financial impact on property owners. • If there is an assumed cost to property owners, the impact was considered. • The cost of side sewer improvements varies based on age and property construction. We assumed that inspections are affordable while repair and replacement are unaffordable.	High: Property owner required to pay for inspection and repairs Medium: Property owner required to pay for inspection only Low: No financial burden expected for the property owner

Summary of Evaluation Criteria		
Key Considerations/Criteria	Measure	Rating Scale
Criterion 4: Local Agency Impacts		
Program development	Ease and/or complication developing the program	• The impact of developing the program is different for each agency due to size and organization (e.g.., city vs. district and small vs. large entity). For the purposes of this comparison, general assumptions were made regarding how the program will impact the agencies on a regional basis. • This consideration was measured based on staffing, equipment, and processes.	High: Program development requires additional staffing and/or new equipment, and new processes must be established Medium: Most staffing and equipment are available, and only new processes must be developed Low: No additional staffing, equipment, or processes are required
Program implementation	Ease and/or complication implementing the program	• The impact of program implementation is different for each agency due to size and organization (e.g., city vs. district and small vs. large entity). For the purposes of this comparison, general assumptions were made for the how the program will impact the agencies on a regional basis. • This consideration was measured based on staffing, equipment, and processes.	High: Program implementation requires that new staff and interactions between component agencies and WTD are required Medium: New staffing may be required, and interactions between component agencies and WTD will increase (minimally) Low: Program can be implemented with no changes in staffing and no additional interactions between component agencies and WTD
Criterion 5: WTD Impacts		
Program development	Ease and/or complication developing the program for WTD	• The impact of program development for WTD. • This consideration was measured based on staffing and processes.	High: Program development requires additional staffing and new processes must be established Medium: Most staffing is available and only new processes must be developed Low: No additional staffing or processes are required
Program implementation	Ease and/or complication implementing the program for WTD	• The impact of program implementation for WTD. • This consideration was measured based on staffing, processes, and interactions with component agencies.	High: Program implementation requires new staffing and interactions with component agencies Medium: Most staffing is available and interactions between component agencies and WTD are increased (minimally) Low: Program can be implemented with no changes in staffing and no additional interactions with component agencies
Criterion 6: Equity and Social Justice		
Equity and social justice	Program ability to be managed and adapted for equitable implementation	• Equitable problem I/I area distribution in the region is not guaranteed. For the purposes of this comparison, King County's 13 equity determinants were reviewed, and health and human services and housing were considered the primary equity and social justice considerations. • This consideration was measured in terms of ability to alleviate additional burden of the program on individuals.	High: Program adds additional burden to potential or current property owners and/or renters Medium: Program can be adapted to alleviate burden to potential or current property owners and/or renters Low: Adds no additional burden to potential or current property owners and/or renters

Attachment 4: Initial Application of the Evaluation Criteria to the Frameworks

Option 1. Focused Standardization of Regional BMPs Rating		
Key Considerations/Criteria		Rationale for Ratings	Rating (High, Medium, Low)
Criterion 1: Regional Effectiveness		
Potential effectiveness	The program's long-term ability to reduce I/I regionally	• The standard BMPs focus on new construction. • Private-side sewer I/I issues are with older/existing buildings (primarily).	• Little to no I/I reduction expected
Criterion 2: Legal and Political Implications		
Legal implications	Legal implication complexity, including new ordinances, private property access, and differences between cities and districts	• No ordinances and agreements are anticipated to develop regional BMPs.	Low
Political implications	Political implication complexity, such as the public accepting the program	• No political implications are anticipated.	Low
Criterion 3: Property Owner Impacts		
General impact	Additional actions and responsibilities placed on property owners	• No property owner impacts are anticipated.	Low
Affordability	Financial impacts to property owners	• No financial impacts to property owners are anticipated.	Low
Criterion 4: Local Agency Impacts		
Program development	Ease and/or complication developing the program	• Agencies may need to develop new procedures to administer the program.	Medium
Program implementation	Ease and/or complication implementing the program	• Depending on the standard BMPs selected, local agencies may require additional resources to implement the program.	Medium
Criterion 5: WTD Impacts		
Program development	Ease and/or complication developing the program for WTD	• WTD assists in developing the regional BMPs. • WTD provides access to regional BMPs on its website.	Low
Program implementation	Ease and/or complication implementing the program for WTD	• No additional staff are expected at WTD to implement a regional BMP program.	Low
Criterion 6: Equity and Social Justice		
Equity and social justice	Program ability to be managed and adapted for equitable implementation	• Equity and social justice implications are expected to be low.	Low

Option 2. Scalable BMP Program Rating		
Key Considerations/Criteria	**Rationale for Ratings**	**Rating (High, Medium, Low)**
Criterion 1: Regional Effectiveness		
Potential effectiveness	The program's long-term effectiveness in reducing I/I regionally	• The standard BMPs focus on new construction. • Private-side sewer I/I issues are with older/existing buildings (primarily).	• Little to no I/I reduction expected
Criterion 2: Legal and Political Implications		
Legal implications	Complexity of the legal implications, such as new ordinances, private property access, and differences between cities and districts	• No ordinances and agreements are anticipated to develop regional BMPs.	Low
Political implications	Complexity of the political implications, such as program acceptance from the public	• No political implications are anticipated.	Low
Criterion 3: Property Owner Impacts		
General impact	Additional actions and responsibilities placed on the property owners	• No property owner impacts are anticipated.	Low
Affordability	Financial impacts to property owners	• No financial impacts to property owners are anticipated.	Low
Criterion 4: Local Agency Impacts		
Program development	Ease and/or complication in developing the program	• Agencies may need to develop new procedures to implement the program.	Medium
Program implementation	Ease and/or complication in implementing the program	• Depending on the standard BMPs selected, local agencies may require additional resources to implement the program.	Medium
Criterion 5: WTD Impacts		
Program development	Ease and/or complication in developing the program	• WTD assists in developing minimum BMPs. • WTD needs to develop new procedures to administer the program.	Medium
Program implementation	Ease and/or complication in implementing the program	• WTD may require resources to assess program compliance.	Medium
Criterion 6: Equity and Social Justice		
Equity and social justice	Ability for the program to be managed and adapted for equitable implementation	• Equity and social justice implications are expected to be low.	Low

Option 3. Voluntary Regional Inspection Training Rating			
Key Considerations/Criteria		**Rationale for Ratings**	**Rating (High, Medium, Low)**
Criterion 1: Regional Effectiveness			
Potential effectiveness	The program's long-term ability to reduce I/I regionally	• We anticipate a gradual reduction of I/I sources over many years where inspections occur; however, this program requires that inspectors train to certain standards only—it does not drive inspections, just ensures quality.	• Little to no I/I reduction expected
Criterion 2: Legal and Political Implications			
Legal implications	Complexity of the legal implications, such as new ordinances, private property access, and differences between cities and districts	• No ordinances and agreements are anticipated to develop a regional inspection training program.	Low
Political implications	Complexity of the political implications, such as program acceptance from the public	• No political implications are anticipated.	Low
Criterion 3: Property Owner Impacts			
General impact	Additional actions and responsibilities placed on the property owners	• No property owner impacts are anticipated.	Low
Affordability	Financial impacts to property owners	• No financial impacts to property owners are anticipated.	Low
Criterion 4: Local Agency Impacts			
Program development	Ease and/or complication in developing the program	• No significant resources are required during development because WTD is the lead.	Low
Program implementation	Ease and/or complication in implementing the program	• Local agencies must staff inspectors and send them to regional training.	Medium
Criterion 5: WTD Impacts			
Program development	Ease and/or complication in developing the program	• WTD develops program content.	Medium
Program implementation	Ease and/or complication in implementing the program	• Minimal resources are required to provide and implement the program.	Low
Criterion 6: Equity and Social Justice			
Equity and social justice	Ability for the program to be managed and adapted for equitable implementation	• No equity or social justice issues are anticipated while developing an inspection training program.	Low

Option 4. Regional Inspection Training with Certification Rating		
Key Considerations/Criteria	**Rationale for Ratings**	**Rating (High, Medium, Low)**
Criterion 1: Regional Effectiveness		
Potential effectiveness	The program's long-term effectiveness in reducing I/I regionally	• We anticipate a gradual reduction of I/I sources over many years where inspections occur; however, this program requires that inspectors train to certain standards only—it does not drive inspections, just ensures quality.	• Little to no I/I reduction expected
Criterion 2: Legal and Political Implications		
Legal implications	Complexity of the legal implications, such as new ordinances, private property access, and differences between cities and districts	• No ordinances and agreements are anticipated to develop a regional inspection training program.	Low
Political implications	Complexity of the political implications, such as program acceptance from the public	• No political implications are anticipated.	Low
Criterion 3: Property Owner Impacts		
General impact	Additional actions and responsibilities placed on the property owners	• No property owner impacts are anticipated.	Low
Affordability	Financial impacts to property owners	• No financial impacts to property owners are anticipated.	Low
Criterion 4: Local Agency Impacts		
Program development	Ease and/or complication in developing the program	• No significant resources are required during development because WTD is the lead.	Low
Program implementation	Ease and/or complication in implementing the program	• Local agencies must staff inspectors and send them to regional training.	Medium
Criterion 5: WTD Impacts		
Program development	Ease and/or complication in developing the program	• WTD develops program content.	Medium
Program implementation	Ease and/or complication in implementing the program	• Additional resources may be required to implement the program and track certifications.	Medium
Criterion 6: Equity and Social Justice		
Equity and social justice	Ability for the program to be managed and adapted for equitable implementation	• No equity or social justice issues are anticipated to develop an inspection training program.	Low

Option 5. Regional I/I Support by WTD Rating		
Key Considerations/Criteria	**Rationale for Ratings**	**Rating (High, Medium, Low)**
Criterion 1: Regional Effectiveness		
Potential effectiveness	The program's long-term effectiveness in reducing I/I regionally	• This program provides a variety of resources, some of which would identify only sources of I/I, and not necessarily those that reduce it. It would be difficult to assess the impact of implementing this program; however, we do not anticipate it to reduce I/I in the region significantly.	• Little to no I/I reduction expected
Criterion 2: Legal and Political Implications		
Legal implications	Complexity of the legal implications, such as new ordinances, private property access, and differences between Cities and Districts	• Legal considerations are required to administer preferred vendor contracts amongst the local agencies.	Medium
Political implications	Complexity of the political implications, such as program acceptance from the public	• There is potential that some interest groups will be against a resource-sharing program.	Medium
Criterion 3: Property Owner Impacts		
General impact	Additional actions and responsibilities placed on the property owners	• No property owner impacts are anticipated.	Low
Affordability	Financial impacts to property owners	• No financial impacts to property owners are anticipated.	Low
Criterion 4: Local Agency Impacts		
Program development	Ease and/or complication in developing the program	• Local agencies will not be heavily involved with program development.	Low
Program implementation	Ease and/or complication in implementing the program	• Local agencies can participate in the program. • No significant resources are anticipated for participation.	Low
Criterion 5: WTD Impacts		
Program development	Ease and/or complication in developing the program	• WTD develops the program and purchases required equipment.	Medium
Program implementation	Ease and/or complication in implementing the program	• Additional resources may be required to implement the program and track equipment use.	Medium
Criterion 6: Equity and Social Justice		
Equity and social justice	Ability for the program to be managed and adapted for equitable implementation	• There may be some equity and social justice concerns if the program is not seen as fairly distributed throughout the region.	Medium

Option 6. Regional Private Side Sewer General Inspection Program Rating		
Key Considerations/Criteria	**Rationale for Ratings**	**Rating (High, Medium, Low)**
Criterion 1: Regional Effectiveness		
Potential effectiveness — The program's long-term effectiveness in reducing I/I regionally	• The program will inspect and repair all private-side sewers within a 10-year period. If repairs are performed, we expect the program to reduce I/I over time. • Case studies from Milwaukee Metropolitan Sewer District, Costa Mesa Sanitary District, and the City of McMinnville include a general inspection program. The Milwaukee program has a primary goal to reduce basement backups. (Overall flow reduction has not been monitored to date.)	• Potential to significantly reduce I/I in the region over time • A long-term (20+ year) flow monitoring program must be implemented to confirm results
Criterion 2: Legal and Political Implications		
Legal implications — Complexity of the legal implications, such as new ordinances, private property access, and differences between cities and districts	• Access to private property for proactive inspections will likely require new ordinances or agreements.	Medium
Political implications — Complexity of the political implications, such as program acceptance from the public	• There is potential for the public to consider a mandated inspection program too intrusive.	High
Criterion 3: Property Owner Impacts		
General impact — Additional actions and responsibilities placed on the property owners	• Proactive inspections can lead to unanticipated repairs for property owners.	High
Affordability — Financial impacts to property owners	• Proactive inspections can lead to unanticipated repairs for property owners. • Affordability depends on the socio-economic demographic.	High
Criterion 4: Local Agency Impacts		
Program development — Ease and/or complication in developing the program	• Most agencies have inspection programs in place. • No additional equipment is required because contractors will perform testing. • New procedures must be implemented.	Medium
Program implementation — Ease and/or complication in implementing the program	• Additional staff may be required at some agencies. • Once staffing and equipment are secured, overall implementation should not be difficult.	Medium
Criterion 5: WTD Impacts		
Program development — Ease and/or complication in developing the program	• The program is run by the agencies. Some agency coordination can be expected, but overall responsibilities for WTD will be minimal.	Low
Program implementation — Ease and/or complication in implementing the program	• No additional WTD staff are expected to implement the general inspection program.	Low
Criterion 6: Equity and Social Justice		
Equity and social justice — Ability for the program to be managed and adapted for equitable implementation	• Some adaptation would be required to ensure that equity and social justice are equitably applied.	High

Option 7. Point of Sale Side Sewer Inspection Program Agency Driven Rating			
Key Considerations/Criteria		Rationale for Ratings	Rating (High, Medium, Low)
Criterion 1: Regional Effectiveness			
Potential effectiveness	The program's long-term effectiveness in reducing I/I regionally	• Side sewers will be inspected before property transfer and repairs are performed. Assuming an annual 5% transfer rate, most side sewers can be inspected and repaired within a 20–25-year period. • The largest case study for point of sale is with East Bay Municipal Utility District. South Fayette Township also has a point-of-sale lateral inspection program. Long-term results for these programs are not yet available.	• Potential to significantly reduce I/I in the region over time. • A long-term flow monitoring program must be implemented to confirm results.
Criterion 2: Legal and Political Implications			
Legal implications	Complexity of the legal implications, such as new ordinances, private property access, and differences between cities and districts	• Sewer ordinances must be revised, and development standards and building codes may need to be changed. • Real estate practices and regulation would need to be revised.	High
Political implications	Complexity of the political implications, such as program acceptance from the public	• There is potential for the public to consider a point-of-sale program too intrusive.	High
Criterion 3: Property Owner Impacts			
General impact	Additional actions and responsibilities placed on the property owners	• Property owners are required to inspect side sewers when transferring property. Real estate and sewer contractors must be involved in side sewer inspection practices.	High
Affordability	Financial impacts to property owners	• Inspections can lead to unanticipated repairs for property owners. Affordability depends on the socio-economic demographic.	High
Criterion 4: Local Agency Impacts			
Program development	Ease and/or complication in developing the program	• Program development requires input from the real estate industry, sewer inspectors, contractors, and all local agencies. Significant public outreach is required to address property owner, real estate agency, closing company, and service provider concerns. • Agencies must implement new procedures to administer the program.	High
Program implementation	Ease and/or complication in implementing the program	• Implementation requires regional coordination among WTD, local agencies, property owners, real estate agencies, closing companies, and service providers. • We expect additional FTEs to be required at most local agencies.	High
Criterion 5: WTD Impacts			
Program development	Ease and/or complication in developing the program	• The program, if overseen by the agencies, requirse some (but not significant) administrative oversight from WTD. • WTD needs to be active in community outreach.	Low
Program implementation	Ease and/or complication in implementing the program	• No additional staff are expected at WTD to implement the point-of-sale inspection program.	Low
Criterion 6: Equity and Social Justice			
Equity and social justice	Ability for the program to be managed and adapted for equitable implementation	• Socio-economic impacts may be high. Adapting to address equity and social justice concerns will be difficult because all property transfers will be required to perform the inspection.	High

Option 8. Regional Private Side Sewer Point of Sale Inspection Program WTD Driven Rating		
Key Considerations/Criteria	Rationale for Ratings	Rating (High, Medium, Low)
Criterion 1: Regional Effectiveness		
Potential effectiveness	The program's long-term in reducing I/I regionally	• Side sewers will be inspected before property transfer and repairs are performed. Assuming an annual 5% transfer rate, most side sewers can be inspected and repaired within a 20–25-year period. • The largest case study for point of sale is with East Bay Municipal Utility District. South Fayette Township also has a point-of-sale lateral inspection program. Long-term results for these programs are not yet available.	• Potential to significantly reduce I/I in the region over time. • A long-term (20+ year) flow monitoring program must be implemented to confirm results.
Criterion 2: Legal and Political Implications		
Legal implications	Complexity of the legal implications, such as new ordinances, private property access, and differences between cities and districts	• Sewer ordinances must be revised, and development standards and building codes may need to be changed. • Real estate practices and regulations must be revised.	High
Political implications	Complexity of the political implications, such as program acceptance from the public	• There is potential for the public to consider a point-of-sale program too intrusive.	High
Criterion 3: Property Owner Impacts		
General impact	Additional actions and responsibilities placed on the property owners	• Property owners must inspect side sewers when transferring property. Real estate and sewer contractors must be involved in side sewer inspection practices.	High
Affordability	Financial impacts to property owners	• Inspections can lead to unanticipated repairs for property owners. Affordability depends on the socio-economic demographic.	High
Criterion 4: Local Agency Impacts		
Program development	Ease and/or complication in developing the program	• Agencies must implement new procedures to participate in the program.	Medium
Program implementation	Ease and/or complication in implementing the program	• No additional staff are expected at local agencies to implement the point-of-sale inspection program if administered by WTD.	Low
Criterion 5: WTD Impacts		
Program development	Ease and/or complication in developing the program	• Program development requires input from the real estate industry, sewer inspectors, contractors, and all local agencies. Significant public outreach is required to address property owner, real estate agency, closing company, and service provider concerns. • WTD must implement new procedures to administer the program.	High
Program implementation	Ease and/or complication in implementing the program	• Additional staff are expected at WTD to implement and administer a regional point-of-sale inspection program.	High
Criterion 6: Equity and Social Justice		
Equity and social justice	Ability for the program to be managed and adapted for equitable implementation	• Socio-economic impacts may be high. Adapting to address equity and social justice concerns will be difficult because all property transfers will be required to perform the inspection.	High

Option 9. Regional Private Side Sewer Grant/Loan Program with Inspection Rating			
Key Considerations/Criteria		**Rationale for Ratings**	**Rating (High, Medium, Low)**
Criterion 1: Regional Effectiveness			
Potential effectiveness	The program's long-term effectiveness in reducing I/I regionally	• Grant and loan programs will help successfully implement other side sewer programs, such as the general inspection and point-of-sale programs. A grant or loan program will help manage equity and social justice concerns. We assume that a grant or loan program will be regionally administered by WTD. • Case studies from Milwaukee Metropolitan Sewer District, Costa Mesa Sanitary District, and the City of McMinnville include grant and loan programs. Many of the local agencies within the King County Service District already have such programs.	• A grant/loan program is more likely to assist in the overall success of a general inspection or point-of-sale program.
Criterion 2: Legal and Political Implications			
Legal implications	Complexity of the legal implications, such as new ordinances, private property access, and differences between cities and districts	• Items (e.g., eligibility) must be determined; however, we expect general legal implications to be low.	Low
Political implications	Complexity of the political implications, such as program acceptance from the public	• We anticipate that general political implications will be low.	Low
Criterion 3: Property Owner Impacts			
General impact	Additional actions and responsibilities placed on the property owners	• Property owners must apply for the program.	Low
Affordability	Financial impacts to property owners	• The program is intended to reduce community financial impacts. Rate increases may be required to fund the program if funded by grants.	Low
Criterion 4: Local Agency Impacts			
Program development	Ease and/or complication in developing the program	• Agency impacts are expected to be minimal if administered at the regional level.	Low
Program implementation	Ease and/or complication in implementing the program	• Financial impacts to agencies should be minimal if administered at the regional level.	Low
Criterion 5: WTD Impacts			
Program development	Ease and/or complication in developing the program	• Several local agencies already have some form of grant or loan program. These programs can be used as models for a regional program. • New processes and procedures must be developed, and potentially a new division formed to administer the program.	High
Program implementation	Ease and/or complication in implementing the program	• Additional administrative resources are required; however, general implementation should not be difficult. • Several FTEs may be required to administer a regional program.	Medium
Criterion 6: Equity and Social Justice			
Equity and social justice	Ability for the program to be managed and adapted for equitable implementation	• The program is intended to address equity and social justice concerns.	Low

Option 10. Regional Private Side Sewer Grant/Loan Program without Inspection Rating		
Key Considerations/Criteria	Rationale for Ratings	Rating (High, Medium, Low)
Criterion 1: Regional Effectiveness		
Potential effectiveness — The program's long-term effectiveness in reducing I/I regionally	• This program will be administered regionally by WTD, and will be available for property owners to voluntarily inspect, replace, and/or repair private side sewers.	• Little to no I/I reduction expected
Criterion 2: Legal and Political Implications		
Legal implications — Complexity of the legal implications, such as new ordinances, private property access, and differences between cities and districts	• Items (e.g., eligibility) must be determined; however, we expect general legal implications to be low.	Low
Political implications — Complexity of the political implications, such as program acceptance from the public	• We anticipate that general political implications will be low.	Low
Criterion 3: Property Owner Impacts		
General impact — Additional actions and responsibilities placed on the property owners	• Property owners are required to apply for the program.	Low
Affordability — Financial impacts to property owners	• The program is intended to reduce community financial impacts. Rate increases may be required to fund the program if funded by grants.	Low
Criterion 4: Local Agency Impacts		
Program development — Ease and/or complication in developing the program	• We expect agency impacts to be minimal if administered at the regional level.	Low
Program implementation — Ease and/or complication in implementing the program	• Financial impacts to agencies should be minimal if administered at the regional level.	Low
Criterion 5: WTD Impacts		
Program development — Ease and/or complication in developing the program	• Several local agencies already have some form of grant or loan program. These programs can be used as models for a regional program. • Some new processes and procedures must be developed. • The program is not expected to be very large if managed independent from a regional inspection program.	Medium
Program implementation — Ease and/or complication in implementing the program	• Additional administrative resources are required; however, general implementation should not be difficult.	Medium
Criterion 6: Equity and Social Justice		
Equity and social justice — Ability for the program to be managed and adapted for equitable implementation	• The program is intended to address equity and social justice concerns.	Low