



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

Task 420

**Assessment of Existing Local Agency Sewer and Side Sewer
Standards**

July 2017

Project 150258

**Brown and Caldwell
701 Pike Street, Suite 1200
Seattle, WA 98101
Phone: 206.624.0100 | Fax: 206.749.2200**

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Revision History

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Table of Contents

1.0	Background and Purpose.....	1
2.0	Consistency of MWPAAC Standards with 2004 KC Standards.....	3
3.0	Comparison to National Standards	4
4.0	Review of MWPAAC Rehabilitation/Replacement Programs	4
5.0	Side Sewer Programs and Inspections.....	6
6.0	Summary	6

Appendix A Agency Summary Sheets

List of Figures

Figure 1. Limits of side sewer ownership, from building.....	2
Figure 2. Side sewer ownership customer awareness in local agencies	3
Figure 3. Local agencies with regions within service area constructed to different standards.....	4
Figure 4. R&R program established.....	5

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1.0 Background and Purpose

This introductory section presents the background and purpose for this Task 420 technical memorandum (TM) and provides an overview of the side sewer delineation in the region.

Background

Inflow and infiltration (I/I) is rainwater, surface water, and groundwater that flows directly and indirectly into sanitary sewers. Although sewer design guidelines include a reasonable allowance for I/I, excessive rates of I/I in a sanitary sewer system can lead to basement backups, sanitary sewer overflows, and unnecessary treatment costs. Excessive I/I flows in King County's (KC) regional separate sanitary sewer system impact both capital and operational costs.

KC Water Treatment Division's (WTD) Conveyance System Improvement (CSI) Program assesses the hydraulic capacity of the regional wastewater system with measured 20-year peak flows. This information is used to plan and size future capacity-related improvement projects.

Findings from CSI Program analysis show that about 70 percent of the peak flow in the separate sanitary sewer system is rain-derived I/I. An estimated 27 percent of the annual wastewater system volume treated by KC's wastewater treatment plants can be attributed to I/I.

This I/I results in higher capital program costs by accelerating the need for and scale of capacity improvement projects. Operational costs are increased because of the need to transport and treat higher rates of flow. The additional capital costs associated with increasing the capacity of the collection system, pump station, and wastewater treatment plant to handle excessive I/I flows are currently spread across all customers through WTD's sewer rates.

WTD established an I/I Control Program in 1999 as part of the Regional Wastewater Services Plan. Currently, the I/I Control Program efforts are focused on portions of the sanitary sewer system experiencing flow capacity shortages. Specifically, the I/I Control Program has developed data to assess where pursuing I/I reduction might be more cost-effective than increasing pipe and/or pump station capacity. Thus far, the I/I Control Program has been effective in reducing I/I experienced in some areas of the regional wastewater system; however, no comprehensive program is currently in place to address I/I throughout the regional wastewater system.

The Phase 1: Evaluation of Inflow and Infiltration (I/I) Reduction Concepts project has been developed to assist KC WTD in the exploration of new elements for the Regional I/I Control Program. This project will build on the work that WTD has done previously and explore more comprehensive and system-wide I/I reduction. WTD selected Brown and Caldwell (Consultant) per the P00208P16 Professional Services Contract to assist with this project. The Consultant has been tasked with the following:

- Collect and share existing I/I Control Program information with the Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC)
- Review sewer and side sewer standards, assess existing local agency standards compared to best management practices (BMPs), and develop an approach to achieving common standards in the region
- Evaluate current city and utility district inspection programs for sewers and side sewers to identify BMPs and develop an outline for a regional inspection training program
- Identify the types of private side sewer programs in common use nationally, and evaluate private side sewer programs within the KC service areas for side sewer inspection and certification, insurance, maintenance, and grants or loans
- Develop a framework for implementing private side sewer programs within the KC service areas, specifically for side sewer inspection and certification, insurance, maintenance, and grants or loans

Purpose

The purpose of this TM is to document the review of the sanitary sewer standards of agencies that discharge to WTD sanitary sewers. As part of this review, the Consultant performed the following:

- Researched online sources for the sanitary sewer standards used by the MWPAAC agencies. These standards include design guidelines, standards, specifications, general notes, and standard drawings.
- Conducted in-person interviews with 32 of the 34 MWPAAC agencies to assess the extent of their sanitary sewer standards and practices. The City of Carnation and Vashon Island are geographically separate from the main WTD service area, so they were not included in this evaluation.
- Requested additional information from MWPAAC agencies on rehabilitation and replacement (R&R) programs and side sewer programs.
- Compared the MWPAAC agencies' available standards and practices to current industry recognized BMPs as discussed in the Task 410 TM "Verify 2004 King County Final Draft Regional I/I Control Standards, Procedures, and Policies."

Pertinent information for each MWPAAC agency is provided in summary sheets made available in Appendix A of this TM.

Side Sewer Ownership Delineation

An issue that plays an important role in the extent to which certain I/I BMPs are applicable to a sewer utility is the delineation of the limits of side sewer ownership and the side sewer maintenance and repair responsibilities.

As shown in Figure 1, 17 of the 32 MWPAAC agencies interviewed take responsibility for side sewers from the edge of the right-of-way (ROW) to the sewer main. Property owners in 14 agency service areas own and are responsible for side sewers from the building structure to the connection with the sewer main. One agency (Muckleshoot Utility District, which services Tribal lands), owns and is responsible for the sewer mains and the entire side sewer.

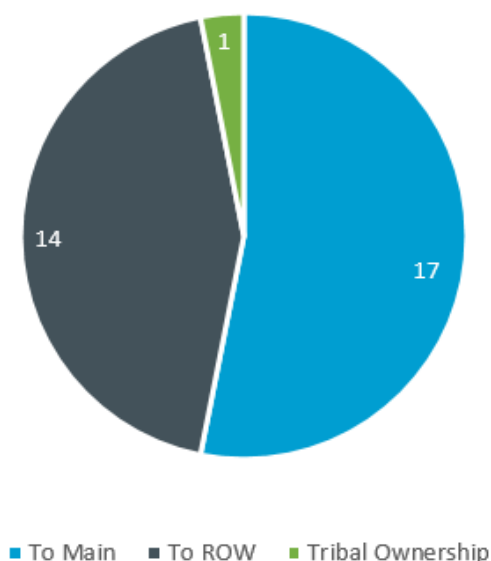


Figure 1. Limits of side sewer ownership, from building

When local agencies were asked if their customers were aware that they own and are responsible for maintaining their side sewers, only four agencies stated with certainty that their customers are aware (see Figure 2).

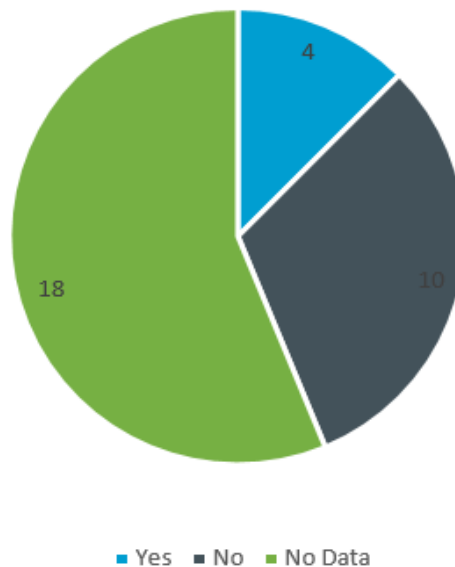


Figure 2. Side sewer ownership customer awareness in local agencies

As the delineations for side sewer ownership and responsibilities vary between local agencies, certain industry-recognized I/I BMPs may or may not be applicable on a region-wide basis. Additionally, the ability of local agencies to develop legal authorities to implement certain I/I BMPs may be limited, further complicating efforts to engage a region-wide common approach.

2.0 Consistency of MWPAAC Standards with 2004 KC Standards

This section discusses the approach to reviewing the consistency of the MWPAAC agency standards with the 2004 King County Final Draft Regional I/I Control Standards, Procedures, and Policies (hereafter 2004 KC Standards). The 2004 KC Standards document was intended to be the primary reference for evaluation and comparison of MWPAAC agency standards. Upon review, however, many of the 2004 KC Standards were determined to be out of date with current national I/I prevention and reduction BMPs.

With the advancement of condition assessment equipment and computer technology in the last decade, industry BMPs have evolved to use different tools, methods, and accepted approaches from those reflected in the 2004 KC Standards. Therefore, because of these advancements, as well as the difficulty of evaluating appropriateness and applicability of these refined BMPs for each agency, a high-level review of MWPAAC agencies' standards was completed and a determination as to whether each individual MWPAAC agency's I/I standards (including available policies, design guidelines, specifications, general notes, and other legal authorities) meet the intent of the 2004 KC Standards was made.

The Consultant determined that 24 of the 32 local MWPAAC agencies' available standards that were reviewed meet the intent of the 2004 KC Standards. A review of available documentation for the other eight agencies indicated that they meet the intent of the 2004 KC Standards in some or most instances.

All of the interviewed local agencies have sanitary and side sewer standards in place that are consistently applied throughout their service areas. While the oldest set of construction standards and specifications dates back to 2005 (Northeast Sammamish Sewer District and City of Issaquah), 18 agencies have construction standards and specifications that have been updated within the last 5 years. Almost half of the local agencies indicated during their interviews that there are regions within their service areas where sewers were constructed to standards significantly different from those in place today, as shown in Figure 3.

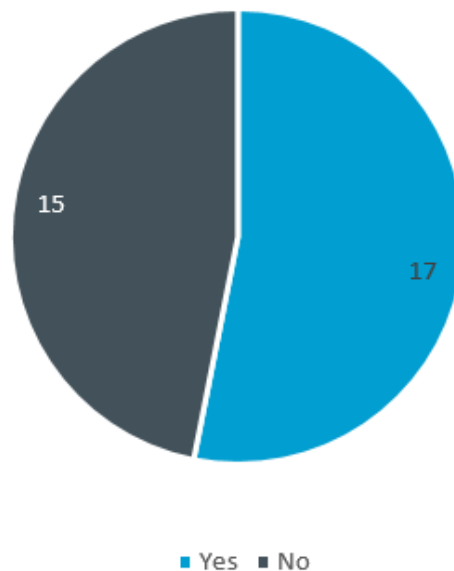


Figure 3. Local agencies with regions within service area constructed to different standards

3.0 Comparison to National Standards

This section discusses the MWPAAC agency standards in comparison to national standards.

Many of the local agencies have continued to evolve their I/I standards since the 2004 KC Standards were drafted, and have adopted practices that are in alignment with national BMPs. However, without current, written national and region-specific sets of I/I standards in place, it would be highly subjective to conclude whether each individual MWPAAC agency's set of standards (including policies, design guidelines, specifications, and other legal authorities) comprehensively meets industry-recognized I/I BMPs. Therefore, individual agencies with standards in place that generally meet industry-recognized I/I BMPs were identified for comparative purposes.

Further, some local agencies have developed sound approaches to addressing region-specific issues such as lakefront properties, steeply sloped properties, and side sewer laterals that serve more than one property. These practices may be considered as "regional" or "local" BMPs that KC and other MWPAAC agencies could consider adopting.

Review summary sheets (Appendix A) list the sound I/I prevention and mitigation practices currently used by local agencies that exemplify nationally recognized industry BMPs and that address region-specific issues.

4.0 Review of MWPAAC Rehabilitation/Replacement Programs

This section presents the review of the MWPAAC R&R programs.

During the interview process, agencies were asked about the existence of local sewer R&R programs. Of the 32 interviewed agencies, 18 indicated that they have active R&R programs, 9 do not have an ongoing R&R program, and 5 have programs in development (see Figure 4).

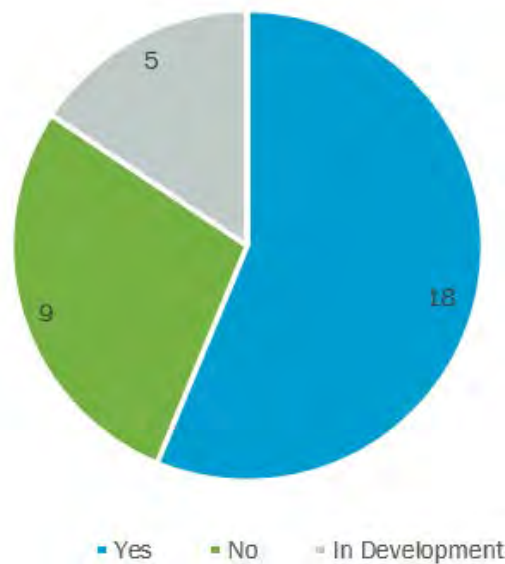


Figure 4. R&R program established

Of the agencies without ongoing R&R programs, most have defined capital improvement plans that specifically designate a dollar amount for ongoing sewer repairs and replacements. The more advanced programs identify required repairs through ongoing internal inspection programs (closed-circuit television [CCTV]) and manhole inspections. Defects requiring attention are logged in the agencies' computerized maintenance management system (CMMS) software. Depending on the severity of the defect, some agencies will either immediately repair the defect or aggregate a significant number of defects for inclusion in a publicly advertised and contracted repair package.

Some cities also coordinate sewer inspections with upcoming road improvements. The cities review their CMMS data, inspect sewers if needed, identify repairs, and complete the sewer repairs prior to the road improvements. Depending on the number of defects in a pipe reach, either the defects are spot-repaired or the whole pipe reach is lined with cured-in-place pipe (CIPP). A few of the agencies finance and work on privately owned sewer laterals in the ROW as part of these programs. This is mainly done to prevent an issue from migrating to the mainline, which may result in the recently replaced roadway being torn up for a future repair. The vast majority of this type of work is undertaken to improve structural integrity and operability of the collection system. Annual budgets for this work vary from less than \$50,000 to more than \$1.5 million.

Other agencies' R&R programs are designated to replace a specific type of asset, usually because of age and material type. These programs have specific boundaries and say that the agency will rehabilitate, usually via CIPP lining, all of the sewers in a geographic region that are a certain age and made of a certain material. Again, the main focus of this type of program is to achieve structural and operational improvements. Individual work packages for large CIPP lining projects tend to be in the \$1 million range. I/I reduction has not been a focus of ongoing R&R programs.

For the programs listed as "in development," the agencies are just getting under way with starting an asset management/condition assessment program. They are starting the inspection work to gather data on the condition of their sewer systems. R&R programs will be developed based on the condition, material, age, and criticality of the asset. These programs could be spot repairs or holistic rehabilitation (lining) or replacement (open trench/pipe bursting).

The cities reporting that they do not have an R&R program still recognize the need for one, but have not been able to implement such a program because of budget limitations. When significant defects are identified, they are repaired and funded through a general sewer fund.

The size and type of R&R programs varied with the size of the service area for each agency and the average age of its infrastructure. The smaller systems tended to have smaller programs (two spot repairs per year) as compared to larger systems that have both spot repair programs and manhole-

to-manhole R&R programs. The major impetus for these programs tends to be structural improvements rather than infiltration reduction.

5.0 Side Sewer Programs and Inspections

This section provides an overview of the side sewer programs and inspections.

During the interview process, the existence of side sewer programs, or the ability for an agency to inspect, maintain, or replace private side sewers, was evaluated. Of the 32 interviewed agencies, only 1 has a side sewer inspection program. The Highlands Sewer District (District) requires that the private side sewer be inspected every 5 years. Prior to a property sale or renovation, the District reviews the inspection records and, if needed, requires defects to be repaired. The District is unique in that it serves a private homeowners association and serves only 108 customers.

All of the sewer agencies that have active inspection programs stop to pan and tilt the sewer main CCTV camera to view the side sewer connection to the main. Defects that can be seen from the mainline are documented. Some agencies notify homeowners of defects observed on the private pipe.

Seven agencies reported that they include replacement of side sewer pipes up to the property line if the mainline pipe is being replaced, regardless of ownership. Two of those agencies reported projects that included side sewer replacement as far up onto private property as was economically feasible. One of those seven agencies charges the homeowner, at a steeply discounted rate, for the repair of the private side sewer when it is included as part of a mainline repair.

All of the cities and some of the districts have provisions in their codes that allow them to enter private property to inspect side sewers. The sewer codes for most of the districts could not be located online. Some even include provisions that require property owners to make repairs to defects that could lead to infiltration, or that may impact the public ROW or the mainline sewer. If the repairs are not made within a time frame, the agency has the right to make the repairs and charge the property owner the cost of the repair. No agency expressed that it has used this provision in its code in the past.

All of the sewer agencies have provisions for permitting and inspecting new construction, repairs, and replacement of side sewers. This is covered in more detail in the Task 510 TM “Evaluation of Current Inspection Programs at Cities and Sewer Districts.”

6.0 Summary

The purpose of this report is to document the review of the sanitary sewer standards of agencies that discharge to WTD sanitary sewers. As part of the review, the Consultant researched available standards online, conducted in-person interviews with 32 of the 34 MWPAAC agencies, and requested additional information on R&R programs and side sewer programs.

Results of the interviews and information review are summarized in this TM, and pertinent information for each MWPAAC agency is provided in summary sheets provided in Appendix A.

Many of the local agencies have continued to evolve their I/I standards since the 2004 KC Standards were drafted, and have adopted practices that are in alignment with national BMPs. Individual agencies with standards in place that generally meet industry-recognized I/I BMPs have been identified.

No practices were identified that would result in a disproportionately high risk of I/I. However, it was noted that the Seattle Public Utilities (SPU) design guidelines do not differentiate requirements for side sewers in each type of sewer system (separate versus combined). This could result in increased I/I risk in the separated portion of the SPU sewer system. More details on this issue, and the approach to mitigating the impacts, is provided in the Task 430 TM.

Further, some local agencies have developed sound approaches to addressing region-specific issues such as lakefront properties, steeply sloped properties, and side sewer laterals that serve more than one property. These practices may be considered as “regional” or “local” BMPs that KC and other MWPAAC agencies could consider adopting. Also noted in the review summary sheets are sound I/I prevention, source detection, and mitigation practices currently undertaken by local agencies that exemplify nationally recognized industry BMPs and that address region-specific issues.

Some opportunities for local agencies to adopt I/I prevention and mitigation BMP strategies may reduce the overall I/I experienced in KC’s regional wastewater service area. These opportunities involve identifying and implementing the following:

- Appropriate and applicable/targeted I/I policies
- Stricter design guidelines
- Construction standards and specifications that incorporate best available technologies and materials
- State-of-the art inspection technologies and methods
- Proactive maintenance practices

Examples of these opportunities include the following:

- Incorporating side sewer inspections at point-of-sale or property transfer
- Requiring side sewer inspections in structure demolition/abandonment permits
- Prohibiting manholes in gutters, low-lying areas, and other areas prone to flooding
- Evaluating watertight products and requiring their use
- Developing a strong new construction and repair inspection program
- Requiring side sewer rehabilitation as part of sewer main R&R projects
- Conducting illicit connection inspections

These opportunities, and approaches to encourage local agencies to consider them, are discussed in the Task 430 TM.

More than half (18) of the MWPAAC agencies interviewed have ongoing R&R programs, and five agencies are currently developing R&R programs. The size and type of R&R programs varied with the size of the service area for each agency and the average age of its infrastructure. The smaller systems tended to have smaller programs (two spot repairs per year) as compared to larger systems that have both spot repair programs and manhole-to-manhole R&R programs. The major impetus for these programs tends to be improvement of structural integrity rather than infiltration reduction.

Of the 32 interviewed agencies, only 1 has a dedicated, ongoing side sewer inspection program. The Highlands Sewer District requires that the private side sewer be inspected every 5 years. Prior to a property sale or renovation, the District reviews the inspection records and, if needed, requires defects to be repaired. The District is unique in that it serves a private homeowners association and serves only 108 customers.

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Appendix A Agency Summary Sheets

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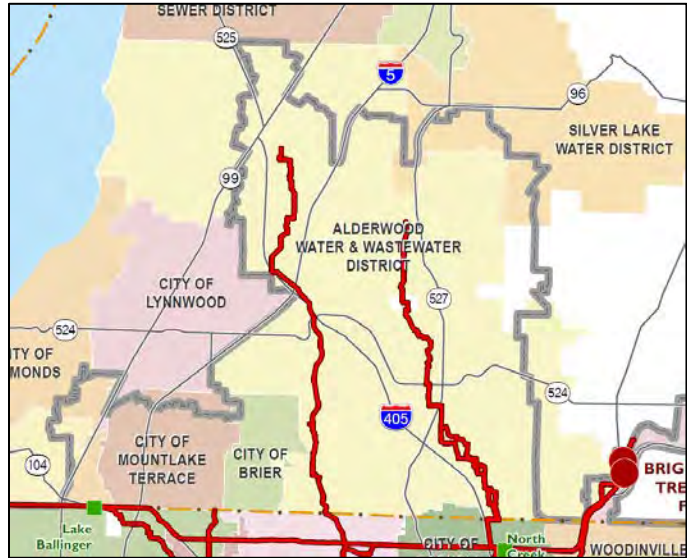
Alderwood Water and Wastewater District

District Type: [Utility District](#)

No. of Customers: [35,000](#)

Definition of side sewer ownership: [Side sewers outside the public right-of-way or public easement are the responsibility of the property owner to maintain \(S&SM 2010, 3.2-050\)](#)

[Customers may not be aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2010](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [In most instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Buried metallic marker tape is required to be installed 30-inches above new side sewers \(DWG S-10\)](#)
- [Rubber gasket joints are required on all side sewers, except ABS and PVC schedule 40 pipe where solvent welded joints are required \(DWG. SS01\)](#)
- [Cleanouts are required on side sewers at the connection to buildings and for aggregate ends greater than 45° and within 100 feet of the sewer main \(DWG. SS-1\). If cleanout is installed under driveway or walk, it must have a solid frame and bolt down lid \(DWG. SS-3\)](#)
- [Water tight seals are required in areas where a manhole lid may be exposed to excessive water \(S&SM 2010, 3-2.060 A. 3.\)](#)
- [Manholes must not be located in sidewalks, curbs and gutter lines or low points \(S&SM 2010, 2-060 B.\)](#)
- [Requirements for abandoning/capping existing side sewers are in place \(S&SM 2010, 5-3.015\)](#)

Does the agency have a rehabilitation/replacement program for sewers? [A program is under development](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

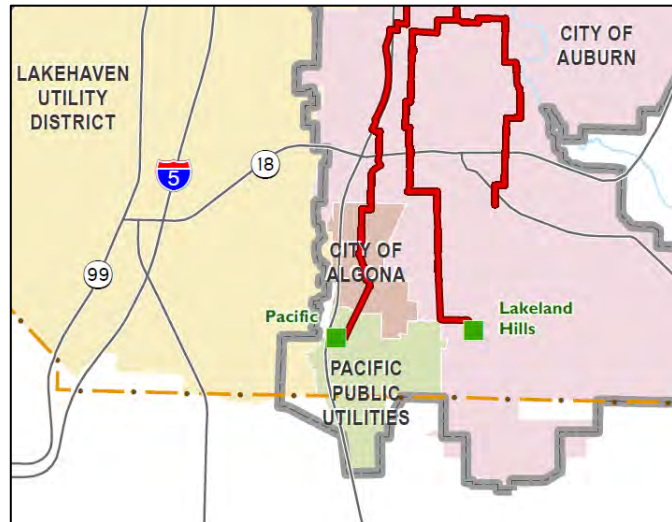
Has the agency implemented proactive side-sewer I/I-related projects? [Unknown](#)

Algona

District Type: [City](#)

No. of Customers: [1,084](#)

Definition of side sewer ownership: [Side sewers are the responsibility of the property owner to maintain. A side sewer lateral is considered to be that portion of a sewer line that will be constructed between a main sewer line and a property line or easement limit line. Private side sewers are the extension of side sewer laterals located outside of the public rights-of-way or easements granted to the City \(Public Works Standards 7.4.C. and 7.4.D.\)](#)



[It is not known if the customers are aware that they own their side sewer.](#)

Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2015](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [In most instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Side sewer shall be inspected by the City's Representative/Inspector prior to backfilling. Side sewer shall be plugged and tested in the presence of the City Inspector by filling with water to obtain 4.5 psi or 10 feet of head. Leakage rate shall not exceed 0.31 gal./hr. for 4-inch pipe and 0.47 gal/hr. for 6-inch pipe, per 100 feet of pipe \(Public Works Standards 7.4.D.4\)](#)
- [No more than 100 feet is allowed between cleanouts. Cleanouts are required for bends equal to or greater than 45. Cleanout shall be watertight plugged gasketed tee or wye lateral \(7.4.D.7\)](#)

Does the agency have a rehabilitation/replacement program for sewers? [No](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [Yes](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

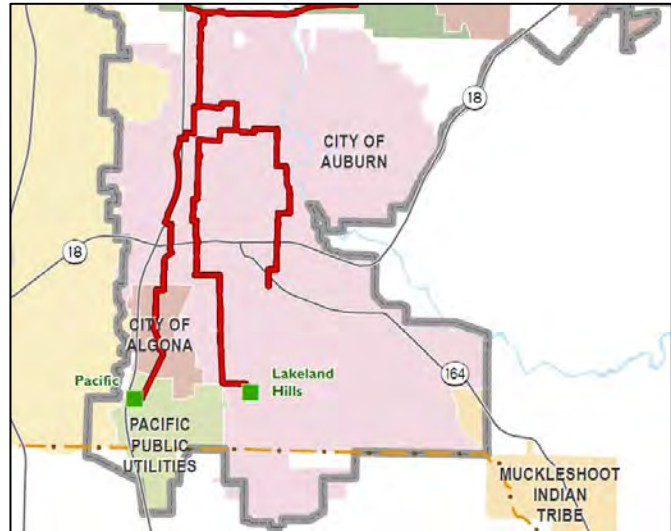
Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

Auburn

District Type: [City](#)

No. of Customers: [16,000](#)

Definition of side sewer ownership: [Side sewers](#) are defined as that portion of the sewer system that extends from two feet (2') outside of the outer foundation wall of the structure to the public sanitary sewer main. The City owns and maintains the portion of the side sewer located within the right-of-way. The property owner owns and maintains the portion of the side sewer located outside of the public right-of-way. Side sewers located within easements are the property owners responsibility to maintain (EDS (2016) 8.01.3)



[Customers are aware that they own their side sewer.](#)

Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2016](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [In most instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [The width of the \[Public Sanitary Sewer Utility\] Easement is intended to allow adequate space for performing maintenance, repair, and open cut replacements. In unusual circumstances \(e.g., steep slopes\) the City may require easements on a case-by-case basis \(Engineering Design Standards \(EDS\), 2016, 8.02.A.\)](#)
- [All side sewers must use push on joints. Glued joints are not allowed outside the building footprint \(EDS, 5.01.3.1.P\)](#)
- [During construction in areas with more than one side sewer per structure, Contractors must test each connected structure to verify which side sewer is used by that structure. The test involves flushing every toilet or running every sink or tub on each floor of each structure and directly observing which side sewer the effluent discharges from. Only those size sewers can be connected. All others are to be abandoned in place per EDS Section 7.08.3\(4\) \(Plugging Existing Pipe\).](#)
- [For sewer main replacements, Contractors are responsible for verifying that all City customers originally connected to the sanitary sewer conveyance line are connected to the new sanitary sewer conveyance line. Prior to project completion, Contractors must document to the City that all City customers have had their services re-established.](#)

- Sanitary sewer manholes are not to be located within the limits of surface water ponding or flow lines associated with stormwater runoff (EDS, 8.01.2.2.H)
- Sanitary sewer manholes are not to be located within sidewalks, trails, or curb and gutters (EDS, 8.01.2.2.J)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No; however, side sewers are usually replaced to the property line as part of sewer main replacement projects](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

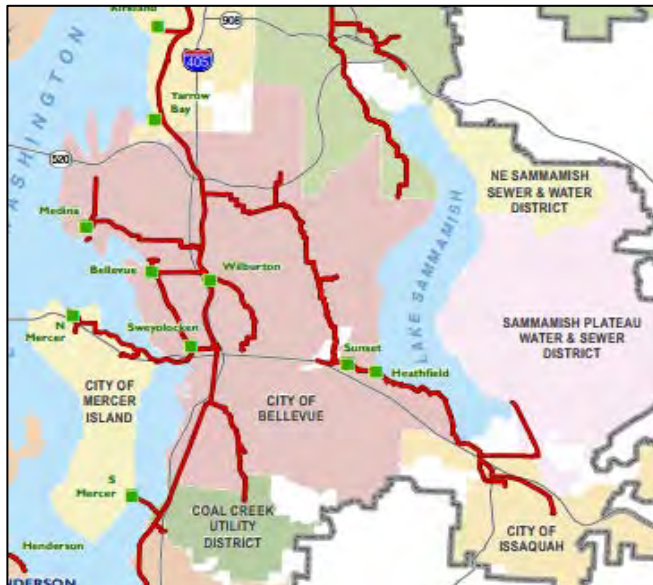
Bellevue

District Type: City

No. of Customers: 37,000

Definition of side sewer ownership: Side sewers are owned by property owners. However, Bellevue's Wastewater Division is responsible for maintenance and repairs of the main sewer lines, including the services connections within the city's right of way and dedicated easements (<https://utilities.bellevuewa.gov/manage-your-utility-services/sewer/sewer-service/>; accessed 6/23/17)

It is not known if the customers are aware that they own their side sewer.



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? Yes

Date of last standards: 2017

Do the standards meet the intent of King County 2004 standards? Yes

Do the standards meet industry I/I best practices? Yes

Areas where the standards exemplify industry or local I/I best practices:

- The statement: "Bellevue's Wastewater Division is responsible for maintenance and repairs of the main sewer lines, including the services connections within the city's right of way and dedicated easements" is posted on the City's website: <https://utilities.bellevuewa.gov/manage-your-utility-services/sewer/sewer-service/>; accessed 6/23/17)
- Side sewer demolitions must be performed prior to the removal of a building foundation. The side sewer for each building must be excavated and removed from the house connection to the edge of the public right-of-way, or property line. Contractors are required to cap the end of the side sewer to remain in place. Side sewer demolition must be performed in the presence of the City of Bellevue Sewer Maintenance Engineering Technician (2017 Sewer Engineering Standards (SES) S2-04.3 Sanitary Sewer General Plan Notes and S6-15.)
- Existing sewer lines to be abandoned must be filled completely with sand, concrete, or controlled density fill; or removed (SES S3-02.G).
- Side sewers and sewer mains must not be used for the grounding of electrical systems or for the maintenance, integrity or continuity of any grounding attachment or connection (SES S3-02.I).

- Manholes in unpaved areas and easement must have bolt-locking covers. All manholes in paved areas and sidewalks must have standard, non-bolt locking covers (SES S3-04.B)
- New and replacement sanitary sewage systems must be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters. Manholes located in the curb and gutter line, flood plains, or flood areas in easements must have a locking gasketed ring and cover (SES S3-04.Q)
- Concrete perimeter seals must be provided around all manhole adjustment sections:
 - Paved areas - asphalt concrete
 - Unpaved areas - cement concrete (SES S3-04.C)
- Mechanical sewer plugs for lake line side sewer clean-outs located below the hydraulic gradient must be designed to withstand uplift pressure from force main.
 - Mechanical plug must consist of aluminum body with double tapered rubber ring. Plug must be engaged by mechanical compression of rubber ring against pipe walls.
 - Plug must include integral handle allowing manual operation of the plug. Rubber ring must be engaged or disengaged by twisting handle. (SES S4-22)
- Backwater Valves - Whenever a situation exists involving an unusual danger of backup, such as any structure where the plumbing drain is two feet (2') or less above the hydraulic gradient of a lake line, or below the rim of the next upstream manhole, a backwater valve and a holding tank may be required per the Uniform Plumbing Code. The effective operation of the backwater sewage valve shall be the responsibility of the owner of the side sewer. Before any installation of this nature is made, the owner is required to comply with provisions of this regulation concerning the agreement to hold the Utility and the City harmless from damage or injury (SES S6-14.5 and Drawing S-23).

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [Yes](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [Yes, sump pump connections into sanitary sewers](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

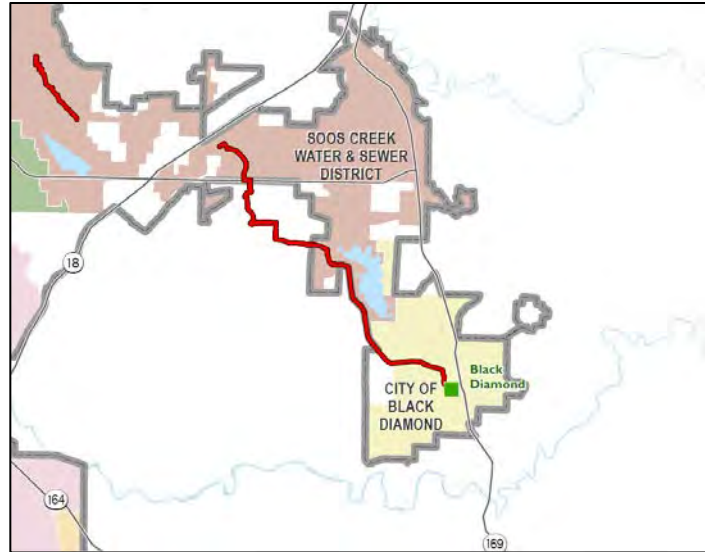
Black Diamond

District Type: [City](#)

No. of Customers: [840](#)

Definition of side sewer ownership: [The definition of side sewer ownership is inconsistent between city code and standards. Per the standards: a side sewer lateral is considered to be that portion of a sewer line that will be constructed between a main sewer line and a property line or easement limit line.](#)

[Customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2009](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [In most instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [All rigid pipe entering or leaving the manhole must be provided with Kor-n-Seal™ connectors approved by the City and the pipe must be placed on firmly compacted bedding. Special care must be taken to see that the openings through which pipes enter the structure are completely water-tight. All manholes require visual inspection by the City and vacuum testing per ASTM C497 and C1244. Prior to backfilling, all pick holes and external joints must be grouted with a non-shrink grout and an epoxy coating, or heat shrink wrap must be provided around the outside of the manhole. JetSet group is not allowed. The City inspector will provide written acceptance of this work before backfilling can occur \(2009 Engineering Design and Construction Standards \(EDCS\) 5.3.15.](#)
- [All manholes in unpaved areas must include a concrete seal around adjusting rings and must be equipped with locking covers \(EDCS 5.1.03\).](#)
- [Manhole elevation must be above the 100-year flood plain \(EDCS 5.1.03.15\).](#)

Does the agency have a rehabilitation/replacement program for sewers? [No](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system?
[Unsure](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [Yes, issues resulting from septic tank to sewer conversions when the new side sewer is connected to the closest septic pipe to the home](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

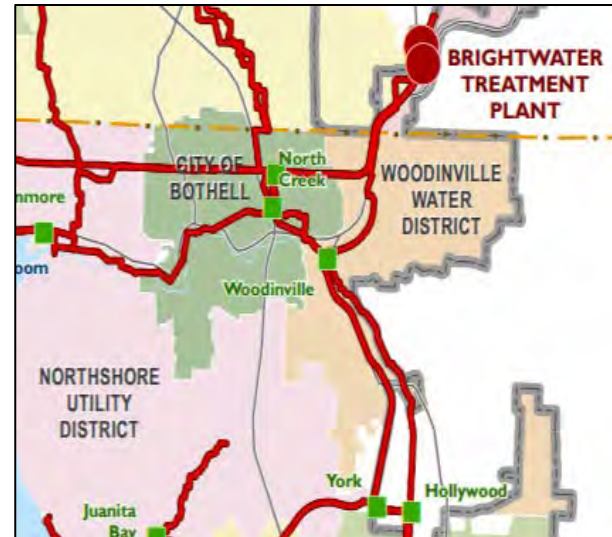
Bothell

District Type: [City](#)

No. of Customers: [4,000](#)

Definition of side sewer ownership: [Property owners are responsible for maintenance and repair of side sewers to the sewer main.](#)

[It is not known if the customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2017](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [Yes](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Whenever a new sewer main/side sewer replaces an existing sewer main/side sewer, the developer must abandon the existing at the sewer main, and must cap or plug the abandoned sewer main. Whenever a replacement side sewer is constructed and connected to an existing sewer main, the side sewer must be constructed as new \(2017 Design and Construction Standards \(DCS\) 6-5.1.8\).](#)
- [Jointing must be with approved, flexible gasketing \(rubber, synthetic rubber-like, and plastic materials specially manufactured for the joint, pipe size, and use intended, and must be furnished by the manufacturer of the pipe used \(DCS 6-9.2\).](#)
- [PVC sewer mains must not have a joint or fitting within 10' of the manhole \(Standard Detail 623\).](#)
- [Manholes must be watertight. In areas of high ground water, riser seams, pick holes, and adjustment rings must be sealed with "Wrapid Seal" by CANUSA-CPS or approved equal \(Standard Detail 623\).](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [Yes](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes, monitoring lift station flows](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [Yes](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

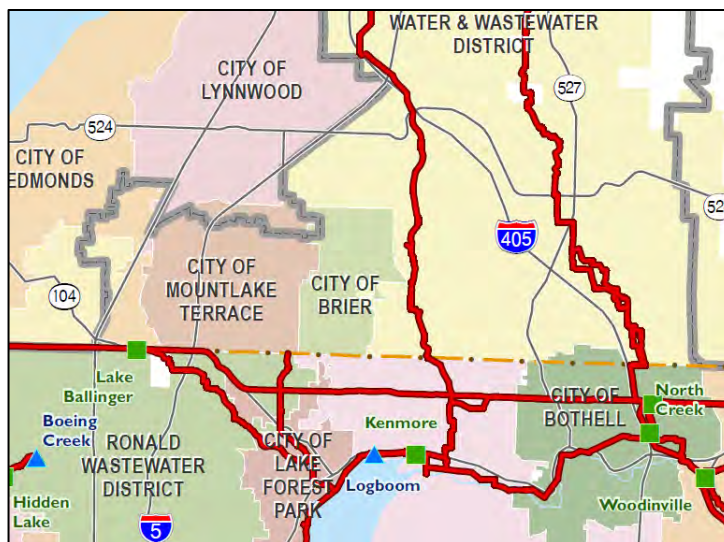
Brier

District Type: [City](#)

No. of Customers: [6,434](#) (estimated population in 2014)

Definition of side sewer ownership: [Property owners are responsible for maintenance and repair of side sewers to the sewer main.](#)

[Customers may not be aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2017](#)

Do the standards meet the intent of King County 2004 standards? [In most instances](#)

Do the standards meet industry I/I best practices? [In some instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Building sewers of four-inch diameter must have cleanouts installed at intervals of not more than fifty feet and sewers of six-inch diameter and larger must have cleanouts installed at intervals of not more than one hundred feet \(2017 Minimum Requirements for Sewer Installation \(MRSI\)\).](#)
- [A list of prohibited connections and discharges is provided in the MRSI and includes \(but is not limited to\) the following: subsoil foundation drains; footing drains; window well drains; door well drains; yard drains; unroofed basement floor drains' overflows from unpolluted water storage facilities; roof drains or downspouts from areas exposed to rainfall or other precipitation; surface or underground waters from any source; and septic tanks.](#)
- [Lifting of Sewage: sewage from structures in which the plumbing drain is too low to permit gravity flow to a public or private sewer may be lifted by artificial means or a grinder pump and discharged into the public or private sewer. Neither pump stations nor public dedicated lifting systems of any kind are allowed \(MRSI\).](#)

Does the agency have a rehabilitation/replacement program for sewers? [No](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [Yes](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

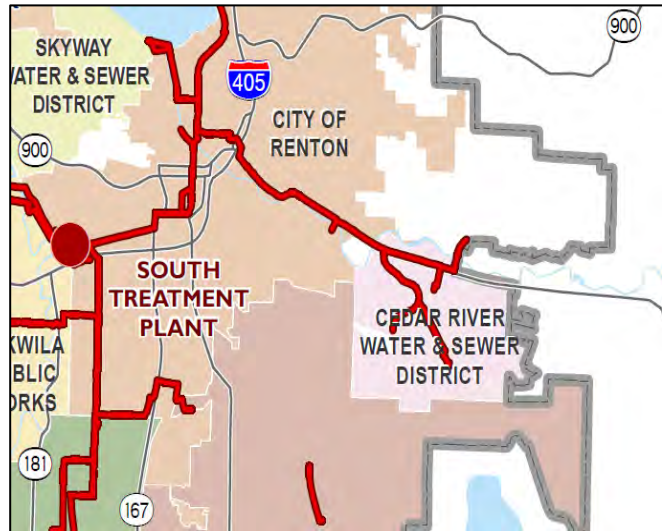
Cedar River Water and Sewer District

District Type: Utility District

No. of Customers: 3,800

Definition of side sewer ownership: Property owners are responsible for maintenance and repair of side sewers to the edge of the right-of-way.

Customers may not be aware that they own their side sewer.



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? Yes

Date of last standards: 2014

Do the standards meet the intent of King County 2004 standards? Yes

Do the standards meet industry I/I best practices? Yes

Areas where the standards exemplify industry or local I/I best practices:

- All precast manhole section joints must be mortared on the outside of the manhole creating a water tight seal, in addition to the flexible gasket (2011 Standard Specifications for Sewer Constructed Extensions (SSSCE), Section D.1.e.2.a)
- Installation requirement for new pipes installed via pipe bursting are provided in SSSCE Section D.4
- Illegal connection and illegal disposal issues are addressed in detail in the District's Specifications and Regulations for Side Sewer Permitting, Design, Construction and Use, 2014 (SRSSPCU) document. Enforcement actions, penalties and fines are also clearly identified
- SRSSPCU Section VII.G requires that the district be contacted when side sewer connections exceeding 150-feet are proposed
- SRSSPCU Section XII. Maintenance of Side Sewer Installation addresses side sewer cleaning (minimum 24-hour notice to the District) and excavations and/or modifications of side sewer installations (minimum 24-hour notice and requirement to obtain a "Side Sewer Repair or Rebuild Form")

Does the agency have a rehabilitation/replacement program for sewers? No; however, some rehabilitation work has been undertaken

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? No

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

Coal Creek Utility District

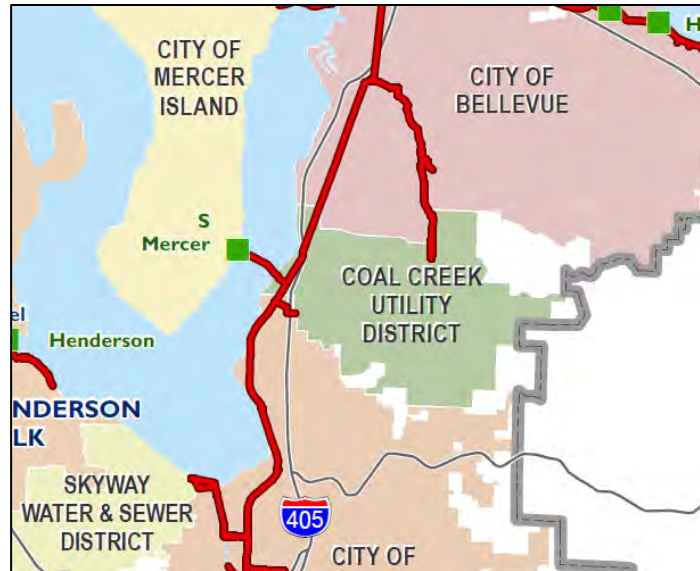
District Type: [Utility District](#)

No. of Customers: [4,000](#)

Definition of side sewer ownership:

[Property owners are responsible for maintenance and repair of side sewers to the edge of the right-of-way.](#)

[It is not known if the customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2017](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [In most instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [In instances where rockeries or retaining walls are to be constructed over a side sewer \(perpendicular placement only\), the side sewer must be installed within a steel casing pipe with District approved casing spacers. The steel casing must extend ten \(10\) feet each side of the retaining wall or as approved by the District. When rockeries or retaining walls are to be placed on top of an uncased side sewer, the side sewer must be exposed and a steel casing installed around the existing pipe by methods approved by the District \(November 2014 Side Sewer Regulations \(SSR\) 7.09\).](#)
- [The property owner or his contractor engaged in demolishing or removing any structure connected to the public sewer must obtain a permit from the District prior to such work, and must expose and plug the side sewer connection of such structure at the property line in accordance with the requirement of the District and this regulation. A district inspector must observe such plugging. SSR 12.03.](#)
- [No side sewer cleaning contractor, plumber, licensed side sewer contractor, or owner is allowed to excavate for the purpose of exposing a side sewer, or make repairs or modifications to an existing side sewer until a permit has been obtained from the District \(see SSR 12.02 for specific language\).](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

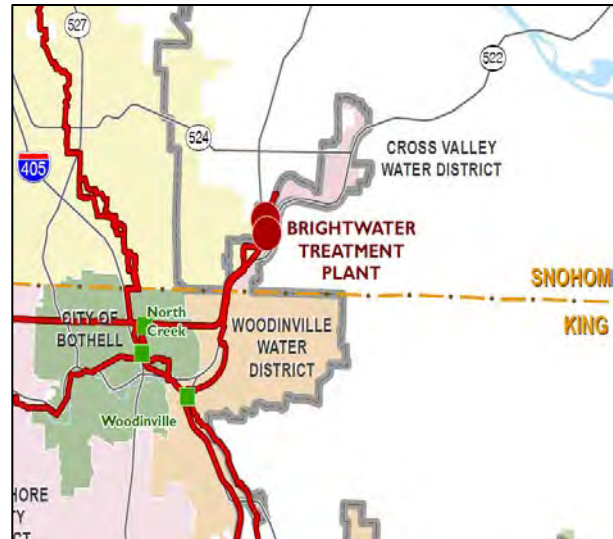
Cross Valley Water District

District Type: [Utility District](#)

No. of Customers: [1,100](#)

Definition of side sewer ownership: [Property owners are responsible for maintenance and repair of side sewers to the edge of the right-of-way.](#)

[Customers may not be aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2015](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [In most instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Side sewers within lakefront property provisions are provided in the District's May 2015 Specifications for Side Sewer Construction, Article VI, 6.29 and 7.04.](#)
- [Per SSSC, Article XIII, "as a condition precedent to entering into contracts with the property owners in the Cross Valley Water District for the installation of side sewers connecting with the sewers installed by the District, and of soliciting said work, the contractors shall be approved as qualified side sewer contractors by the District."](#)
- [Sewer maintenance responsibilities are clearly delineated in SSSC Article XIV.14.01: "All costs and expense incidental to the installation, connection, maintenance and repair or replacement of the inside and outside sewers shall be borne by the owner or occupant of the premises served by the side sewer."](#)
- [Progressive enforcement actions and penalties for violations of the District's side sewer requirements are defined in SSSC Article XVII – Penalties.](#)

Does the agency have a rehabilitation/replacement program for sewers? [No](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? No

Are there any known practices that have been implemented that may have a high risk of I/I? No

Has the agency implemented proactive side-sewer I/I-related projects? No

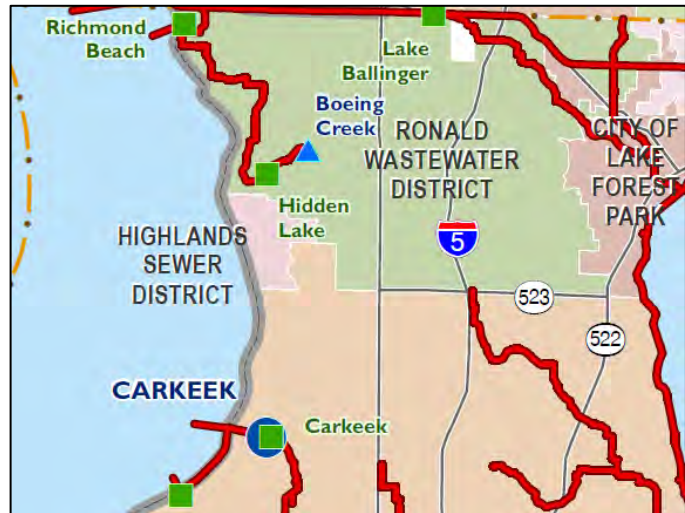
Highlands Sewer District

District Type: [Utility District](#)

No. of Customers: [150](#)

Definition of side sewer ownership: [Property owners are responsible for maintenance and repair of side sewers to the edge of the right-of-way.](#)

[Customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2009](#)

Do the standards meet the intent of King County 2004 standards? [In some instances](#)

Do the standards meet industry I/I best practices? [In some instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Requirements for testing gravity sewer are provided in the District's January 2009 Engineering Standards.](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [Yes](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

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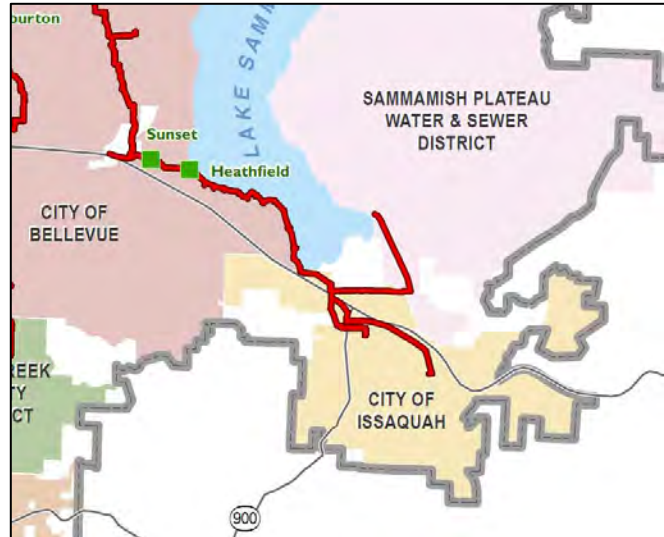
Issaquah

District Type: [City](#)

No. of Customers: [7,500](#)

Definition of side sewer ownership: [Side sewers shall be owned and maintained by the property owner up to and including the connection to the City-owned sewer main \(Policy U3.4\)](#)

[It is not known if the customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [1988](#)

Do the standards meet the intent of King County 2004 standards? [In some instances](#)

Do the standards meet industry best practices? [In some instances](#)

Area where the standards exemplify industry or local I/I best practices:

- [Manholes not set in paved areas must be set at a finished grade six \(6\) inches higher than the surrounding terrain to prevent surface water infiltration into the system, unless plans specify otherwise \(Technical Specifications, Part 1, 3-10\).](#)

Does the agency have a rehabilitation/replacement program for sewers? [No; however, some relining work has been performed](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [Yes, developers hammer tapping connections into the sanitary sewer system](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

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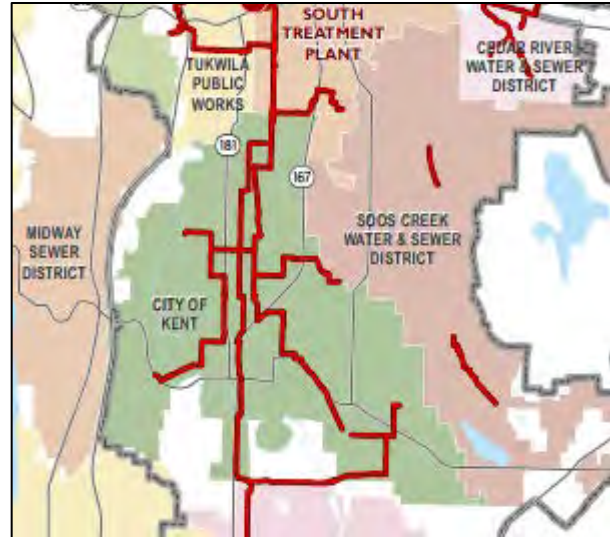
Kent

District Type: [City](#)

No. of Customers: [17,000](#)

Definition of side sewer ownership: [Sanitary sewer service lines that extend from the mainline are considered private side sewers. Side sewers are to be constructed and maintained by the property owner in accordance with the KCC 7.04](#)

[It is not known if the customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2009](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [In most instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Manhole frames and covers must be cast gray or ductile iron and locking type lids are required in public areas. \(See Standard Plan 4-3 and 2009 Design & Construction Standards \(DCS\), 4.7.D\)](#)
- [Cleanouts are required at the right-of-way or easement line \(See Standard Plans 4-7 and 4-8\). All cleanouts within 5' of the right-of-way line shall be brought up to grade. Cleanouts within private property in grass or landscaped areas may be buried a maximum of one foot. \(DCS, 4.6.B.10. and .11\).](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes, visually](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

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Kirkland

District Type: [City](#)

No. of Customers: [11,000](#)

Definition of side sewer ownership: [Property owners are responsible for maintenance and repair of side sewers to the sewer main.](#)

[Customers may not be aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2014](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [In most instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Any lateral under a structure such as a rockery and with less an 3' of cover below the structure base must be ductile iron for 5' on each side of the structure \(Sanitary Sewer - Design Criteria VI.B.5\)](#)
- [All house plumbing outlets must be connected to the sewer. No downspouts or storm drainage may be connected to the sewer system \(Plan No. CK-S20 #5\)](#)
- [Lateral reuse is addressed in SSDC VI.E.1-3](#)
 1. [Existing PVC laterals may be reused. A video inspection must be submitted for review to determine size and condition.](#)
 2. [All other lateral types must be replaced to meet current specifications.](#)
 3. [Existing 6" concrete laterals may be slip line. A video inspection must be submitted for review to determine size and condition.](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes, currently conducting flow metering](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [Yes](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

Lake Forest Park

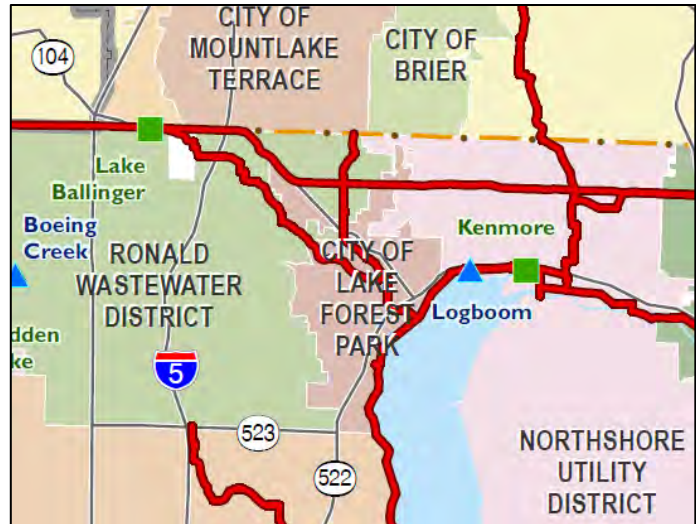
District Type: [City](#)

No. of Customers: [3,590](#)

Definition of side sewer ownership:

[Property owners are responsible for maintenance and repair of side sewers to the sewer main.](#)

[Customers may not be aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2011](#)

Do the standards meet the intent of King County 2004 standards? [In most instances](#)

Do the standards meet industry I/I best practices? [In most instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Requirements for the protection and maintenance of private property are established in the City's Side Sewer Specification, 6.1. Included in these requirements is: "It is expressly understood that the Contractor shall in particular restore all easements to a condition equal to its original condition, or superior, and in a condition satisfactory to the City and property Owner."](#)

Does the agency have a rehabilitation/replacement program for sewers? [No, but some sewer rehabilitation, lining, pipe bursting, and smoke testing has been performed](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

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Lakehaven Water and Sewer District

District Type: [Utility District](#)

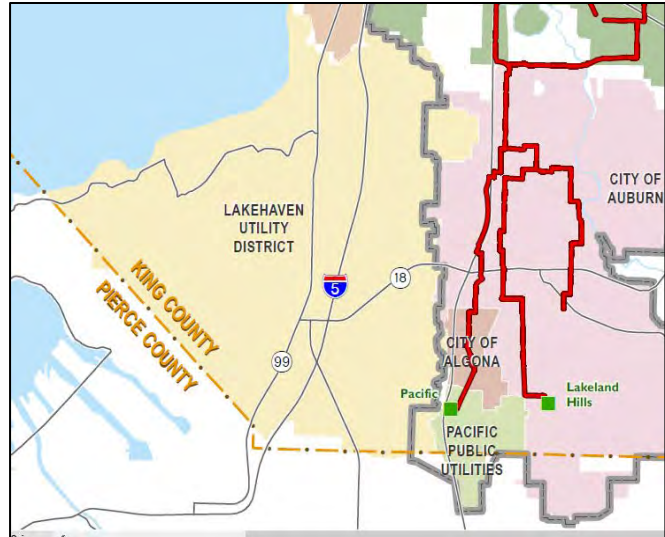
No. of Customers: [25,987](#)

Definition of side sewer ownership: [Gravity Building Sewer](#): a privately owned and maintained pipeline system located within private property that is designed to carry sewage or wastewater leading from a building drain/plumbing outlet of a structure to the gravity side sewer, or emptying into a private grinder pump wet well, if applicable.

The gravity building sewer shall begin at the terminus of the "building drain" as defined by the applicable plumbing code and shall terminate at the property line/right-of-way margin or Lakehaven easement boundary, or at a private grinder pump wet well, if applicable.

Gravity side sewer: a privately owned and maintained pipeline system located within a public right-of-way or Lakehaven easement that is designed to carry sewage or wastewater leading from a gravity building sewer terminus, a private force main/discharge pipeline from a private grinder pump, or other approved facilities to the public gravity sanitary sewer system main.(SIGBSSS, 2016)

Customers may not be aware that they own their side sewer.



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2015](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [In most instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [A trench dam detail is shown in Standard Plan SS-09.](#)
- [Locking manhole covers must be provided on all manholes located on easement or off of roadway surfaces \(2002 Sanitary Sewer Specifications \(SSS\) 5.3.7.3\).](#)
- [Sewer Guard Watertight Manhole Inserts are required \(only one product can be used, and the inserts are manufactured to fit specific existing manhole frames\) SSS 5.3.14.](#)
- [At the direction of the Engineer or where high groundwater is encountered, a preformed joint sealant must be used in manholes. This sealant shall be in rope form, conforming to the requirements of Federal Specifications SS-S-210 and must be "Kent-seal" as manufactured by Hamilton Kent Manufacturing Company, "Ram-nek" as manufactured by K.T. Snyder Company, or approved equal \(SSS 5.3.6.2\)](#)

Does the agency have a rehabilitation/replacement program for sewers? [A program is under development](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [Yes](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

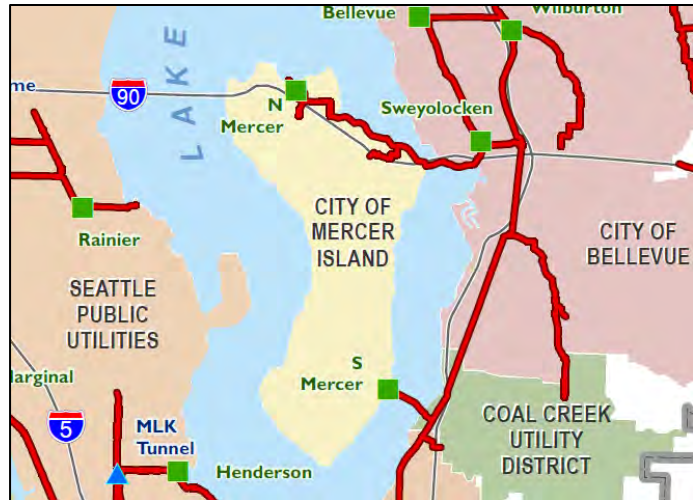
Mercer Island

District Type: City

No. of Customers: 7,000

Definition of side sewer ownership:

"Side sewer" means a private pipe and related appurtenances extending from the sewer main to the connection with a building (MICCC 15.06.020, 2017) B. Private Ownership of Area Sewers. Side sewers are owned by the property owner. Property owners shall be responsible for the development, maintenance, and repairs of side sewers and their appurtenances.



Side sewers, whether located in a public or private place, shall be owned, installed, operated, and maintained by the owner or occupant of the property or premises served unless otherwise described in an easement, maintenance agreement, or other legal document. This includes the pipe system up to, but not including, manufactured tee/wyes, or mechanical connections to the public main.” (Ord. 14C-03 § 2).

It is not known if the customers are aware that they own their side sewer.

Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? Yes

Date of last standards: 2009

Do the standards meet the intent of King County 2004 standards? Yes

Do the standards meet industry I/I best practices? Yes

Areas where the standards exemplify industry or local I/I best practices:

- Utility pipe tracer tape is required to be installed above side sewers (Standard Detail S-17).
- A locking cleanout cap is required (Standard Detail S-19).
- Building demolition and side sewer reconnection requirements are provided in Standard Detail S-22, and include the following: “When demolishing an existing building, the building side sewer shall be disconnected prior to removal of building foundations. The contractor must install a mechanical plug with non-shrink grout at the end of the side sewer to remain in place. Disconnections must be performed in the presence of the city's utility inspector. The contractor shall provide an as-built drawing depicting the disconnected side sewer upon completion of the work.”
- Requirements for lake line cleanouts and backwater valve installation above the hydraulic grade line (S-23) and below the hydraulic grade line are provided in Standard Details S-23 and S-24.

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [Yes; in addition, side sewers must be replaced to the property line when reused](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [Yes](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

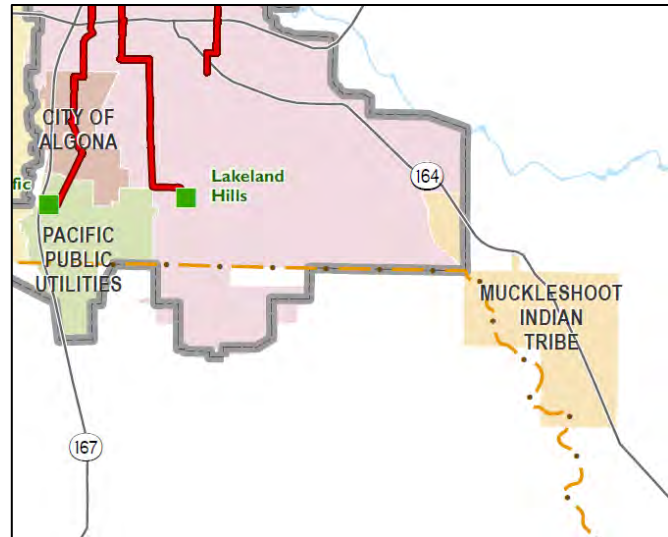
Muckleshoot Indian Tribe

District Type: [Tribe](#)

No. of Customers: [3,000](#)

Definition of side sewer ownership: [The Muckleshoot Indian Tribe owns sewer mains and side sewers.](#)

[Customers do not own or maintain their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2012](#)

Do the standards meet the intent of King County 2004 standards? [In some instances](#)

Do the standards meet industry I/I best practices? [In some instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Sanitary sewer main video inspection requirements are provided in the District's Water and Sewer Specifications and Standard Details \(WSSSD\), Section 205 Sanitary Sewer Plan Notes 4.](#)
- [Per Standard Drawing 2.03.02.8, "The Contractor shall conduct a "Sewer Main Video Inspection" of the sewer tap. The Contractor shall be required to repair, any sewer tap construction defects found by the tribal inspector. The cost of all repairs and subsequent "Sewer Main Video Inspections" will be the responsibility of the Contractor. Due to public health and safety, building occupancy will not be allowed until repairs are completed and accepted by the Tribe's engineer."](#)

Does the agency have a rehabilitation/replacement program for sewers? [No](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes, currently monitoring flow in manholes](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

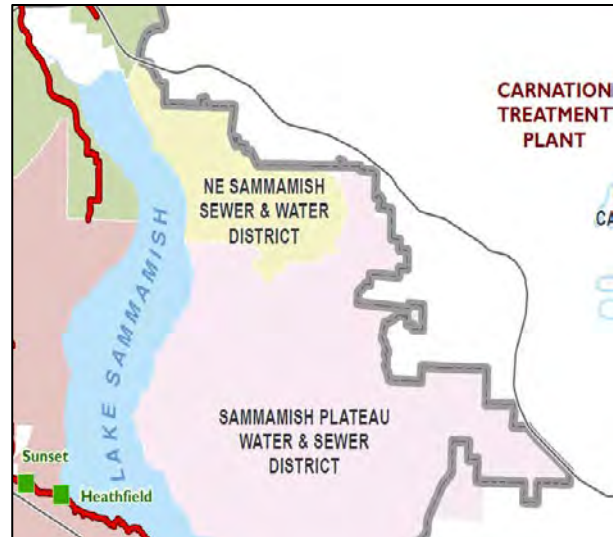
Northeast Sammamish Sewer District

District Type: [Utility District](#)

No. of Customers: [4,800](#)

Definition of side sewer ownership: [Property owners are responsible for maintenance and repair of side sewers to the edge of the right-of-way.](#)

[Customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2005](#)

Do the standards meet the intent of King County 2004 standards? [In some instances](#)

Do the standards meet industry I/I best practices? [In some instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Per Section F, 3.B.13 of the District's Design and Format Standards for Preparation of Developer Extension Construction Plans and Specifications, "Connection of side sewers to manholes shall be avoided if possible. If side sewers must be connected to a terminating manhole such as in a cul-de-sac, no more than two \(2\) side sewer connections will be allowed."](#)
- [In Section G of the document referenced above, requirements for the following are clearly delineated: the Protection of Work Property and Safety \(24\), Commencement of work on Public and Private Right-of-Way \(25\), and Construction on Easements \(26\).](#)

Does the agency have a rehabilitation/replacement program for sewers? [A program is under development](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? No

Has the agency implemented proactive side-sewer I/I-related projects? No

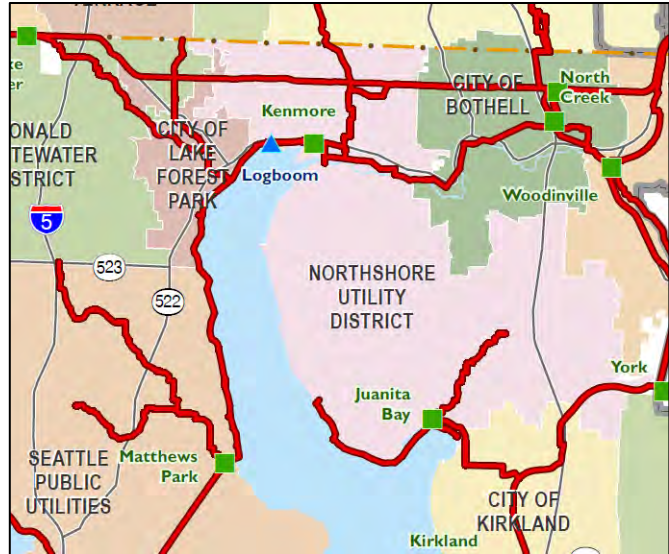
Northshore Utility District

District Type: [Utility District](#)

No. of Customers: [22,000](#)

Definition of side sewer ownership: [Property owners are responsible for maintenance and repair of side sewers to the edge of the right-of-way.](#)

[It is not known if the customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2017](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry best practices? [In most instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Per April 2017 Engineering Specification – Materials of Construction \(ES-MC\) 9.3 \(j\), all manhole lift holes must be completely filled smooth with grout both inside and out in order to ensure water-tightness.](#)
- [ES-MC 9.4, requires all manhole frames and covers, as well as cleanout frames and covers, to be locking type.](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes, conducting flow metering](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [Yes, experiencing capacity-related issues](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

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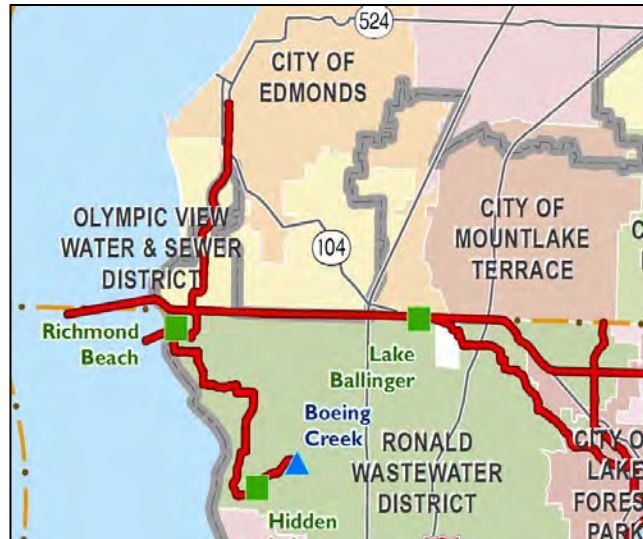
Olympic View Water and Sewer District

District Type: [Utility District](#)

No. of Customers: [15,000](#)

Definition of side sewer ownership: [Property owners are responsible for maintenance and repair of side sewers to the edge of the right-of-way.](#)

[It is not known if the customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2016](#)

Do the standards meet the intent of King County 2004 standards? [In some instances](#)

Do the standards meet industry I/I best practices? [In some instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [The following provisions are included the District's 5/23/2016 Side Sewer Specification Standard Detail:](#)
 - [“1. All private side sewer construction requires a permit and the payment of a fee. The permit application will require the complete legal description, address, and the dimensions of the property to be served.”](#)
 - [“2. All construction in the public Right-of-Way must be done by a licensed sewer contractor.”](#)
 - [“10. The side sewer shall be inspected by District staff prior to backfilling. The side sewer shall be plugged and tested in the presence of the District Inspector by filling with water or air. Leakage rate shall not exceed 0.31 gal/hour for 4-inch pipe and 0.47 gal/hour for 6-inch pipe, per 100 feet of pipe for water or must maintained 4 pounds of pressure for a minimum of fifteen \(15\) minutes.”](#)
 - [“15. Right-of-Way restoration shall equal or exceed the original condition.”](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

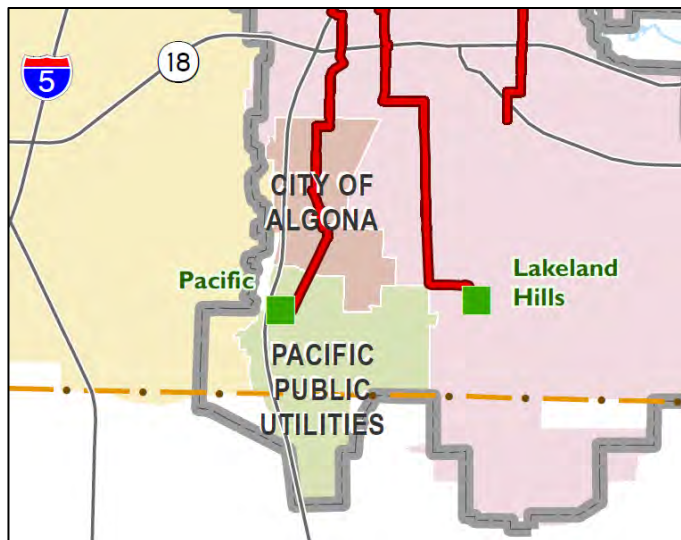
Pacific

District Type: [City](#)

No. of Customers: [2,500](#)

Definition of side sewer ownership: [A side sewer lateral is considered to be that portion of a sewer line that will be constructed between a main sewer line and a property line or easement limit line. Private side sewers are the extension of side sewer laterals located outside of the City of Pacifica](#)

[Customers may not be aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2011](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry best practices? [In most instances](#)

Areas where the standards exceed industry best practices:

- [Locking manhole frame and covers must be provided for all manholes located outside pavement areas \(Drawing No. SS-MH F/C\)](#)
- [The following Standard Drawings are unique and not provided by many other local agencies:](#)
 - [Drawing No. SS-Side-Ditch presents requirement for side sewers construction under a ditch](#)
 - [Drawing SS-SS Exst St presents requirements for new side sewers constructed in an existing street](#)
 - [Drawing No. SS-SS Deep details requirements for deep side sewers](#)

Does the agency have a rehabilitation/replacement program for sewers? [A program is under development](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? No

Are there any known practices that have been implemented that may have a high risk of I/I? No

Has the agency implemented proactive side-sewer I/I-related projects? No

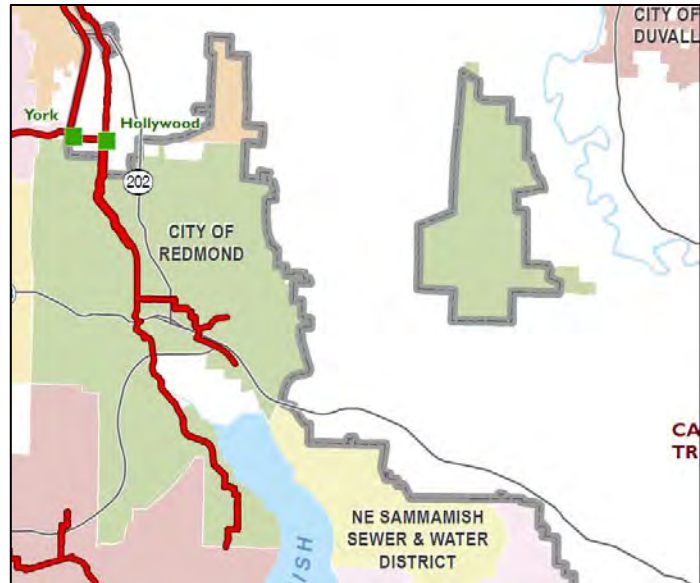
Redmond

District Type: City

No. of Customers: 60,560 (estimated population in 2016)

Definition of side sewer ownership: To Main

It is not known if the customers are aware that they own their side sewer.



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? Yes

Date of last standards: 2016

Do the standards meet the intent of King County 2004 standards? Yes

Do the standards meet industry I/I best practices? Yes

Areas where the standards exemplify industry or local I/I best practices:

- Trees shall not be located within eight (8) feet horizontally from the pipe (2012 Design Requirements Water and Wastewater System Extensions, Section V.7. g.)
- Per 7017.3(6) of the 2016 Redmond Standard Specifications, abandonment of existing side sewer can be accomplished by:
 1. "Capping the side sewer at the property line
 2. Capping the side sewer at the tee on the main
 3. Capping the side sewer as shown on the approved construction drawings"

Does the agency have a rehabilitation/replacement program for sewers? Yes

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? No

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? No

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? No

Are high levels of I/I contributing to any issues experienced in the agency's collection system? No

Are there any known practices that have been implemented that may have a high risk of I/I? No

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

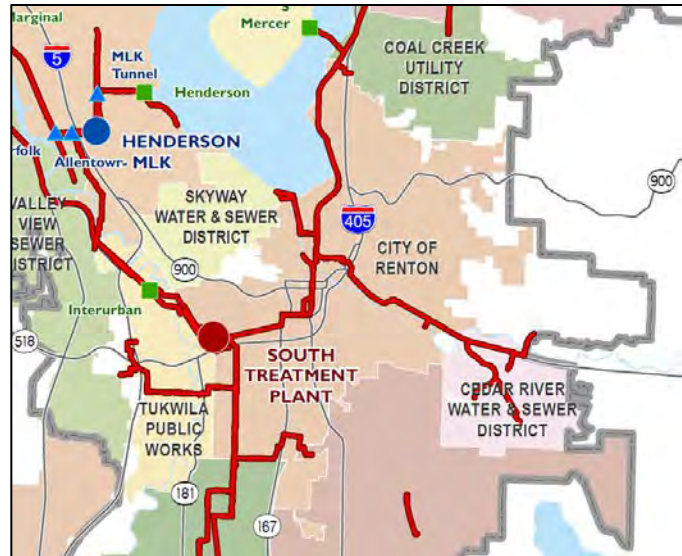
Renton

District Type: City

No. of Customers: 19,000

Definition of side sewer ownership: Property owners are responsible for maintenance and repair of side sewers to the sewer main.

Customers may not be aware that they own their side sewer.



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? Yes

Date of last standards: 2016

Do the standards meet the intent of King County 2004 standards? Yes

Do the standards meet industry I/I best practices? In most instances

Areas where the standards exemplify industry or local I/I best practices:

- As shown on Standard Plan 401, all manhole covers must be locking lids.
- Per Section 4-6-040 F. Public Sewer Standards, 7.: "All joints and connections shall be made gastight and water tight, and installed in accordance with APWA spec. 62-3.98A. Concrete pipe joints shall conform with ASTM C-4423. Ductile iron pipe push-on joints shall confirm with ANSI A-21.11. PVC pipe joints shall conform with ASTM D2680. Other jointing materials and methods may be used only by written approval of the Utilities Engineer."
- Section 4-6-040F.13. states that old building sewers may be used in connection with new buildings only when they are found, on examination and tests by the Utilities Engineer, to meet all City requirements.

Does the agency have a rehabilitation/replacement program for sewers? Yes

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? Yes

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? Yes

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? No

Are high levels of I/I contributing to any issues experienced in the agency's collection system? No

Are there any known practices that have been implemented that may have a high risk of I/I? [Yes, basement and foundation drains connected to the sanitary sewer system](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

Ronald Wastewater District

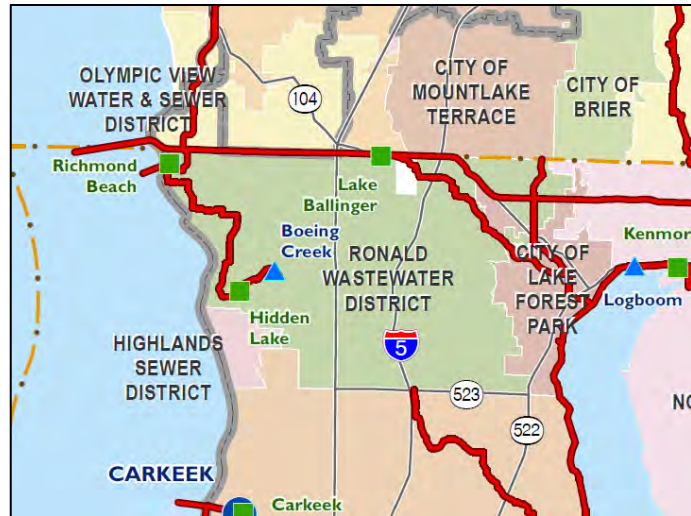
District Type: [Utility District](#)

No. of Customers: [16,000](#)

Definition of side sewer ownership:

[Property owners are responsible for maintenance and repair of side sewers to the edge of the right-of-way.](#)

[It is not known if the customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2014](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [In some instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [As stated in Section C of the District's Engineering and Construction Manual, "when an existing side sewer is to be reused after being disconnected or abandoned, the side sewer, the stub in the right of way, and the connection to the main shall be telespected \(TV inspected\) to determine the integrity and condition of the lines. If the District determines the side sewer, stub, or tee connection is/are deteriorated, structurally unsound, cracked, leaking, or shows other indications that the useful life of the side sewer, stub, or tee connection is/are short, the side sewer, stub, and/or tee shall be replaced at the property owner's expense."](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [Yes; in addition, side sewers are replaced as part of sewer main replacement projects](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [Yes, sump pump and roof/floor drains connected into the sanitary sewer system](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes](#)

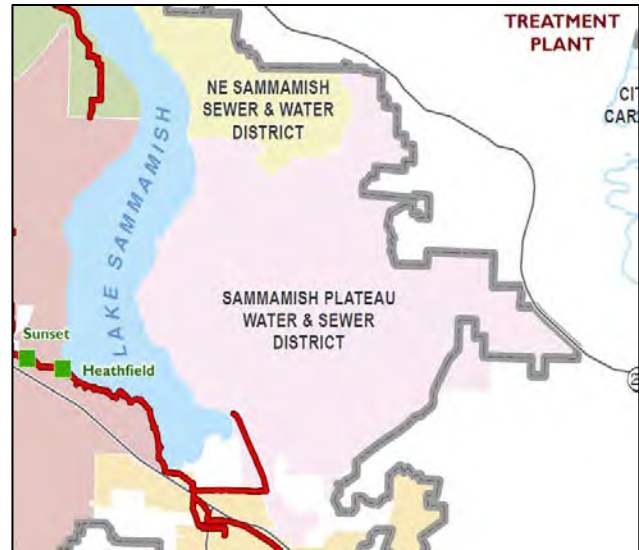
Sammamish Plateau Water and Sewer District

District Type: [Utility District](#)

No. of Customers: [25,000](#)

Definition of side sewer ownership: [Property owners are responsible for maintenance and repair of side sewers to the edge of the right-of-way.](#)

[It is not known if the customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2011](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [Yes](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Article III of the District's 2010 Side Sewer Regulations \(SSR\) details the requirements for obtaining side sewer permits](#)
- [SSR Article IV details the District's requirements for side sewer contractor licensing](#)
- [SSR Article V is related to side sewer contracts between property owners and licensed Side Sewer Contractors](#)

Does the agency have a rehabilitation/replacement program for sewers? [A program is under development](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

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Seattle

District Type: [City](#)

No. of Customers: [662,400](#)
(estimated population in 2015)

Definition of side sewer ownership: [Property owners are responsible for maintenance and repair of side sewers to the sewer main.](#)

[It is not known if the customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2016](#)

Do the standards meet the intent of King County 2004 standards? [Unable to determine](#)

Do the standards meet industry best practices? [Unable to determine](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes, including Broadview Pilot Project](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [Yes](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [Yes; disconnection incentives as part of the Broadview Pilot Project](#)

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Skyway Water and Sewer District

District Type: [Utility District](#)

No. of Customers: [4,000](#)

Definition of side sewer ownership:
[Property owners are responsible for maintenance and repair of side sewers to the sewer main.](#)

[It is not known if the customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2011](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [Yes](#)

Areas where the standards exemplify industry or local I/I best practices:

- [The District has a comprehensive side sewer program that is outlined in the Side Sewer Regulations. These regulations include procedures for obtaining a side sewer permit, construction requirements and inspection.](#)
- [The District's Guidelines for Construction of Water and Sanitary Sewer Facilities \(WSG\) could serve as a model for organization of standards and policies](#)
- [WSG Section 3.3.5 details the District's requirements for vacuum testing manholes](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [Yes; in addition, side sewers are replaced as part of sewer main replacement projects](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes; evaluate pump station run times for general trends](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system?
[Unsure](#)

Are there any known practices that have been implemented that may have a high risk of I/I? No

Has the agency implemented proactive side-sewer I/I-related projects? No

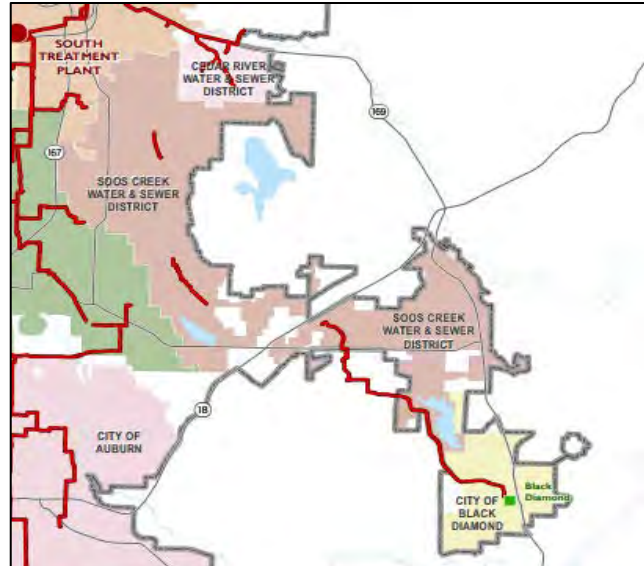
Soos Creek Water and Sewer District

District Type: [Utility District](#)

No. of Customers: [37,000](#)

Definition of side sewer ownership: [The District owns and maintains from public sewer to property line \(termed the "stub service"\). Lot Owner owns and maintains side sewer from property line to building \(Detail S-8\).](#)

[Customers may not be aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2011](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [Yes](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Manholes must have locking lids, rubber gasket joints, and all manhole joints and pick holes must be sealed from the inside and outside with a sand and Portland cement concrete mix \(Sewer Design and Construction Standards \(SDCS\) Chapter 7 C.3\). In unimproved areas, manholes must have a collar that slopes away from the manhole rim.](#)
- [Side Sewer Specification 10 outlines unauthorized connections and the monetary and other penalties associated with an illicit connection. It is also stated that the driver for these enforcement actions is inflow and infiltration prevention.](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [Yes; in addition, side sewers are replaced as part of sewer main replacement projects](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes; evaluate lift station run times](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [Yes, known from lift station run times](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

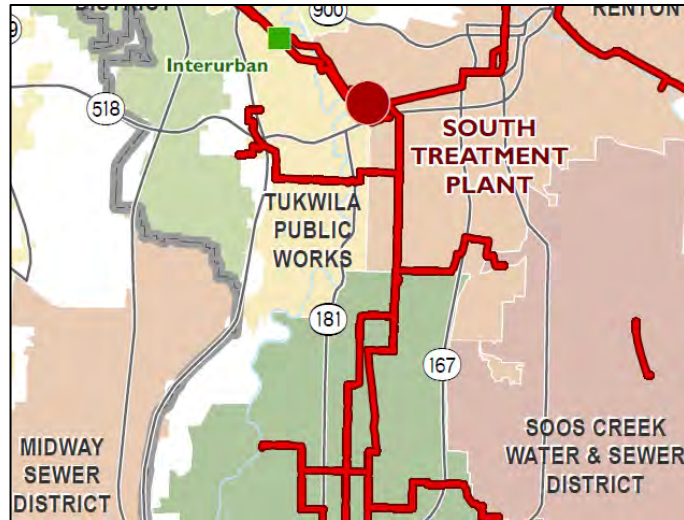
Tukwila

District Type: City

No. of Customers: 2,000

Definition of side sewer ownership: The property owner maintains the side sewer connection from the public main to the building (8.1.1 B).

It is not known if the customers are aware that they own their side sewer.



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? Yes

Date of last standards: 2009

Do the standards meet the intent of King County 2004 standards? Yes

Do the standards meet industry I/I best practices? Yes

Areas where the standards exemplify industry or local I/I best practices:

- Water testing is required on every sanitary side sewer installation. The side sewer must be water tight to 6-feet of head from the test tee (Sewer Standards (SS) 8.2.3.1)
- Approved manhole channels must be prefabricated fiberglass/channel inserts (SS 8.3.2E)
- All joints must be fitted with rubber gaskets and grouted. All lifting eye holes must be grouted (Detail SS-04 & SS-06 for manholes)

Does the agency have a rehabilitation/replacement program for sewers? Yes

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? No

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? Yes; in addition, there are old pipes in the industrial area of the system that have been eroded from chemicals

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? No

Are high levels of I/I contributing to any issues experienced in the agency's collection system? No

Are there any known practices that have been implemented that may have a high risk of I/I? No

Has the agency implemented proactive side-sewer I/I-related projects? Yes

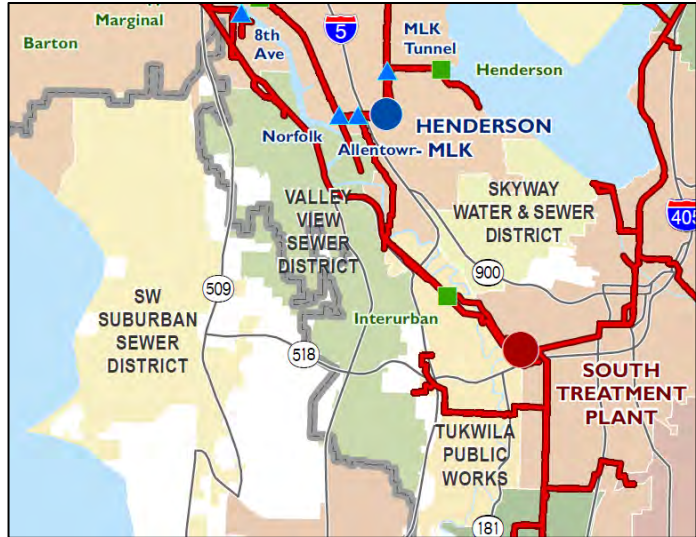
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Valley View Sewer District

District Type: [Utility District](#)

No. of Customers: [8,000](#)

Definition of side sewer ownership: [The limit of responsibility of the Valley View Sewer District shall be maintenance of the Public Sewer. Side Sewers shall be maintained by the Property Owners served. \(SSR 1972, 2.01\). The words "Side Sewer" shall mean a conduit extending from the plumbing system of a structure to and connecting with a Public or Private Sewer. \(SSR 1972, 1.09\).](#)



[It is not known if the customers are aware that they own their side sewer.](#)

Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2015](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [Yes](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Detail 7 requires a pre-fabricated manhole base with glass fiber supported plastic liner by Predl Systems, and gasketed connections.](#)
- [Detail 11 for manhole frames in gravel includes an apron to promote drainage away from manhole cover.](#)
- [A timber baffle / hill holder design is provided in Detail 17.](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [Yes; in addition, side sewers are replaced as part of sewer main replacement projects](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [Yes, especially in older areas with concrete sewers](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [Yes; tracking flow at 18 pump stations](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [Yes, capacity-related issues](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)

Woodinville Water District

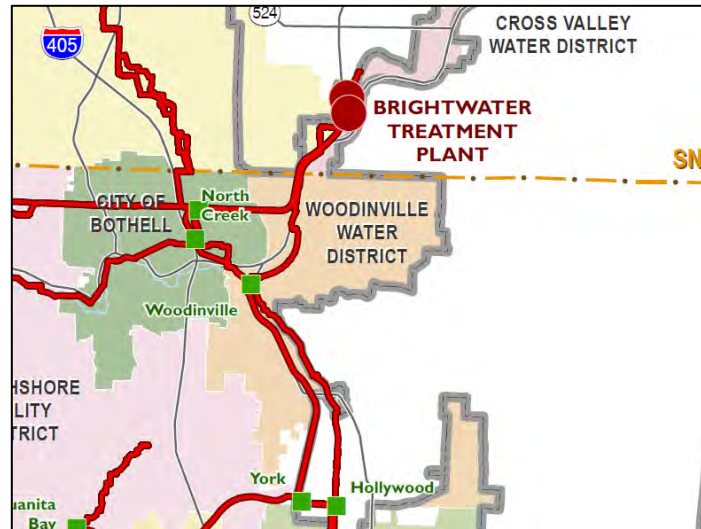
District Type: [Utility District](#)

No. of Customers: [3,000](#)

Definition of side sewer ownership:

[Property owners are responsible for maintenance and repair of side sewers to the sewer main.](#)

[It is not known if the customers are aware that they own their side sewer.](#)



Existing Sewer and Side Sewer Standards Summary:

Are sewer and side sewer standards in place? [Yes](#)

Date of last standards: [2017](#)

Do the standards meet the intent of King County 2004 standards? [Yes](#)

Do the standards meet industry I/I best practices? [In some instances](#)

Areas where the standards exemplify industry or local I/I best practices:

- [Easement Criteria includes landscaping limitations in easement, no utilities under sidewalks, and paved access to manholes for maintenance \(General Specifications \(GS\) GP-46 and C-5, and Standard Detail 23 O&M Vactor Access Road\). No manhole in sidewalks \(GS CS-5\)](#)
- [Asbestos Control measures for addressing asbestos cement \(AC\) pipe repairs and replacement \(GS GP-46\)](#)
- [Manholes must be watertight. In areas of high groundwater, rise seams, pickholes, and adjustment rings must be sealed with Wrapidseal™ or NPC external joint wrap \(General Sewer Note \(GSN\) 18\). Manhole joints must be watertight and sections shall be jointed with flexible joint and mortar \(GS MS-5e\). Manholes are equipped with locking lids \(GS MS-5f\). Manhole lift holes must be grouted \(GS CS-5\). Manhole rims in paved roadways must be tilted to match grade. In unpaved areas, manholes must have a collar sloped away from the rim.](#)
- [PVC sewer mains must not have a pipe joint within 10-feet of a manhole \(GSN 19\).](#)
- [Vegetation and trees are required to be at least 30-feet away from public sewers \(GS C-2\).](#)

Does the agency have a rehabilitation/replacement program for sewers? [Yes](#)

Does the agency have a private side sewer program or any mechanisms in place to inspect, maintain, or replace side sewers? [No](#)

Are there regions within the agency's service area that may have been constructed to significantly different standards than the ones currently in place? [No](#)

Inflow and Infiltration (I/I) - Related Activities:

Has the agency evaluated I/I independently of King County Initiatives? [No](#)

Are high levels of I/I contributing to any issues experienced in the agency's collection system? [No](#)

Are there any known practices that have been implemented that may have a high risk of I/I? [No](#)

Has the agency implemented proactive side-sewer I/I-related projects? [No](#)