City of Sumas
Request for Council Action

Meeting Date: February 10, 2025

Subject:
Statement of Qualifications - bhc Consultants
Sewer System Expansion Study

Department: Planning Department **Prepared By:** Michelle Quinn

Agenda Location: ☐ Public Hearing ☐ Old Business ☑ New Business
☐ Staff Reports

Brief Summary:

RFQ's were requested, we received one statement for qualifications; for a study of future expansion of our sewer system.

The cost of this study is covered by the Washington State Department of Commerce Grant.

Budget Implications: ☑ Current Budget ☐ New Budget Request ☐Non-Budgetary

Staff Recommendation:

Staff respectfully recommends that the City Council accept the qualifications from bhc Consultants to draft a study of our sewer system for future expansion

Reviewed By:

Mayor: Bosch

Finance Director: Mollie Bost

City Clerk: Michelle Quinn

Public Works Director: Sunny Aulakh

1155 N. State Street, Suite 700
Bellingham, Washington 98225

p. 564.225.3995

COVER LETTER

February 3, 2025

Ms. Michelle Quinn, City Clerk
City of Sumas
433 Cherry Street/ PO Box 9
Sumas, Washington 98295
Electronically submitted via email to: mquinn@cityofsumas.com, saulakh@cityofsumas.com

Subject ▪ Statement of Qualifications for Sewer System Expansion Study

Dear Ms. Quinn:

BHC Consultants, LLC (BHC) is excited about the prospect of working with the City of Sumas (City) to draft a technical study for future expansion of the City's sewer system to outer-lying areas. In late 2022, we enjoyed working with the City on the 8-inch conveyance pipe evaluation. We have assembled a highly qualified team who specialize in sewer expansion planning and design, understand the City's goals, objectives, and standards, and have an extensive history of successfully completing these types of projects. With BHC, you receive a team of leaders in their respective disciplines who are well suited for this opportunity for the following reasons:

- **Knowledgeable Project Team.** Serving as the BHC team's project manager, I will be responsible for schedule, budget, oversight, and project delivery. I have assembled a talented team that is experienced in sewer planning and design, and who are available to provide the necessary expertise to meet the City's needs and expectations on this project. Our team is ready and available to start immediately as we know this has a short schedule with your funding needing to be spent by June 30, 2025.
- **Project Approach.** BHC researches and applies industry standards and guidelines on our projects. With a watchful eye to industry trends and emerging technologies and techniques, we aim to produce sewer expansion studies and plans that meet DOE requirements, support the City's mission, and can be folded into your City Comprehensive Plan. Our staff has an in-depth understanding of the codes, standards, and regulatory expectations needed to successfully complete the project. Our experience in preparing studies for both DOE approval and City Comprehensive Plan inclusion will allow us to create a scope with the proper level of effort to meet your expectations.
- **Previous Success.** Our project team understands the challenges and issues the City encounters while providing valuable sewer service to its customers. Over the past 18 years, BHC has coordinated, written, and received DOE approval for more than 50 sewer comprehensive plans, and we have developed a proven system for getting plans through the DOE approval process. This knowledge will allow us to deliver a study for your City Comprehensive Plan that has the proper foundation for DOE approval if the City goes forward with expansion in the future.

Regarding the request in the RFQ for a list of principals, BHC's principals are James (Jim) R. Gross, PE, PMP, our president, and Cameron Ochiltree, PE, our director of engineering. Both Jim and Cameron bring more than 50 years of civil engineering consulting expertise on sewer system studies and planning for public sector infrastructure projects.

We are excited about the opportunity to work with the City and look forward to hearing from you. If you have any questions or require additional information, please feel free to contact me at our Bellingham office address above, via email at mmichalak@bhcconsultants.com, or phone at 564.225.1029.

Respectfully submitted,

BHC Consultants, LLC

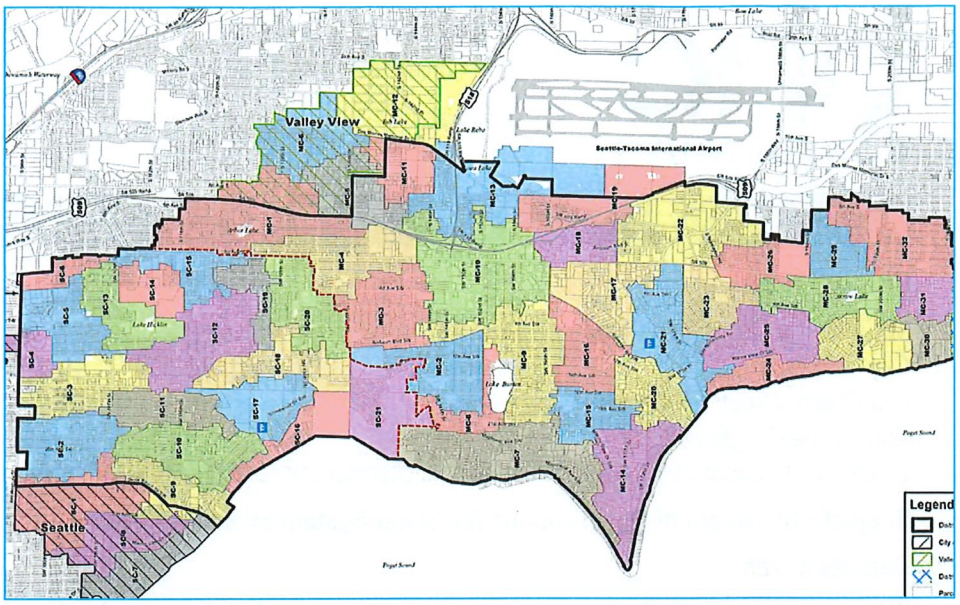
Michael Michalak

Michael Michalak, PE ▪ Project Manager

Jon Davies ▪ Principal in Charge

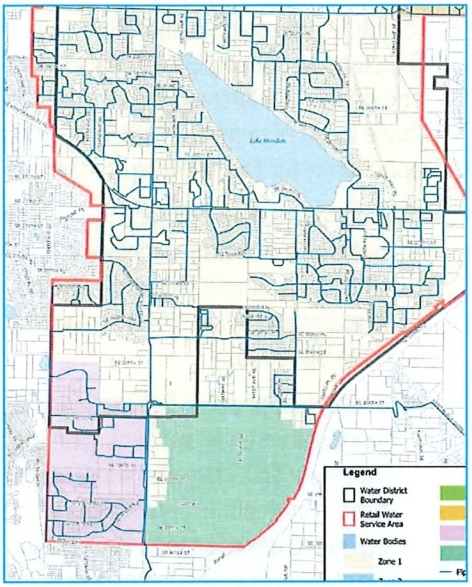
February 3, 2025

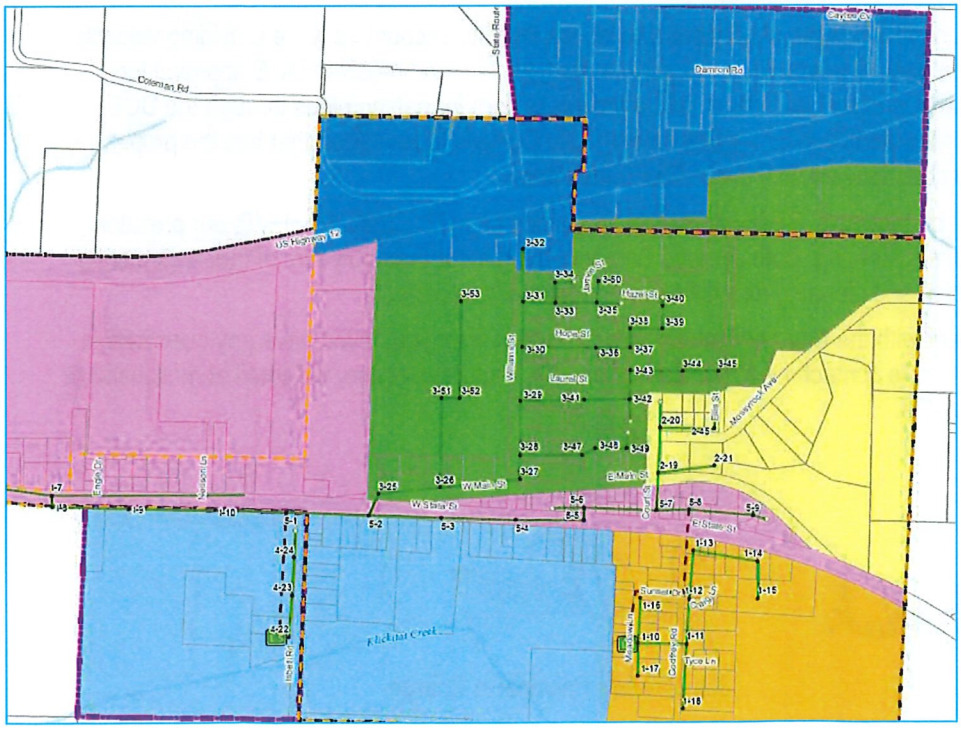
Statement of Qualifications



City of Sumas

Sewer System Expansion Study





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Bellingham, Washington 98225

P. 564.225.3995

bhc CONSULTANTS

www.bhcconsultants.com

EXPERIENCE DRAFTING TECHNICAL STUDIES FOR SEWER EXPANSION

BHC Consultants, LLC (BHC), is an employee owned and managed consulting engineering, hydraulic modeling, planning, and code consulting firm with offices in Bellingham, Seattle, and Tacoma, Washington.

BHC is comprised of more than 80 engineers, planners, code compliance specialists, and support personnel. Our staff is one of the most experienced in municipal engineering infrastructure design and construction in the Northwest. Through successful project performance with the City and surrounding municipalities, we have a keen understanding of local agency guidelines and standards. Our experience and attention to detail provides efficient document preparation and allows for a more streamlined review by our clients. Our goal is complete client satisfaction.

Sewer Plan Expertise

BHC's primary focus over the last 18 years has been on sewer projects, including planning, design, and construction services for all elements of the sewer industry. BHC staff have authored more than 50 sewer system plans for clients in the state of Washington. In addition to having unique capabilities in the development of comprehensive sewer plans, we have provided sewer system planning, design, and construction management services for special purpose districts and municipalities of varying sizes.

BHC staff have been involved in 50+ sewer system plans successfully approved by regulatory agencies in Western Washington.

Knowledge of Regulatory Requirements of the Washington State Department of Ecology for Sewer Systems

Our sewer plans are prepared in accordance with the Ecology Criteria for Sewage Works Design (Orange book) and State Department of Health's water system planning handbook and design manual recommendations when we put together a sewer plan. We understand this project is more of a high-level study, but having a study with DOE regulations in mind will benefit the City if they decide to move forward with the expansion.

To make sure it is easy for regulators to check the box on the plan requirements, we include a table in the executive summary listing all the requirements for DOE along with a reference for where we have addressed that requirement in the plan. For sewer plans, our team will often invite DOE permit writers to attend our progress meetings during the project so they can give input on what still needs to be addressed. We have found doing these things with the regulators before and during these projects saves time in the approval phase. BHC stays up to date on all new regulations through our designated sewer sector leads who stay on top of new regulations and disseminate information to staff.

Previous Experience and Operational Support Working with Local Municipalities, Special Utility Districts and/or Public Agencies with Utilities

BHC has extensive experience working with numerous other local special utility districts and public agencies with utilities, including providing operational support as necessary. Representative clients include:

- City of Lynden
- City of Everson
- City of Nooksack
- Clearview Water District
- Alderwood W/WWD
- City of Bothell
- Mukilteo W/WWD
- City of Everett
- City of Lynnwood
- City of Edmonds
- Northshore Utility District
- Northshore Utility District
- North City Water District
- North Perry Avenue Water District
- Snohomish County PUD No. 1
- King County
- Seattle Public Utilities
- City of Bellevue
- City of Monroe
- City of Mossyrock
- Southwest Suburban Sewer District
- Kitsap County
- City of Bainbridge Island
- City of Enumclaw
- City of Port Orchard
- King County
- Soos Creek Water and Sewer District
- City of Bellevue
- City of Duvall
- City of Fircrest

Experience with Preparing and/or Updating Utility Comprehensive Plans

BHC has successfully prepared and updated numerous utility comprehensive plans for a multitude of clients. Representative plans include:

- City of Monroe: 2015 and 2024 Periodic Comprehensive Plan Updates
- Alderwood Water and Wastewater District: S2102 Sewer Capacity Study
- Alderwood Water and Wastewater District: Water System Modeling Program
- City of Marysville: Sanitary Sewer Plan
- City of Lynnwood: Comprehensive Sewer Plan
- City of Lynnwood: Alderwood Mall Subarea Utilities Survey
- City of Kirkland: Kirkland Sewer Comprehensive Plan
- City of Mossyrock: General Sewer Plan
- Midway Sewer District: General Sewer Plan Update
- City of Puyallup: Comprehensive Sewer Plan Update
- City of Redmond: 2023 Wastewater System Model and Plan Updates
- Cedar River Water and Sewer District: 2017 Water and Sewer Comprehensive Plans
- Clark County Regional Wastewater District: General Sewer Plan Update
- Soos Creek Water and Sewer District: Water and Sewer Plan Update
- Southwest Suburban Sewer District: General Sewer Plan Update
- City of Lynden: General Sewer Plan Update
- City of Everson: General Sewer Plan Amendment
- City of Nooksack: General Sewer Plan Amendment

Experience with Preparing and/or Updating City Comprehensive Plans

BHC has successfully prepared and updated City Comprehensive Plans during the current comprehensive plan cycle. This experience allows us to give you exactly what you need to meet the needs of your comprehensive plan. The following is the list of clients where we did their update or supported City Staff in completing the plan:

- City of Lynden
- Cit of Enumclaw
- City of South Cle Elum
- City of Pacific
- City of Fircrest
- City of Roy
- City of Napavine
- City of Mossyrock (provided support to City staff)
- City of Winlock (provided support to City staff)
- City of Langley (Climate Element)
- City of Leavenworth (Housing and Land Use Appendices for Comp Plan)

Scoping, Design and Construction of Sewer Infrastructure Capital Improvements, including Linear Pipe Projects

BHC's sewer pipeline engineering and design encompasses gravity sewers, force mains, inverted siphons, grinder pump/ pressure sewers, and vacuum sewers. Pipeline design is usually a two-phase process involving preliminary design followed by final design. Depending on the needs of the project, BHC will prepare a preliminary design report or technical memorandum that develops, considers, evaluates and presents: design flows; hydraulic analyses; potential alignment and material alternatives and considerations; appurtenances; costs; project implementation (environmental conditions, issues and permits, design and construction issues and requirements and schedule); and final design requirements. In essence, the preliminary design report establishes the basis of design and can be an important first step to ensure the project successfully meets the needs of our client.

The design of sewer pipelines is not included as part of this study, but typically involves surveying and mapping, geotechnical engineering, environmental assessments and permitting. If portions of the project are not within the rights of way or existing easements, easement acquisition will be required. Depending on the project's location, specialty consultants may be required, such as traffic engineers, real estate appraisers, and property acquisition consultants. Some of this information and these investigations will be obtained or done during preliminary design while other or more detailed investigations and efforts will be deferred until final design. BHC has worked with and established solid working relationships with many consultants in Western Washington. BHC is well versed in coordinating and orchestrating the work of multiple consultants on a design team.

The design of sewer pipelines often times involves the use of trenchless technologies, such as jack and bore, horizontal directional drilling, microtunneling and other methods to cross underneath streams, major roads and highways, railroads and wetlands. Existing pipelines may also be replaced or upgraded via pipe bursting or cured-in-place-pipe (CIPP). BHC staff are knowledgeable in the different technologies and understand the conditions and requirements.

In addition to pipeline and conveyance planning we also have experience with siting sewer lift/pump stations when looking at sewering new areas. Topography of the service area determines the best place to site a station. Our team has sited many lift/ pump stations for our clients and understand what factors are most important to consider in regard to where to place a station to best serve the system and convey the flows to the treatment plant.

Familiarity with Sewer Studies

The BHC team assembled for this project has worked on similar efforts throughout their career, including ongoing and recently completed sewer comprehensive plans. Our extensive experience performing sewer studies will support the City's sewer utility updates, operations, and expansion.

Sewer Expansion Study Considerations:

- Purpose and Need for Plan
- History and Ownership
- Service Boundaries and Maps
- Existing Sewer System and Proposed Sewer Expansion Descriptions
- Proposed/Future Sewers
- Proposed Lift Stations and Force Mains
- Topography and Elevations
- Sensitive Areas
- Nearby Water Facilities
- Population Trends/Forecasts
- Land Use Designation and Zoning of the Proposed Sewer Expansion Area
- Planning Level Cost Estimates

QUALITY OF PREVIOUS PERFORMANCE

Similar Project Experience

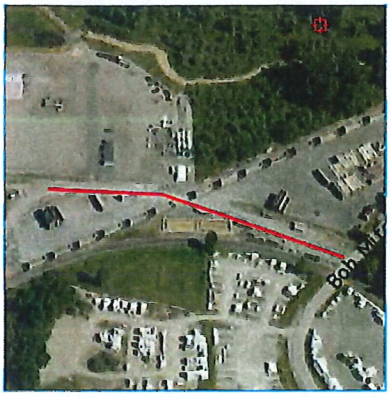
The BHC team provides its clients with high quality professional engineering services delivered on time and within the allotted budget. Our project management philosophy is founded on our belief that we should be more than a consultant to our clients; our commitment is to be a project partner.

We manage our projects on a daily basis, monitoring the scope, milestones, and budget, while searching for opportunities that may enhance the value of the work that is ultimately delivered. The following projects demonstrate our team's previous work on developing and updating sewer system plans in the State of Washington.

City of Sumas: 8-inch Conveyance Pipe Evaluation

Similar Project Components

- Technical engineering evaluation.
- Sewer evaluation project with the City of Sumas.



BHC was contracted by the City of Sumas to evaluate the condition of an 8-inch sewer conveyance pipeline under a heavily traveled gravel driveway located on a private industrial site. The City was concerned that the pipeline had not been installed correctly because unsuitable material was used during the open cut trenching for the installation of the pipeline and there were concerns that the pipeline was sagging in multiple places. Installed between 2014 to 2015, the property owner was to use road base and asphalt, but that part of the project was not completed, and it was left as a gravel driveway. The owner used this driveway to reload garbage onto rail cars with heavy forklifts and semi-trucks.

BHC reviewed and analyzed the City's August 2021 CCTV inspection report, video, and photographs performed on the pipeline. BHC provided a summary of our observations and recommendations regarding the installation and capacity of the 8-inch pipe. From the CCTV video review, the primary defect in the pipeline were sags spanning 5 to 10 feet and the maximum sag depth measured was approximately 1-inch. Many of the sags are located near manholes, which are the most common location for sags to occur and is usually indicative of improper compaction during manhole installation. A rolled joint gasket was also noted and is a common source of infiltration in sewer systems. All other joints looked acceptable. The pipe itself did not appear damaged (i.e., cracked, or misshaped) along the entire inspected stretch.

BHC concluded that the issues with the 8-inch sewer were mostly likely caused by issues during installation, however without post-installation CCTV footage, it was not possible to make a definitive conclusion on whether the pipe issues were solely caused during installation or if the heavy traffic loading also contributed.

City of Lynden: General Sewer Plan Update

Similar Project Components

- Updated population projections, land uses, and associated wastewater flows.
- Pump station condition evaluations.
- Complete hydraulic and process capacity evaluation of the WWTP, including condition assessment.
- Prepare 6- year and 20-year CIP.

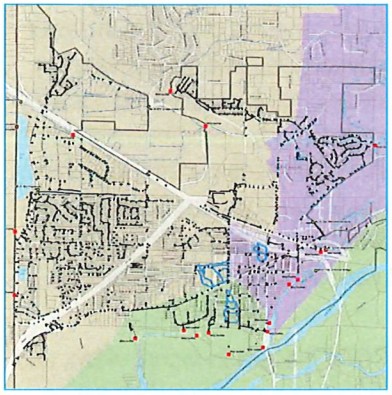
The City of Lynden operates a wastewater collection utility, serving approximately 19,500 customers throughout its 2,879-acre Urban Growth Area. The City's wastewater

collection facilities include 57 miles of gravity sewers, over 4 miles of sewer force mains, and 14 pump stations that convey wastewater to the City's Wastewater Treatment Plant (WWTP). The WWTP is a conventional secondary treatment plant utilizing activated sludge and extended aeration. The WWTP process also includes aerobic solids digestion, solids composting, effluent filtration, and effluent ultra-violet (UV) disinfection. Treated wastewater is discharged to the Nooksack River. Biosolids from the wastewater treatment process are either used to produce compost onsite for residents and agricultural uses or shipped for land application in Eastern Washington. BHC completed the City's General Sewer Plan Update in October 2016.

City of Monroe: 2015 and 2024 Periodic Comprehensive Plan Updates

Similar Project Components

- Coordinated planning across water and wastewater utilities.
- O&M program.
- Prioritized Capital Improvement Program.
- WSP aligned with 2020 Department of Health Guidebook.



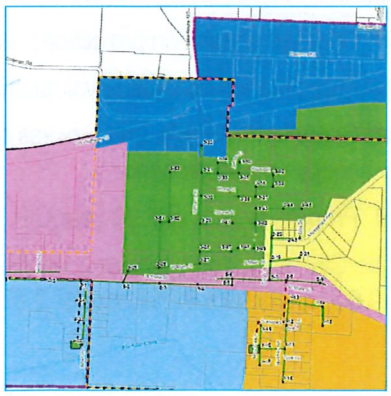
BHC was retained to update the Water General Plan, the Sewer General Plan, and the Stormwater Comprehensive Plan concurrently so that all three documents would be completed to coincide with the City-wide Comprehensive Plan. In compliance with the state mandated schedule to update City-wide Comprehensive Plans, it was necessary to update all utility planning. The update to the City's Comprehensive Plan was mandated by RCW 36.70A. 130 (5a) and was submitted in September 2024 to the Washington State Departments of Commerce, Transportation, Health, and Ecology, as well as Snohomish County, local agencies, and a series of public comment sessions. The utility system plans were incorporated and appended to the Comprehensive Plan and supported an update for the City's Environmental Impact Statement. This approach allowed for greater consistency across plan documents in maps, writing, and referencing than is typically possible. The detailed analyses and information for each utility were presented as a technical appendix. A hydraulic analysis was conducted of the entire water distribution, sewer collection system, and portions of the stormwater system to identify deficiencies and define required improvements. The requirements of the system plans varied by utility and in the case of water and wastewater, those requirements are defined in WAC 246-290-100 and WAC 173-240-050, respectively with more general requirements for the stormwater plan.

BHC also performed the 2015 and 2009 update to the Monroe Stormwater System Plan and has submitted the new concurrent updates to the Sewer, Water and Stormwater Plans along with the City-wide Comprehensive Plan in September of 2024.

City of Mossyrock: General Sewer Plan

Similar Project Components

- Flow projections.
- Hydraulic modeling.
- Capital improvement identification.
- Financial plan.



The City of Mossyrock is a small residential community and recreational destination near Mayfield Lake. The City has a population of around 900 that is anticipated to grow by 15% in the next twenty years within an urban growth area (UGA) of just over 560 acres. BHC lead the preparation of a general sewer plan for the City which addresses wastewater collection and treatment facilities owned and operated by the City. The planning effort included modeling the existing wastewater collection system using the Mike+ modeling platform. The modeling evaluated projected populations to identify

future system requirements. The plan evaluated alternatives and identified capital improvements to address those future system requirements and incorporated a financial plan to address funding for the required capital improvements through adjustments to rates and connection fees.

City of Puyallup: Comprehensive Sewer Plan Update

Similar Project Components

- Identification of unsewered areas and layout of preliminary sewer.
- Rate study and analysis.
- Adopted Comprehensive Sewer Plan.
- Prioritized Capital Improvement Plan.

The City of Puyallup's previous Comprehensive Sewer Plan did not adequately address several key elements which affected the City's ability to effectively manage their wastewater utility. BHC was retained to develop a Comprehensive Sewer Plan that focused on creating a hydraulic model to accurately identify and forecast capacity issues in the City's system. Associated with this effort was the refinement of the I/I contribution that entered the collection and conveyance system. Other major elements of the work included: development of a 6- and 20- year CIP that was iterated to meet funding availability; wastewater treatment plant chapter planning; population and employment forecasting; identification and layout of unsewered areas; and preparation of planning level costs used for rate analysis.

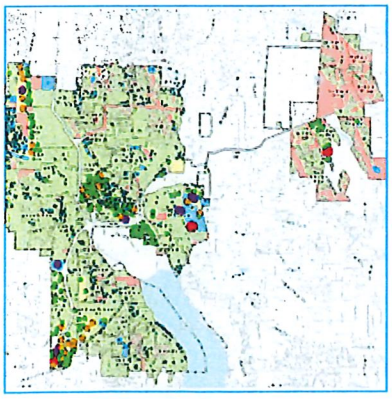
City of Redmond: 2023 Wastewater System Model and Plan Updates

Similar Project Components

Population and flow projections.

Planning level cost estimates.

City staff and council workshops.

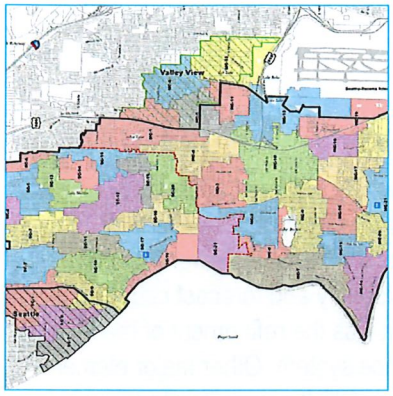


BHC worked with the City of Redmond to update their Sewer Comprehensive plan in 2021 for Department of Ecology approval. New planning data to support the City's zoning changes as part of their 2050 Comprehensive Plan warranted revisions to the Sewer Comprehensive Plan in terms of system wide capacity analysis and basin specific alternatives evaluation. BHC updated the hydraulic and hydrologic MikeUrban sewer model based on recently completed and planned wastewater projects and then calculated and input new flow loading assumptions into the model based on new zoning changes. The model was used to assess current capacity deficiencies, and to size wastewater facilities to meet near-term and long-term growth potential. City-led capital improvement projects and developer-led improvement projects were distinguished to show projects that will be triggered and paid for by development. BHC performed additional hydraulic analyses to evaluate alternatives for other special interest sub-basins, including the main City Center area, that included storage, pumping, basin rerouting, operational improvements, and preliminary feasibility analysis to support discussions with adjacent service providers and further identify potential alternatives to alleviate deficiencies.

Southwest Suburban Sewer District: General Sewer Plan Update

Similar Project Components

- Flow projections.
- Hydraulic modeling.
- Capital improvement identification.

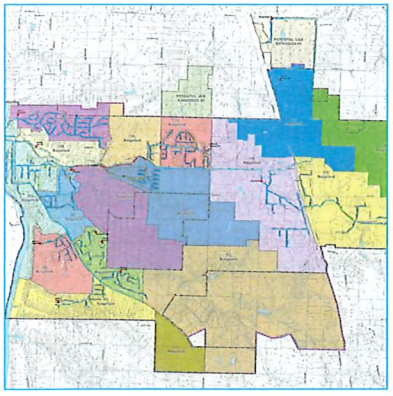


BHC prepared the 2010 Comprehensive Sewer Plan for the Southwest Suburban Sewer District and recently submitted an updated plan for approval in 2024. BHC also serves as an on-call engineer for the District providing engineering services for capital improvement projects and developer extension reviews. The District serves over 50,000 people from White Center through Burien and into Normandy Park, making it one of the largest special service Districts in the state. BHC originally developed hydraulic models for the District's Salmon Creek and Miller Creek collection systems which feed into their two wastewater treatment plants, and then updated the models to the most recent MIKE+ modeling software. The models were used to identify capacity limitations using a dual surcharging criteria to allow for moderate surcharging in deep sewered areas. The capacity analysis was used for multiple planning horizons to identify, develop, and prioritize capital improvement projects. Improvements were ranked based on their severity and likelihood of occurrence to support short- and long-range planning efforts. BHC continues to provide on-call modeling services to the District. The wastewater plans are prepared to comply with Washington Department of Ecology requirements.

Clark Regional Wastewater District: General Sewer Plan Update

Similar Project Components

- Complex regional hydraulic model development and calibration.
- Wastewater utility planning.
- Developed and updated policies regarding the wastewater utility.

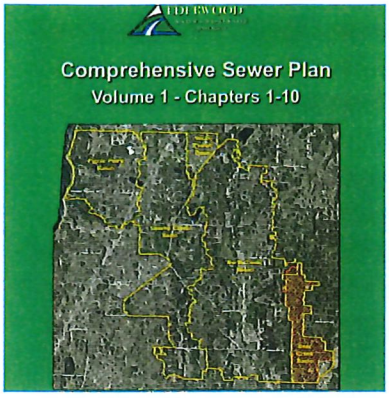


Clark Regional Wastewater District (District) is one of the largest sewer districts in the state, currently providing wastewater service to nearly 100,000 people, 30,000 employees, 25,000 students, and 300 acres of industrial users. The District service area extends for more than 50 square miles and includes all or portions of three cities (Cities of Ridgefield, Battle Ground, and Vancouver) and unincorporated Clark County. The District owns and maintains more than 600 miles of sewer pipes, 60 pump stations, and 800 individual STEP systems. Growth and development within the District service area have been very robust and among the healthiest in the state. As a result, an aggressive Capital Improvements Program (CIP) to support this economic development and population growth was developed as part of the Comprehensive General Sewer Plan (Plan). The Plan was used as an effective tool in sizing and extending the sewer system to unserved areas while accommodating growth in existing service areas. Major elements of the Plan included: refining the long-range population and employment projections for the City's service area; projecting future wastewater generation by basin throughout the planning horizon; updating the District's hydraulic model that is calibrated to actual rainfall data and flow records for the service area; and preparation of an accurate, feasible, and defensible CIP.

S2102 Sewer Capacity Study, Alderwood Water and Wastewater District

Similar Project Components

- Flow projections.
- Flow data analysis.
- Hydraulic modeling.
- Capital improvement identification.



The AWWD S2102 Sewer Capacity Program included updates to and expansion of the District's existing wastewater collection system hydraulic model to identify and characterize sewer capacity projects; and prepare a prioritized sewer system capital improvement implementation plan. Subsequent phases of the program will include design and implementation of sewer system capital improvement projects. The modeling includes development of new collection system models using InfoWorks ICM modeling software drawing from prior truncated XPSWMM models and District GIS data. Modeling also included development for demand projections through 2050 using population and employment data from the Puget Sound Regional Council, and precipitation scenarios incorporating recent climate change projections to account for changes in precipitation frequency and intensity. The models were calibrated to flow monitoring data and validated performance based on discussions with District staff. The models were used to identify capacity limitations and develop appropriate capital improvements. Risk scoring to evaluate projects based on consequence of surcharge and likelihood of occurrence based on planning scenario were used to provide a preliminary prioritization of projects. The capacity-driven capital improvements were evaluated and prioritized together with non-capacity and non-wastewater projects to provide an integrated capital improvement plan for the District.

ABILITY TO MEET CONTRACT DEADLINES

Project Management, Communication, and Cost Control

Effective and frequent communication is essential for a successful project. We will communicate with District staff via in person and/or virtual meetings, telephone calls, emails, and written documentation. As part of our communication efforts, we will provide documentation of all work products, including assumptions, applicable regulations, calculations, methodology for formulating analyses and decisions, evaluations, recommendations, draft documents, and final documents. A two-week review time is typically incorporated into the schedule to allow for input from District staff on interim or routine submittals. Longer review times are incorporated into the schedule for more significant submittals. Coordination meetings and conversations will be held regularly throughout the project so that information can be presented and discussed, key decisions can be evaluated, and the project scope and schedule can be reviewed and modified as required. Meeting and conversation minutes will be prepared, and the documentation will be distributed to all participants.

Effective project management and cost control is essential to keep the project on schedule and within budget. Michael Michalak, our dedicated Project Manager, has extensive experience managing projects. His regular activities will include monitoring the progress of the work, tracking expenses, verifying that overruns are not occurring, ensuring that sufficient staff are assigned to complete the work, and managing accounting and billing for the project. His extensive working experience with our hydraulic modelers and his understanding of CIP development will aid in identification and prioritization of critical capital projects.

Quality Control

Effective delivery of projects also requires effective quality assurance/quality control (QA/QC). Our team has a documented QA/QC policy in place to ensure our projects are consistently delivered with the desired quality and thoroughness. We believe the QA/QC process starts at project kick-off and is a continuing process through project completion. QA/QC procedures manuals are prepared and followed on a project specific basis. Our QA/QC process always includes a thorough internal review by a senior reviewer who is not directly involved in the development of the project to provide a "fresh set of eyes". These review documents remain in the project file and can be made available for client review at any time. Retention of QA/QC documents will be discussed with the District during scoping for the project. Our assigned QA/QC leaders will be consulted not only at submittal milestones, but also early in the plan development. A table showing our QA/QC process is shown below.

BHC QA/QC Program for Work Products

Deliverables	Responsible Reviewer (Project Manager is Responsible for Engineer's Seal and Delivery)		
	QA/QC Engineer	Word Processor	CAD/GIS Manager
Planning Document • Report • Tech Memo • Letter	• Technical Content • Calculations • Modeling Analysis • Purpose • Conclusions/ • Recommendations	• BHC/Client Standard Formatting • Readability • Table of Contents • Page Referencing • Abbreviations • Sources • Printing/Electronic Versions	• Map/Figure Standard Formatting

REFERENCES

BHC has an excellent reputation for consistently meeting client schedules and providing quality work. With our local staff resources, experienced in-house capabilities, and strong teaming relationships, we can efficiently deliver your project and complete it on time and within budget. We provide the following references for your independent verification of our successes.

City of Lynden: General Sewer Plan Update

Steve Banham, PE, Public Works Director, 360.354.3446, banhams@lyndenwa.org

City of Monroe: 2015 and 2024 Periodic Comprehensive Plan Updates

Mr. Alex Dupey, AICP, Director of Planning Services, MIG, 503.297.1005, extension: 258, alexd@migcom.com

City of Mossyrock: General Sewer Plan

Ms. Angeleetta Hartmann, City Treasurer, 360.983.3300, treasurer@cityofmossyrock.com

City of Puyallup: Comprehensive Sewer Plan Update

Mr. Mark Higginson, Engineer, 253.841.5559 mhigginson@ci.puyallup.wa.us

City of Redmond: 2023 Wastewater System Model and Plan Updates

Mr. Mike Haley, PE, Project Manager, 425.556.2843, mhaley@redmond.gov

Mr. Jeff Thompson, PE, Project Manager, jthompson@redmond.gov

Southwest Suburban Sewer District: General Sewer Plan Update

Mr. Bill Stephani, General Manager, 206.244.9575 extension 1100, bill.stephani@swssd.com

Clark Regional Wastewater District: General Sewer Plan Update

Mr. Shawn Moore, PE, District Engineer/ Assistant Manager, 360.993.8849

S2102 Sewer Capacity Study, Alderwood Water and Wastewater District

Don Ranger, Project Engineer, 425.743.4605, dranger@awwd.com

STAFF READILY AVAILABLE FOR THE PROJECT

The commitment, availability, and expertise of our project team is key to the successful outcome of the tasks assigned under this on-call contract. BHC has assembled a team with extensive experience designing sewer systems. Our team will work closely with City staff to develop practical and cost-effective solutions, and to produce useful and thorough documents that are easy to read and understand. We are well prepared to meet this project's specific needs and will provide the highest level of service and benefits to you. Members of our team have worked together on several projects for the City and other clients, and have developed strong, efficient working relationships. Full resumes for all team members are in the section for Team Member Resumes.

Project Manager ▪ Michael Michalak, PE

Role and Responsibilities. Michael will manage and lead the project team to deliver preliminary and final sewer expansion study technical reports, define the scopes during contract development, facilitate communications, review meetings, and workshops with the City, and ensure project deliverables are completed on time and within budget. Through frequent communications with the project team, Mike will track the progress of the project and identify any issues that arise so they can be addressed promptly and efficiently. Communications with the City will be tailored to your preferences and can include weekly email updates and periodic meetings.

Michael has more than 9 years of civil engineering consulting experience performing design services, construction administration, project management, engineering studies, and construction inspection on a variety of public infrastructure projects. His project work has involved water distribution systems, sanitary collection system improvements, pump stations, stormwater management, road improvements, airport facilities and site developments, as well as some water and wastewater treatment plant upgrades. Michael is proficient in sewer flow and I/I modeling and well versed in pipeline trenchless technologies. Michael is skilled in the following software: ArcGIS, AutoCAD, Bluebeam, EPA SWMM, and Microsoft Project.

Education / License BS Environmental Engineering, University of Michigan, 2015. Professional Engineer: Washington No. 24014126; Michigan No. 6201309853.

Planner ▪ Eli Mulberry, AICP

Role and Responsibilities. Eli will contribute planning expertise to the sewer expansion study by reviewing the City's land use and zoning codes, population growth projections, and the existing comprehensive plan. He will assess planning requirements relevant to the expansion and provide informed recommendations. Additionally, Eli will collaborate with state and local agencies to ensure population forecasts align with the best available data. With a strong understanding of new state housing requirements, he will also evaluate how the sewer expansion may support local residential growth needs and incorporate relevant policy updates where applicable.

Eli has worked on more than 10 multi-faceted land use codes, comprehensive plan, and zoning updates. Through both development regulations and comprehensive plans, his policy analysis and evaluation skills have helped multiple jurisdictions harmonize state and regional goals with distinct community visions. Eli has also provided on-call planning support and conducted SEPA environmental reviews across Washington state. Eli's background encompasses fishery resource management through the Fish and Wildlife Service, GIS mapping, and transportation planning at the Seattle Department of Transportation. He applies this unique blend of experience to his long-range planning work, bridging compliance, sustainability, data-driven decision-making, and community aspirations.

Education / License Master of Urban Planning, University of Washington, 2021. Master of Public Administration, University of Washington, 2021. BA Environmental Studies, Knox College, 2014. Certified Planner, American Institute of Certified Planners (AICP) No. 35488.

Staff Engineer ▪ Sam Ferguson, EIT-OR

Role and Responsibilities. Sam will provide engineering support throughout the duration of the project assisting with data collection, drafting of the preliminary and final sewer expansion study technical reports, and preparing preliminary opinion of probably project costs for potential future sewer expansion projects.

Sam has 3 years of professional engineering experience working as a staff engineer on water, wastewater, and stormwater infrastructure projects. He has prepared stormwater plans and engineering reports for commercial, subdivision, multi-family housing, and single-family residence projects. He has performed hydrologic analyses of natural and urban watersheds and developed HEC-RAS 1D and 2D hydraulic models for bridge replacements, a dam breach, and flood plain analysis. Sam has managed residential projects from start to finish, working closely with clients and governing jurisdictions to obtain construction approval through the review process. He has helped complete funding applications and successfully procure funding for projects, including funding from the Drinking Water State Revolving Fund (DWSRF). He has developed civil construction plans, contract documents, technical specifications, plan sets, and cost estimates for municipal, commercial, and residential development. Sam has conducted site visits to assess project feasibility and assisted contractors during construction that included reviewing submittals and assisting with construction engineering. He is proficient in Civil 3D and AutoCAD, HEC-RAS and WWHM 2012 modeling software, and Esri GIS mapping software. He also has experience in InfoWater Pro, surveying, and GPS data collection.

Education / Registration BS Civil Engineering, Washington State University, 2019. Engineer in Training: Oregon.

As-Needed GIS Analysis ▪ Carlito Tolentino, GISP

Role and Responsibilities. Carlito will provide GIS support, including mapping existing and proposed sewer service areas, and preparing exhibits for the sewer system expansion study on an as-needed basis.

Carlito has 22 years of experience providing GIS services on diverse engineering and planning projects. His main responsibilities include coordinating with project leads to implement maps, data, and other GIS information into comprehensive plans and map notebooks. He collects GIS data imperative for multi-part projects from multiple sources including County, City, District, and open sources, as well as analyzes, develops, and creates base mapping and geodatabases supplemental to the project's comprehensive documentation. Carlito's duties also include GIS and CAD data integration, data analysis, data conversion, and map editing, as well as compiling existing and new utility data from project engineer's design drawings to create and format utility base maps from comprehensive plans. Carlito manages and maintains all GIS data through a geodatabase and mapping on BHC's network server, verifies no duplication of data, provides QA/QC, and documents metadata for data involved for all base maps and data. He also has extensive experience with GIS data use in the ArcGIS environment and for public governments.

Education / Certification BS Certificate, GIS Management, University of Washington, 2006. BA Community and Environmental Planning, University of Washington, 1998. Geographic Information Systems Professional (GISP), No. 52430.

As-Needed Hydraulic Modeler ▪ Kevin Cook, PE

Role and Responsibilities. Kevin will provide hydraulic modeling analysis for the sewer system expansion study on an as-needed basis, if the City would like to include modeling and capacity analysis in the scope of the study to evaluate potential impacts of the sewer expansion on the existing sewer system.

Kevin is an experienced civil and water resources engineer with a background in separated/combined sewer collection systems and facility planning and modeling. He is technically versed in a wide range of hydraulic/hydrologic modeling software packages and is experienced with supporting projects ranging from model development, calibration, and analysis. Kevin utilizes diverse knowledge in flow monitoring and spatial data to ensure that modeling tools are used efficiently and effectively to support projects ranging in scale from conceptual infrastructure planning, pre-design support, future development and climate change analysis, alternatives development, and comprehensive system analysis.

Education / Certification BS Civil Engineering, Seattle University, 2012. Professional Engineer: Washington No. 54874.

Project Availability of Team Members

BHC currently has three offices in Western Washington that share work and resources. Often, professional staff from all three offices will contribute to a project team. Currently, we have about 150 active projects. Michael will be able to draw on resources from any of the offices to address project needs. We address workload demands for each project at Monday morning staffing meetings. Quarterly labor projections are used to proactively assign resources to meet project requirements. BHC has a great reputation for meeting project schedules as evidenced by the large number of projects and long-term relationships with repeat clients, such as the City of Lynden, Mukilteo Water and Wastewater District, City of Lynnwood, City of Redmond, and Kitsap County.

We are able to begin work on this project as soon as we receive notice to proceed. Our labor projections currently show that our staff will be approximately 50-75 percent utilized with existing projects, leaving adequate time for this project to begin right away through the end of this contract.

LICENSING AND CERTIFICATION

State of Washington
BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS
P O Box 9025
Olympia, WA 98507

MICHAEL JOSEPH MICHALAK
823 KODIAK LN
BELLINGHAM WA 98226-8243

STATE OF WASHINGTON

PROFESSIONAL ENGINEER
ENVIRONMENTAL

MICHAEL JOSEPH MICHALAK
823 KODIAK LN
BELLINGHAM, WA 98226-8243

24014126 License Number
12/09/2025 Expiration Date

Ken Fuller, Director

A REMINDER FROM THE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS

WAC 196-27-020 FUNDAMENTAL CANONS AND GUIDELINES FOR PROFESSIONAL PRACTICE.

(2) REGISTRANTS SHALL PERFORM SERVICES ONLY IN AREAS OF THEIR COMPETENCY.

(C) REGISTRANTS SHALL NOT AFFIX THEIR SIGNATURES OR SEALS TO ANY PLAN OR DOCUMENT DEALING WITH SUBJECT MATTER IN WHICH THEY LACK COMPETENCE BY VIRTUE OF EXPERIENCE OR TO ANY SUCH PLAN OR DOCUMENT NOT PREPARED UNDER THEIR SUPERVISORY CONTROL.

STATE OF WASHINGTON

BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS
THIS CERTIFIES THE PERSON OR BUSINESS NAMED BELOW IS AUTHORIZED AS A

PROFESSIONAL ENGINEER
ENVIRONMENTAL

MICHAEL JOSEPH MICHALAK
823 KODIAK LN
BELLINGHAM, WA 98226-8243

24014126 License Number
2024-06-13 Issue Date
12/09/2025 Expiration Date

Ken Fuller, Director

(R/4/23)

AICP

This certificate hereby qualifies

Eli N Mulberry

as a member with all the benefits of a Certified Planner and a commitment to the AICP Code of Ethics and Professional Conduct.

Certified Planner Number: 35488

Joel Albizo, FASAE, CAE
Chief Executive Director

Karen Wolf, FAICP
President

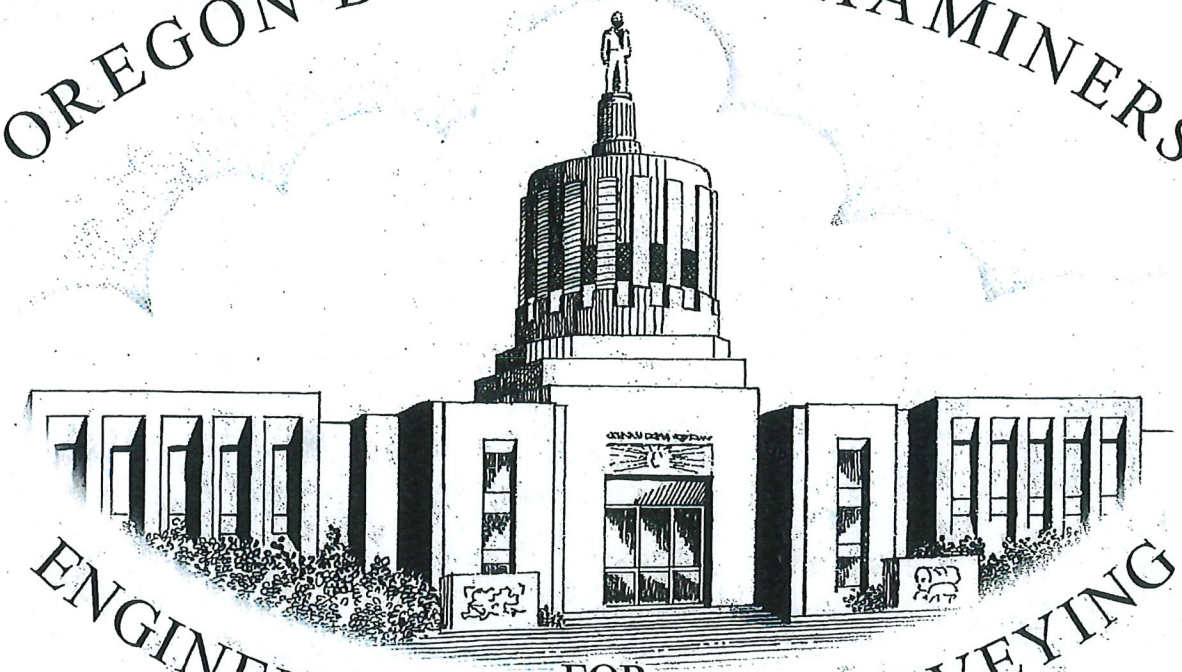
AICP

American Institute
of Certified Planners

Creating Great Communities for All

Verify: www.youracclaim.com/

OREGON BOARD OF EXAMINERS



FOR

ENGINEERING & LAND SURVEYING

declares,

SAMUEL JAMES FERGUSON

has been granted enrollment as an

ENGINEERING INTERN

following successful completion of the Fundamentals of Engineering examination, thereby showing a mastery of basic engineering subjects.

OREGON STATE BOARD 1919–2019 100 YEARS OSBEELS SAFEGUARDING LIFE, HEALTH, AND PROPERTY ENGINEERING & LAND SURVEYING

In accordance with the laws of Oregon, Engineering Intern number **95264EI** has been issued and the seal of the Board affixed on 9 of JULY 2019 in Salem, Oregon.

Daren L. Cone

Daren Cone, Board President

Jenn Gilbert, Interim Administrator

TEAM MEMBER RESUMES

Project Manager ▪ Michael Michalak, PE

Michael has more than 9 years of civil engineering consulting experience performing design services, construction administration, project management, engineering studies, and construction inspection on a variety of public infrastructure projects. His project work has involved water distribution systems, sanitary collection system improvements, pump stations, stormwater management, road improvements, airport facilities and site developments, as well as some water and wastewater treatment plant upgrades. Michael is proficient in sewer flow and I/I modeling and well versed in pipeline trenchless technologies. Michael is skilled in the following software: ArcGIS, AutoCAD, Bluebeam, EPA SWMM, and Microsoft Project.

Education

BS Environmental Engineering, University of Michigan, 2015

License

Professional Engineer: Washington No. 24014126; Michigan No. 6201309853

Project Experience

- **General Sewer Plan Update (2024-Ongoing), Southwest Suburban Sewer District, Burien, WA**
  Project Engineer. Responsibilities include QA/QC review and providing recommendations for updates to the General Sewer Plan.

- **Southwest Suburban Sewer District: Developer Extensions No. 259 Hunter, No. 260 Terrain Sewer Extension, and No. 261 Mary's Place, Burien, WA**
  Project Engineer. Responsibilities include reviewing construction plans submitted to the District by developers applying for district extensions to connect to the existing sewer system and providing comments for necessary changes to the plans to be in accordance with the District's Developer Extension Manual.

- **5th Avenue South Developer Extension (2024-Ongoing), Southwest Suburban Sewer District, Burien, WA**
  Project Engineer. Responsibilities include development of design criteria, preparation of drawings, specifications, and opinion of probable construction cost (OPCC) to extend gravity sewer to service 14 additional properties that are currently on septic systems. Coordination with surveyor and geotechnical subconsultant.

- **General Sewer Plan Amendment (2024-Ongoing), Cities of Everson and Nooksack, WA**
  Project Engineer. Responsibilities include reviewing the existing plan and providing recommendations for updates to the General Sewer Plans for the cities of Everson and Nooksack's sanitary collection systems. Evaluation of population projections, existing pump station and collection system assessment, and development of the cities' 6-year and 20-year Capital Improvement Programs (CIPs) for the collection system.

- **Sewer Standards Updates (2024-Ongoing), Kitsap County, Port Orchard, WA**
  Project Engineer. Responsibilities include reviewing the existing sewer standards and standard details and providing recommendations for updates. Compared sewer standards to Department of Ecology Sewage Works Design Manual and other municipalities' standards. Coordination meetings with Kitsap County.

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- **Filbert Road Water and Sewer Improvements (2024-Ongoing), Alderwood Water and Wastewater District, Lynnwood, WA**
  Project Engineer. Responsibilities include development of design criteria, preparation of drawings, specifications, and opinion of probable construction cost (OPCC) for approximately 800 feet of water main replacement and approximately 2,000 feet of sewer replacement to avoid conflict with WSDOT's proposed fish passage culvert across State Route 524. Coordination meetings with the District and WSDOT. Investigation to review feasibility of trenchless construction methods – horizontal directional drilling.

- **South Transfer Station Stormwater Conveyance (2024-Ongoing), Seattle Public Utilities, Seattle, WA**
  Project Engineer. Responsibilities include development of design criteria, preparing drawings, specifications, and opinion of probable construction cost (OPCC) for approximately 1,000 feet of new storm sewer to provide conveyance from existing stormwater quality vaults at South Transfer Station to the proposed secondary treatment system at South Transfer Station 2. Attending weekly design coordination meetings with Seattle Public Utilities and other consultants. Investigation to review feasibility of trenchless construction methods – pilot tube guided boring.

- **Reservoir Seismic Evaluations (2024-Ongoing), Snohomish County Public Utility District No. 1, Everett, WA**
  Project Engineer. Responsibilities include performing site inspections at the PUD's water reservoirs, booster pump stations, and water treatment facilities, and preparation of report and exhibits providing recommendations for proposed civil upgrades to improve the facilities' resiliency to seismic events.

- **Well 10 Manganese Treatment System (2024-Ongoing), Manchester Water District, Manchester, WA**
  Project Manager. Responsibilities include project management of multidiscipline design team for the design of manganese treatment system for Well 10 to provide added resiliency to the District's water supply. Preparation of drawings, specifications, and opinion of probable construction cost (OPCC). Conducted site visits and attended coordination meetings with the District and surveyor. Permitting assistance.

Staff Engineer ▪ Samuel J. Ferguson, EIT-OR

Sam has 3 years of professional engineering experience working as a staff engineer on water, wastewater, and stormwater infrastructure projects. He has prepared stormwater plans and engineering reports for commercial, subdivision, multi-family housing, and single-family residence projects. He has performed hydrologic analyses of natural and urban watersheds and developed HEC-RAS 1D and 2D hydraulic models for bridge replacements, a dam breach, and flood plain analysis. Sam has managed residential projects from start to finish, working closely with clients and governing jurisdictions to obtain construction approval through the review process. He has helped complete funding applications and successfully procure funding for projects, including funding from the Drinking Water State Revolving Fund (DWSRF). He has developed civil construction plans, contract documents, technical specifications, plan sets, and cost estimates for municipal, commercial, and residential development. Sam has conducted site visits to assess project feasibility and assisted contractors during construction that included reviewing submittals and assisting with construction engineering. He is proficient in Civil 3D and AutoCAD, HEC-RAS and WWHM 2012 modeling software, and Esri GIS mapping software. He also has experience in InfoWater Pro, surveying, and GPS data collection.

Education

BS Civil Engineering, Washington State University, 2019
Undergraduate Civil Engineering Program, Montana State University, 2014 – 2016

License

Engineer in Training: Oregon

Project Experience

- **Cedar Hills Regional Landfill, Area 9 Demolition and Excavation (2022-2024), King County Solid Waste Division, King County, WA**
  Project Engineer. Developed construction drawings, technical specifications, and cost estimates for an estimated $65,000,000 project. Design included approximately 1.4 million cubic yards of excavation, over 6,000 linear feet of stormwater ditches, and the development of a robust erosion and stormwater control plan. Coordinated development of bid documents with multiple sub consultants to meet deadlines.

- **Carlsborg-Van Lan Water System Improvements (2022-Ongoing), PUD No. 1 of Clallam County, Sequim, WA**
  Project Engineer. Responsible for developing sections of the Preliminary Design Department of Health (DOH) Project Report, including analysis of water treatment alternatives. Worked with vendors to develop cost estimates for alternative analysis.

- **Charles Air Hangar Stormwater Improvements (2022-Ongoing), Rohleder Borges Architecture, King County International Airport, Seattle, WA**
  Project Engineer. Designed stormwater detention and treatment facilities within the King County International Airport (KCIA). The project scope was simplified midway through to only involve permitting for onsite grading. Permits have been approved, and construction is in progress.

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- **Wastewater Treatment Plant Expansion Project (2022-Ongoing), City of Lynden, WA**
  Project Engineer. Responsible for preliminary design tasks including developing preliminary layouts, equipment surveys, cost estimating, and applying for funding through the Clean Water State Revolving Fund (CWSRF). Project is ongoing.

- **Guide Meridian Pump Station (2022-Ongoing), City of Lynden, WA**
  Project Engineer. Construction services include general project coordination, submittal review, change order administration, and progress tracking. Experience several schedule delays through construction due to unforeseen circumstances which involved facilitating the approval of change orders and force account changes between the City and contractor.

- **Pump Station No. 3 and 4 Upgrades (2022-Ongoing), Kitsap County, Silverdale, WA**
  Project Engineer. Responsible for developing the mechanical piping arrangement within Pump Station No. 3. Technical design included dimensioning the layout within CAD to facilitate proper ingress/egress, as well as ensuring setback requirements were met for future facility maintenance.

- **North End Wastewater Treatment Plant Final Design (2022-Ongoing), Swinomish Indian Tribal Community, La Conner, WA**
  Project Engineer. Services during construction include construction observation, attending weekly construction meetings, and preparing field reports on progress made each week.

- **Water System Master Plan Update (2020), City of Ontario, OR**
  Staff Engineer. Assisted the lead engineer in updating the Water System Master Plan for the City of Ontario, Oregon. This project required evaluating the performance of the current water system, forecasting future water demand, and identifying areas of the system that would require improvements. An alternative analysis was carried out which prioritized certain system improvements based on projected areas of growth within the city. Essential to the city's Capital Improvements Plan, a cost analysis was performed for all proposed improvement alternatives.

- **Preliminary Dam Breach Analysis (2019), Baker City, OR**
  Staff Engineer. Developed a 2D HEC-RAS model to analyze downstream impacts of a dam breach for the proposed irrigation storage pond for the City of Baker City's Wastewater System Improvements project. Flow depth and velocity results were used to evaluate impacts to downstream infrastructure.

- **Lone Rock Road Bridge Replacement Hydraulics Report (2020), Gilliam County, OR**
  Staff Engineer. Analyzed the hydraulic conditions for the replacement of the existing bridge on Lone Rock Road. HEC-RAS was utilized to model the existing, natural, and proposed river cross sections within the vicinity of the bridge to provide data demonstrating that the proposed bridge meets all state hydraulic requirements. Fish passage and scour analysis were also performed. Deliverables included the Hydraulics Report, construction plans, and specifications.

Planner ▪ Eli N. Mulberry, AICP

Since his time at BHC, Eli has worked on mor than 10 multi-faceted land use codes, comprehensive plan, and zoning updates. Through both development regulations and comprehensive plans, his policy analysis and evaluation skills have helped multiple jurisdictions harmonize state and regional goals with distinct community visions. Eli has also provided on-call planning support and conducted SEPA environmental reviews across Washington state. Prior to BHC, Eli's professional background encompasses fishery resource management through the Fish and Wildlife Service, GIS mapping, and transportation planning at the Seattle Department of Transportation. He applies this unique blend of experience to his long-range planning work, bridging compliance, sustainability, data-driven decision-making, and community aspirations.

Education

Master of Urban Planning, University of Washington, 2021
Master of Public Administration, University of Washington, 2021
BA Environmental Studies, Knox College, 2014

Certifications

Certified Planner, American Institute of Certified Planners (AICP) No. 35488 (2023)

Project Experience

- **On-Call Planning Services (2024-Ongoing), City of Clyde Hill, WA**
  Project Manager. BHC was hired to provide code writing assistance to update the City's development regulations to comply with new state legislation around Middle Housing, Accessory Dwelling Units (ADUs), Unit Lot Subdivision, and permit procedures streamlining. To date, Eli has facilitated discussion with City staff and the Council surrounding the requirements and policy options, ensuring compliance while mitigating impacts and conflicts with the Comprehensive Plan's vision for housing.

- **On-Call Planning Services (2021-Ongoing), Town of South Cle Elum, WA**
  Planner. Provides on-call land use planning for the Town, including permit reviews, development regulation updates, and Comprehensive Plan amendments. Eli ensures high-quality services while respecting the small-town scale and community values. His work includes updating zoning and PUD codes to align with community vision, as well as providing SEPA review and ensuring compliance with public notice timelines for long-range and regulatory updates.

- **2024 Comprehensive Plan Update (2023-Ongoing), City of Enumclaw, WA**
  Planner. The City hired BHC to lead a team of consultants in updating its Comprehensive Plan. Eli focused on addressing housing demand gaps, analyzing land capacities to comply with state law changes, and drafting updates to the Plan's goals and policies using data and insights from workshops. He also updated the Future Land Use Map to simplify designations, address housing needs, and align with community goals while maintaining the City's charm and urban scale. Additionally, Eli supported the Plan's design, formatting, and language consistency.

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- **2024 Comprehensive Plan Update (2023-2024), City of Pacific, WA**
  Planner. The City hired BHC to manage all aspects of its Comprehensive Plan update. Eli's work on this project involved policy analysis to identify the City's housing displacement risks and trends under the existing Plan, conducting a land capacity analysis for housing production and affordability, and updating and streamlining the Plan's Elements' goals and policies. Eli also played a key role in facilitating and discussing updates to the City's Future Land Use Map with the Planning Commission. The overall goal was to ensure the designations preserve the City's existing scale and charm while simplifying and streamlining regulations for easier application.

- **2022 Housing Action Plan (2022-2023), City of Napavine, WA**
  Planner. As a subconsultant to Jackson Civil, BHC was hired to complete a Housing Needs Assessment and Housing Action Plan for the City of Napavine. Eli gathered and analyzed data on housing conditions and demand. From this, he prepared a Housing Needs Assessment report and Policy Framework review. He also collaborated on drafting the Housing Action Plan document, and identified policy options and approaches to meet the City's housing gaps and affordability demands.

- **Municipal Code Update (2022-Ongoing), City of Stanwood, WA**
  Planner. BHC is helping the City of Stanwood implement a complete overhaul of their municipal code. The overall goal is to make the code easier to use and interpret for both City planning staff and the public. Eli's work to date has included drafting the City's Complete Street Ordinance, supporting updates to the critical area regulations, and assessing and facilitating conversations to identify the City's priorities for development regulation amendments.

- **Climate Planning and Element (2024-Ongoing), Town of South Cle Elum, WA**
  Planner. BHC was contracted to assist in the acquisition and implementation of a Washington State Department of Commerce grant for climate planning. Eli's work involves supporting planning and implementing outreach, producing a climate vulnerability assessment, and developing a draft Climate Element for the Town's Comprehensive Plan and development regulations to address climate impacts in the Town.

As-Needed Hydraulic Modeler ▪ Kevin Cook, PE

Kevin is an experienced civil and water resources engineer with a background in separated/combined sewer collection systems and facility planning and modeling. He is technically versed in a wide range of hydraulic/hydrologic modeling software packages and is experienced with supporting projects ranging from model development, calibration, and analysis. Kevin utilizes diverse knowledge in flow monitoring and spatial data to ensure that modeling tools are used efficiently and effectively to support projects ranging in scale from conceptual infrastructure planning, pre-design support, future development and climate change analysis, alternatives development, and comprehensive system analysis.

Education

BS Civil Engineering, Seattle University, 2012

License

Professional Engineer: Washington No. 54874, Oregon No. 96174

Project Experience

- **Sewer Capacity Study (2022–2024), Alderwood Water and Wastewater District, Lynnwood, WA**
  Senior Modeler/Project Engineer tasked with assessing the Districts sewer conveyance system. A previously developed InfoSWMM model was converted to Infoworks ICM and updated with the latest as-built and GIS data to reflect existing conditions. Four of the major district basins were calibrated to flow monitoring data for multiple dry and wet weather events. Model was updated to reflect different planning horizons with representative design storms updated to reflect future climate change. Multiple deficiency criteria were evaluated and capital improvement recommendations were assigned risk scores to support prioritization.

- **Sewer Capacity Study (2023–2024), Swinomish Indian Tribal Community, La Conner, WA**
  Project Manager tasked with evaluating sewer alternatives to provide conveyance and treatment to accommodate growth and inter-agency agreements. Developed conceptual alternatives including WWTP expansion, lift station upsizing, conveyance re-routing, and likely construction techniques to accommodate sewer capacity needs. Developed evaluation criteria matrix to compare alternatives for review.

- **On-Call Hydraulic Modeling (2022–Ongoing), Clark Regional Wastewater District, Vancouver, WA**
  Supporting the District with model conversion from Mike Urban to Mike+ with previously developed hydraulic model. Additional support tasks included QA/QC, flow data quality review and simulation set up, and calibration methodology. Provided guidance on ways to improve model simulation run times as well recommendations to calibrate to wet weather and evaluate I/I response. Held workshops to discuss technical applications of hydrology and hydraulics as well general best-practices for modeling approaches and assessments.

- **General Sewer Plan (2023–Ongoing), City of Marysville, WA**
  Senior Modeler/Project Engineer supporting the City with updating their hydraulic model in InfoSWMM and calibrating to recently collected flow monitoring data. Calibrated model will be used to evaluate existing and future conditions to account for population growth and changes in I/I. Capital improvement recommendations and preliminary cost estimates will be developed to support capital improvement program.

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- **General Sewer Plan Update (2022–2024), Southwest Suburban Sewer District, Burien, WA**
  Project Engineer tasked with validating the District's hydraulic model in Mike+ to treatment plant data and field observations of areas with know I/I issues. Updated model with peak flow estimates for employment and population projects and identified both conveyance and lift station improvements to meet the Districts level of service. Developed plan to implement I/I reduction program to rehabilitate infrastructure and reduce I/I in the system. Coordinated with District and consultant staff to develop plan chapters for Ecology review and approval.

- **General Sewer Plan (2022–2023), City of Mossyrock, WA**
  Senior Modeler tasked with providing QA/QC for flow projections and assumptions regarding I/I. Reviewed model set up and results as well as deficiencies and improvements. Coordinated with staff engineers on assumptions for cost estimates and preparation of sewer plan for Ecology review.

- **Modeling and Analysis Support On-Call (2018-2021), Seattle Public Utilities, WA**
  Technical Modeling Lead/Project Manager for multiple work assignments. These have included drainage basin model calibration, combined sewer overflow (CSO) compliance modeling and analysis, sewer and stormwater conveyance and capacity analysis, sewer model update and calibration, and alternatives development and system optimization for real time controls.

- **Alderwood Lift Station 17 Analysis (2021), Alderwood Water and Wastewater District, Lynnwood, WA**
  Modeling Lead/Project Engineer tasked with developing planned sewer flows to support pump sizing and conveyance capacity upstream and downstream of facility. This included review of observed pump station data, existing and planned land use data, inflow and infiltration (I/I) studies, and validation to existing system performance. Worked with District staff to confirm existing operation in extreme events for bypassing operations and other facility issues. Hydraulic model was developed based on available GIS and as-built data to identify potential upstream and downstream capacity issues that could impact existing and future flows.

- **92nd Avenue Pump Station (2021), City of Battle Ground, WA**
  Modeling Lead/Project Engineer tasked with analyzing hydraulically connected pump stations to support pre-design of proposed pump station capacity increase and facility layout. This included reviewing operations and storage times for existing facilities, flow development and capacity analysis, and identified alternatives for phased decommissioning of facilities to support long term growth. Feasibility of new sewer line to support development and expansion was also addressed to support development planning. Hydraulic model was updated to City's preferred modeling software to support future analysis and expansion.

- **Drainage Systems Analysis (2019-2020), Seattle Public Utilities, WA**
  Project Manager for sub-consultant team tasked with analyzing SPU's drainage system infrastructure. Major tasks included QA/QC and technical support for design storm analysis of previously constructed drainage models. Also supported 2D modeling efforts to assess surface run-off for entire City-wide analysis, utilizing cloud computing to improve efficiency. Reviewed methodology and results to identify scoring areas susceptible to potential impacts from sea-level rise as well as impacts to urban creek flooding.

- **Wastewater System Analysis (2017-2019), Seattle Public Utilities, WA**
  Technical Lead for SPU's wastewater systems analysis. This included leading several sub-consultants in hydraulic/hydrologic model calibration to over 140 monitoring locations in combined, separated, and partially separated areas. Calibrated models were used to identify existing and potential future capacity limitations. Aided development of tools and processes to analyze system efficiently. Utilized additional data to develop risk areas and support prioritization.

As-Needed GIS Analyst ▪ Carlito D. Tolentino, GISP

Carlito has 22 years of experience providing GIS services on diverse engineering and planning projects. His main responsibilities include coordinating with project leads to implement maps, data, and other GIS information into comprehensive plans and map notebooks. He collects GIS data imperative for multi-part projects from multiple sources including County, City, District, and open sources, as well as analyzes, develops, and creates base mapping and geodatabases supplemental to the project's comprehensive documentation. Carlito's duties also include GIS and CAD data integration, data analysis, data conversion, and map editing, as well as compiling existing and new utility data from project engineer's design drawings to create and format utility base maps from comprehensive plans. Carlito manages and maintains all GIS data through a geodatabase and mapping on BHC's network server, verifies no duplication of data, provides QA/QC, and documents metadata for data involved for all base maps and data. He also has extensive experience with GIS data use in the ArcGIS environment and for public governments.

Education

Certificate, GIS Management, University of Washington, 2006
BA Community and Environmental Planning, University of Washington, 1998

Certification

Geographic Information Systems Professional (GISP), No. 52430

Wastewater Project Experience

- **S2102 Sewer Capacity Study, Alderwood Water and Wastewater District, City of Lynnwood, WA**
  Senior GIS Analyst. Responsible for the map edits and design of the sewer alignment for the sewer capacity improvement task.

- **Sewage Pump Station No. CW-4 Upgrade Project, City of Bremerton, WA**
  GIS Analyst. Produced figures to convey the vicinity and alternative maps for the CW-4 upgrade project for the city. Collected city and county online GIS data to showcase area of detailed project area and alternative solutions. Responsible for the map edits, design, and schematic design drawing analysis.

- **Comprehensive General Sewer Plan and Sewer Map Book, Clark Regional Wastewater District, Vancouver, WA**
  Senior GIS Analyst. Worked on the existing sewer system plan maps for updates, editing fixtures of the sewer basins future system flow and GIS geodatabase data management. With over 80 basins to account for, created and formatted a mapbook to illustrate each basin with its sewer system, base mapping, and topography data. Along with these updated maps were the schematic maps to show flow and other comprehensive plan maps.

- **2023 Wastewater System Model and Plan Updates, City of Redmond, WA**
  Senior GIS Analyst. Provided GIS mapping to update the City's sewer system and model plan updates. Key components included identifying updated piping, preferred alternatives and future improvements and formatting city and vicinity project location, environmental, and zoning maps. Developed a mapbook for the data driven

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pages showcasing preferred alternatives sewer analysis. Existing data from both the city and county were implemented for the plan update.

- **Sewer Comprehensive Plan, City of Edmonds, WA**
  Senior GIS Analyst. Provided GIS mapping to update the City's sewer comprehensive plan. Key components included identifying updated piping and future improvements and formatting city and vicinity project location, environmental, and zoning maps. A topographic map was created to show flow of the existing and proposed piping. Existing data from both the city and county were implemented for the comprehensive plans.

- **Comprehensive Sewer Plan Update, Southwest Suburban Sewer District, Burien, WA**
  Senior GIS Analyst. Responsible for managing the GIS mapping and data management of the comprehensive sewer plan update. Utilized existing GIS from the county and municipalities for generating the sewer plan maps, vicinity, water features, sewer system, and land use map. A mapbook of the different mini basins was developed to identify sewer systems within each basin.

- **Sewer System Development Utilities, Comprehensive General Sewer Plan Update and GIS Portal Enterprise Administrator, Soos Creek Water and Wastewater District, Renton, WA**
  Senior GIS Analyst. Currently updating sewer system updates for the district GIS server/portal. Provide GIS mapping updates for comprehensive sewer system plan update. Administer the district's GIS Enterprise Portal – web mapping, application and data management.

- **Drainage System Analysis, Seattle Public Utilities, Seattle, WA**
  Senior GIS Analyst. Worked on the Drainage System Analysis using SPU's DWW and CSO GIS data to map out flooding inventories. Workflow was to identify, assess and prioritize drainage related problems in project areas of Seattle. Map sites were developed using a mapbook format to display areas with concern.

- **General Sewer Plan, Midway Sewer District, Kent, WA**
  GIS Analyst. Responsible for the mapping design and layout formats. Analysis and editing for the CIP, modeling, and future piping maps. QA/QC final draft maps for the draft plan.

- **Central Kitsap Comprehensive Wastewater Facility Planning, Kitsap County, Port Orchard, WA**
  Senior GIS Analyst. Responsible for the mapping design and layout formats. Analysis and editing for the CIP, modeling, and future piping maps. QA/QC final draft maps for the draft plan.

- **Comprehensive Sewer and Water Plans, City of Lynnwood, WA**
  GIS Analyst. Responsible for the map edits, design, and schematic design drawing analysis. Assemble sewer and water draft plan maps for QA/QC.

- **Bellevue Sewer Lake Line Condition Assessment, City of Bellevue, WA**
  GIS Analyst. Mapped ground penetrating radar (GPR) data points that were utilized to identify and locate sewer lines or points beneath the water/subsurface around the Bellevue lake line area. Assembled map exhibits to address these GPR points using aerial and GIS base data mapping.