



PARKS & PUBLIC WORKS COUNCIL COMMITTEE & COMMITTEE OF THE WHOLE HYBRID MEETING

Tuesday, March 19, 2024, at 5:00 PM

Snoqualmie City Hall, 38624 SE River Street & Zoom

COMMITTEE MEMBERS

Chair: Ethan Benson

Councilmembers: Bryan Holloway and Catherine Cotton

This meeting will be conducted in person and remotely using teleconferencing technology provided by Zoom.

Join by Telephone: To listen to the meeting via telephone, please call **253.215.8782** and enter Webinar ID **867 8554 3964** and Password **1700050121** if prompted.

Press *9 to raise your hand to speak. Raising your hand signals the meeting moderator that you have a comment.
Press *6 to mute and unmute.

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- 1) Click this [link](#).
- 2) If the Zoom app is not installed on your computer, you will be prompted to download it.
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- 4) Please confirm that your audio works prior to participating.

CALL TO ORDER & ROLL CALL

AGENDA APPROVAL

PUBLIC COMMENTS

MINUTES

- [1.](#) Approval of minutes dated March 5, 2024.

AGENDA BILLS

- [2.](#) **AB24-039:** Snoqualmie Valley Mobility Coalition Draft Resolution and Presentation
- [3.](#) **AB24-034:** Water Reclamation Facility Effluent Mixing Zone Study

DISCUSSION

4. Solid Waste Contract Discussion
5. Dissolution of East King County Regional Water Association Discussion
6. Director Reports:
 - a. Staffing
 - b. Project status

ADJOURNMENT



**PARKS & PUBLIC WORKS COUNCIL COMMITTEE &
COMMITTEE OF THE WHOLE
HYBRID MEETING MINUTES
MARCH 5, 2024**

This meeting was conducted in person and remotely using teleconferencing technology provided by Zoom.

CALL TO ORDER

Chair Ethan Benson called the meeting to order at 5:00 pm.

Committee Members: Councilmembers Ethan Benson, Bryan Holloway, and Catherine Cotton.

Mayor Katherine Ross was also present.

City Staff:

Michael Chambless, City Administrator; Deana Dean, City Clerk; Jeff Hamlin, Interim Parks & Public Works Director; Patrick Fry, Project Engineer; Janna Walker, Budget Manager; Andrew Vining, Project Engineer (remote); and Andy Latham, IT Support.

AGENDA APPROVAL – The agenda was approved as presented.

PUBLIC COMMENTS – There were no public comments.

MINUTES

1. The minutes from the February 21, 2024, were approved as presented.

AGENDA BILLS

2. **AB24-028:** Residential Sewer Connection. Interim Parks & Public Works Director Jeff Hamlin spoke to this item. Committee comments and questions followed. This item is approved to move forward at the March 11, 2024, City Council meeting consent agenda.
3. **AB24-036:** Resolution Selecting City Wide Facility Solutions of Washington, LLC for a 12-month Custodial Contract with option to renew. Patrick Fry, Project Engineer, spoke to this item. This item is approved to move forward at the March 11, 2024, City Council meeting consent agenda.

DISCUSSION:

4. Solid Waste Contract Discussion. Patrick Fry, Project Engineer, provided an update on the solid waste RFB process including timeline. Consultant Jeanette Jurgensen appeared remotely. Discussion followed. Committee was provided a hard copy of the proposed draft contract and is encouraged to provide feedback to Patrick. This item will be brought back at a future City Council meeting for discussion and action.

ADJOURNMENT - The meeting was adjourned at 5:44 pm.

*Minutes taken by Deana Dean, City Clerk.
Recorded meeting audio is available on the City website after the meeting.
Minutes approved at the _____, 2024, Parks & Public Works Committee Meeting.*

DRAFT



BUSINESS OF THE CITY COUNCIL CITY OF SNOQUALMIE

AB24-039
March 25, 2024
Committee Report

Item 2.

AGENDA BILL INFORMATION

TITLE:	AB24-039: Snoqualmie Valley Mobility Coalition 2024 Mobility Awareness Resolution	<input type="checkbox"/> Discussion Only
PROPOSED ACTION:	Approve Snoqualmie Valley Mobility Coalition 2024 Mobility Awareness Resolution and authorize the Mayor to sign	<input checked="" type="checkbox"/> Action Needed: <input type="checkbox"/> Motion <input type="checkbox"/> Ordinance <input checked="" type="checkbox"/> Resolution

REVIEW:	Department Director	Emily Arteche	3/12/2024
	Finance	n/a	Click or tap to enter a date.
	Legal	David Linehan	3/14/2024
	City Administrator	Mike Chambless	3/14/2024

DEPARTMENT:	Community Development		
STAFF:	Emily Arteche		
COMMITTEE:	Parks & Public Works	COMMITTEE DATE: March 19, 2024	
EXHIBITS:	1. Resolution		

AMOUNT OF EXPENDITURE	\$ n/a
AMOUNT BUDGETED	\$ n/a
APPROPRIATION REQUESTED	\$ n/a

SUMMARY

INTRODUCTION

Snoqualmie Valley Mobility Coalition and partnering Valley cities are requesting the City of Snoqualmie join in a joint resolution calling on cities to prioritize transportation and accessibility needs throughout the Snoqualmie Valley in 2024 as a step towards improving transportation.

LEGISLATIVE HISTORY

None.

BACKGROUND

The Coalition’s Resolution is to provide Mayors and Councilmembers with a comprehensive framework to effectively influence the conception, planning, development, and execution of city-wide policies and projects through a mobility lens. This Resolution is a collaborative effort to achieve a unified transportation vision throughout the Snoqualmie Valley. The Coalition endorses efforts to ensure accessible, affordable, convenient, coordinated, reliable, and safe mobility options and opportunities.

ANALYSIS

The Snoqualmie Valley Mobility Coalition is optimistic that having a shared goal of further promoting well-connected transportation and mobility systems will strengthen collective efforts to improve accessibility for residents, facilitate the availability of essential services, and enhance economic opportunities in the region.

The Resolution is intended to support the work of local cities and community leaders as we all strive to support policies prioritizing safe and accessible mobility and infrastructure for all residents, businesses, and visitors. This includes considering all modes of transportation, such as public transit, biking, rolling, and walking, to ensure equitable and affordable options.

The Coalition will work with other cities, agencies, and partners to prioritize mobility and find comprehensive solutions.

BUDGET IMPACTS

N/A

NEXT STEPS

Make a motion to recommend approval and authorize the Mayor to sign the Resolution at the next City Council meeting schedule on March 25,2024.

PROPOSED ACTION

Move to approve Snoqualmie Valley Mobility Coalition 2024 Mobility Awareness Resolution and authorize the Mayor to sign.

RESOLUTION NO. xxxx

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SNOQUALMIE, WASHINGTON IN SUPPORT OF SNOQUALMIE VALLEY MOBILITY COALITION'S (SVMC) 2024 MOBILITY AWARENESS

WHEREAS, a variety of unique transportation challenges and gaps have historically faced the Snoqualmie Valley and impact the citizens, business and visitors of the City of Snoqualmie; and

WHEREAS, in November 2017, a group consisting of transportation providers, members of the Snoqualmie Tribe, city officials/staff, human services providers, King County elected officials, medical providers, school district staff, and other concerned citizens formed the SVMC in to address the impact of transit; and

WHEREAS, in the autumn of 2021, the SVMC Task Force recommended that Valley Cities prioritize transportation and mobility requirements, needs, and concerns as part of a clear and unified Valley wide approach regarding transportation and mobility needs for all cities in the Snoqualmie Valley; and

WHEREAS, the City recognizes mobility is an integral part of our daily lives and is essential for health, success, and a fulfilling life; and

WHEREAS, the SVMC developed a 2020-2024 Valley 5 Transportation Plan, analyzing the transportation requirements and identifying gaps and prioritizing community needs for the cities in the Valley;

NOW, THEREFORE, BE IT RESOLVED, by the City Council of the City of Snoqualmie, Washington, as follows:

Section 1. The City is supportive of advancing the SVMC 2024 Mobility Awareness initiative providing inclusive and safe mobility options throughout the Snoqualmie Valley to meet the diverse needs of all people including people with disabilities, people in wheelchairs, people walking and people using transit, vehicles, scooters, skateboards, school buses, emergency response vehicles, bicycles and cars.

PASSED by the City Council of the City of Snoqualmie, Washington, this __ day of March 2024.

Katherine Ross, Mayor

Attest:

Deana Dean, City Clerk

Approved as to form:

David A. Linehan, Interim City Attorney



**BUSINESS OF THE CITY COUNCIL
CITY OF SNOQUALMIE**

AB24-034
March 25, 2024
Choose an item.

Item 3.

AGENDA BILL INFORMATION

TITLE:	AB24-034: Water Reclamation Facility Effluent Mixing Zone Study	<input type="checkbox"/> Discussion Only <input checked="" type="checkbox"/> Action Needed: <input type="checkbox"/> Motion <input type="checkbox"/> Ordinance <input checked="" type="checkbox"/> Resolution
	PROPOSED ACTION: Adopt Resolution No. XXXX Selecting Kennedy Jenks for completing the WRF Effluent Mixing Zone Study	

REVIEW:	Department Director	Jeff Hamlin	2/26/2024
	Finance	Janna Walker	3/12/2024
	Legal	David Linehan	Click or tap to enter a date.
	City Administrator	Mike Chambless	Click or tap to enter a date.

DEPARTMENT:	Parks & Public Works		
STAFF:	Andrew Vining, Project Engineer		
COMMITTEE:	Parks & Public Works	COMMITTEE DATE: March 19, 2024	
EXHIBITS:	1. AB24-034x1 (Res. No. XXXX) 2. AB24-034x2 (Effluent Mixing Zone Plan of Study) 3. AB24-034x3 (Design Consultant Selection Memorandum) 4. AB24-034x4 (Excerpt from NPDES Permit)		

AMOUNT OF EXPENDITURE	\$ 73,965
AMOUNT BUDGETED	\$ 4,106,822
APPROPRIATION REQUESTED	\$ 0

SUMMARY

INTRODUCTION

This Agenda Bill seeks approval to select Kennedy Jenks to complete an Effluent Mixing Zone Study for the Water Reclamation Facility Outfall 001. This work will fulfill NPDES Permit requirements and will be performed as outlined in the Effluent Mixing Zone Plan of Study (Attachment 3).

BACKGROUND

The City Water Reclamation Facility (WRF) discharges treated municipal wastewater to the Snoqualmie River through Outfall 001, which is approximately 1,700 feet upriver of Snoqualmie Falls. Outfall 001 is permitted by the Washington State Department of Ecology (Ecology) under National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit No. WA0022403 (Permit). The current Permit (version 6) was issued May 19, 2021, and is effective July 1, 2021, through June 30, 2026.

ANALYSIS

Previous City of Snoqualmie NPDES Permit limits have relied on simple volumetric equations prepared by Ecology to estimate the amount of mixing at Outfall 1, quantified as dilution factors. These results are generally consistent with the Snoqualmie River Basin Temperature TMDL Study prepared by Ecology in 2011. More commonly NPDES Permit dilution factors are based on past mixing zone studies prepared by permittees.

Special conditions in the current Permit require the City to perform a mixing study that will more accurately determine mixing characteristics of the discharge by modeling those characteristics under specified conditions at the outfall. This information may be used by Ecology to prepare future permit modifications that will consider increased WRF flows and more stringent nutrient removal requirements for the Snoqualmie River. To maintain compliance with the NPDES permit requirements and prepare information for future permit modifications the City must complete and submit the Effluent Mixing Zone Study to Ecology prior to July 31, 2024.

The City submitted an Effluent Mixing Zone Plan of Study prepared by Parametrix in September 2023. The City must next submit an Effluent Mixing Report before July 31, 2024.

BUDGET IMPACTS

Administration recommends approving a contract with Kennedy Jenks in the amount of \$73,965 to complete an Effluent Mixing Zone Study for the WRF. This contract will be paid from the Wastewater Utility Fund (#402) budget. The 2023-24 amended budget appropriates \$4,106,822 for services within the Wastewater Utility Fund. Currently, \$2,628,425 has been spent in the current biennium. With the addition of the Kennedy Jenks contract, the remaining Biennial Budget appropriation is \$1,404,432. Therefore, sufficient appropriation exists within the 2023-2024 Biennial Budget (Wastewater Utility Fund #402) to fund the contract.

Wastewater Utility (#402) - Services

2023-2024 Amended Biennial Budget	
Beginning Budget	\$ 4,106,822
Expenditures	\$ (2,628,425)
<hr/>	
Current Available Budget	\$ 1,478,397
<hr/>	
Contract with Kennedy Jenks	\$ (73,965)
Available Services Budget after Contract	\$ 1,404,432

Spending within Wastewater Utility (#402) during 2023 was higher than expected. It is possible that the Wastewater Utility budget will be exceeded before the end of the 2023-2024 Biennial Budget. As a result, the City may need an additional appropriation for the Wastewater Utility Fund. Staff will continue to monitor and manage the Wastewater Utility budget and if needed will introduce a budget amendment prior to the end of the 2023-2024 budget cycle.

NEXT STEPS

Staff and Consultants will gather information to prepare the Effluent Mixing Zone Study. The Effluent Mixing Zone Study will be submitted to Ecology prior to July 31, 2024. In 2025 the City will begin preparing an application for permit renewal based on projected flow and load to the WRF and current mixing zone data.

PROPOSED ACTION

Move to adopt Resolution No. XXXX Selecting Kennedy Jenks for completing the WRF Effluent Mixing Zone Study, and authorize the Mayor to sign.

RESOLUTION NO. XXX

A RESOLUTION OF THE CITY COUNCIL OF CITY OF SNOQUALMIE, WASHINGTON AWARDED AND AUTHORIZING EXECUTION OF A CONTRACT WITH KENNEDY JENKS FOR COMPLETING A WATER RECLAMATION FACILITY EFFLUENT MIXING ZONE STUDY

WHEREAS, pursuant to Ordinance No. 448 as codified in Snoqualmie Municipal Code Section 1.08.010, the City of Snoqualmie has adopted the classification of non-charter code city, retaining the mayor-council plan of government as provided for in Chapter 35A.12 RCW; and

WHEREAS, upon review of qualified engineering firms with experience completing mixing zone studies on the MRSC roster, the City chose to select Kennedy Jenks to provide the requested engineering services for the Project; and

WHEREAS, the City must to complete a Water Reclamation Facility Effluent Mixing Zone Study prior to July 31, 2024 to maintain compliance with the National Pollutant Discharge Elimination System (NPDES) Waste Discharge permit No. WA0022403; and

WHEREAS, City Staff recommends using Kennedy Jenks as the most qualified firm to work on the Project.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SNOQUALMIE, WASHINGTON AS FOLLOWS:

Section 1. Award of Engineering Services Contract.

The City hereby awards the contract for an Effluent Mixing Zone Study to Kennedy Jenks.

Section 2. Authorization for Contract Execution.

The Mayor is authorized to execute a contract for planning services in the amount of \$73,965 with Kennedy Jenks in substantially the form attached hereto as Exhibit A.

PASSED by the City Council of the City of Snoqualmie, Washington, this day of March 2024.

Katherine Ross, Mayor

Attest:

Deana Dean, City Clerk

Approved as to form:

David Linehan, Interim City Attorney

CITY OF SNOQUALMIE
AGREEMENT FOR CONSULTANT SERVICES
Contract Title: WRF Effluent Mixing Zone Study

THIS AGREEMENT made and entered into by and between the CITY OF SNOQUALMIE, a Washington municipal corporation (the "City"), and Kennedy / Jenks Consultants incorporated ("Consultant") is dated this ____ day of _____ 2024.

Consultant Business: Kennedy/ Jenks Consultants, Inc.
Consultant Address: 1500 NE Irving St. Suite 200
Portland, OR 97232

Consultant Phone: 206-753-3412

Consultant Fax:

Contact Name: Christopher Baersten (Stoll)

Contact e-mail:

ChrisBaersten@kennedyjenks.com

Federal Employee ID No.: 94-2147007

Authorized City Representative for this contract: Jeff Hamlin, Interim Department Director

WHEREAS, the City desires to complete a Water Reclamation Facility Effluent Mixing Zone Study;

WHEREAS, public convenience and necessity require the City to obtain the services of a consultant with expertise in the area of engineering mixing zone studies;

WHEREAS, the City finds that Consultant is qualified to perform and is experienced in performing the required services; and

WHEREAS, the city desires to engage the Consultant to engage the Consultant to provide the above-cited engineering services.

NOW, THEREFORE, the parties herein do mutually agree as follows:

1. Employment of Consultant.

A. The City retains the Consultant to provide the services described in "Exhibit A" (the "Work"). Any inconsistency between this Agreement and the Scope of Work shall be resolved in favor of this Agreement. The Consultant shall perform the Work according to the terms and conditions of this Agreement.

B. The City may revise the Work and the compensation only by a written Change Order signed by the authorized City representative that shall become a part of this Agreement.

C. The project manager(s) of the Work shall be Andrew Vining. The project manager(s) shall not be replaced without the prior written consent of the City.

D. Work shall commence when the City issues a notice to proceed and it shall be completed

no later than July 31st, 2024, unless the completion date is extended in writing by the City.

2. Compensation.

A. The total compensation to be paid to Consultant, including all services and expenses, shall not exceed \$ 73,965 as shown on Exhibit B, which shall be full compensation for the Work. Consultant shall notify the City when its requests for payment reach eighty-five percent of the total compensation.

B. The Consultant shall be paid in such amounts and in such manner as described in Exhibit B.

C. Consultant shall be reimbursed for Eligible Expenses actually incurred. "Eligible Expenses" means those types and amounts of expenses that are approved for reimbursement by the City in writing before the expense is incurred. If travel and/or overnight lodging is authorized, Consultant shall lodge within the corporate limits of City.

3. Request for Payment.

A. Not more than once every thirty days the Consultant shall file its request for payment, accompanied by evidence satisfactory to the City justifying the request for payment, including a report of Work accomplished and tasks completed, and an itemization of Eligible Expenses with copies of receipts and invoices.

B. All requests for payment should be sent to

City of Snoqualmie
Attn: Andrew Vining, Project Engineer
38624 SE River Street
P.O. Box 987
Snoqualmie, WA 98065

4. Work Product.

A. The Consultant shall submit all reports and other documents specified in Exhibit A according to the schedule established in Exhibit A. If, after review by the City, the information is found to not meeting the requirements of this agreement, Consultant, at its expense, shall expeditiously correct such non-compliant Work. If Consultant fails to correct such Work, the City may withhold from any payment due an amount that the City reasonably believes will equal the cost of correcting the Work.

B. All reports, drawings, plans, specifications, and intangible property created in furtherance of the Work, and any intellectual property in such documents, are property of the City and may be used by the City for any purpose; provided that re-use without Consultant's permission shall be at the City's sole risk.

5. Termination of Contract. City may terminate this Agreement by sending a written notice of termination to Consultant ("Notice") that specifies a termination date ("Termination Date") at least fourteen (14) days after the date of the Notice; provided, however, that in the event of a material breach of this Agreement, termination may be effective immediately or upon such date as determined by the City in its sole discretion. For purposes of this Agreement, "material breach" is defined as misfeasance, malfeasance or violation of any criminal law, ordinance or regulation.. Upon receipt of the Notice, the Consultant shall acknowledge receipt to the City in writing and immediately commence to end the Work in a reasonable and orderly manner. Unless terminated for Consultant's material breach, the Consultant shall be paid or reimbursed for all hours worked and Eligible Expenses incurred up to the Termination date, less all payments previously made; provided that work performed after date of the

Notice is reasonably necessary to terminate the Work in an orderly manner. The Notice may be sent by any method reasonably believed to provide Consultant actual notice in a timely manner

6. Assignment of Contract – Subcontractors. Consultant shall not assign this contract or sub-contract or assign any of the Work without the prior written consent of the City.

7. Indemnification.

A. To the extent provided by law and irrespective of any insurance required of the Consultant, the Consultant shall defend and indemnify the City from any and all Claims to the extent caused by the negligence or breach of this Agreement by the Consultant; provided, however, the requirements of this paragraph shall not apply to that portion of such Claim that reflects the percentage of negligence of the City compared to the total negligence of all persons, firms or corporations that resulted in the Claim.

B. Consultant agrees that the provisions of this paragraph 7 apply to any claim of injury or damage to the persons or property of consultant’s employees. As to such claims and with respect to the City only, consultant waives any right of immunity, which it may have under industrial insurance (Title 51 RCW and any amendment thereof or substitution therefore). THIS WAIVER IS SPECIFICALLY NEGOTIATED BY THE PARTIES AND IS SOLELY FOR THE BENEFIT OF THE CITY AND CONSULTANT.

C. As used in this paragraph: (1) “City” includes the City’s officers, employees, agents, and representatives; (2) “Consultant” includes employees, agents, representatives sub-consultants; and (3) “Claims” include, but is not limited to, any and all losses, claims, causes of action, demands, expenses, attorney’s fees and litigation expenses, suits, judgments, or damage arising from injury to persons or property.

D. Consultant shall ensure that each sub-consultant shall agree to defend and indemnify the City to the extent and on the same terms and conditions as the Consultant pursuant to this paragraph.

8. Insurance.

A. Consultant shall comply with the following conditions and procure and keep in force at all times during the term of this Agreement, at Consultant’s expense, the following policies of insurance with companies authorized to do business in the State of Washington. The Consultant’s insurance shall be rated by A. M. Best Company at least “A” or better with a numerical rating of no less than seven (7) and otherwise acceptable to the City.

1. Workers’ Compensation Insurance as required by Washington law and Employer’s Liability Insurance with limits not less than \$1,000,000 per occurrence. If the City authorizes sublet work, the Consultant shall require each sub-consultant to provide Workers’ Compensation Insurance for its employees, unless the Consultant covers such employees.
2. Commercial General Liability Insurance on an occurrence basis in an amount not less than \$1,000,000 per occurrence and at least \$2,000,000 in the annual aggregate, including but not limited to: premises/operations (including off-site operations), blanket contractual liability and broad form property damage.
3. Business Automobile Liability Insurance in an amount not less than \$1,000,000 per occurrence, extending to any automobile used by Consultant in the course of the Work. A statement by Consultant and approved by the City Administrator,

certifying that no vehicle will be used in accomplishing this Agreement, may be substituted for this insurance requirement.

4. Professional Errors and Omissions Insurance in an amount not less than \$1,000,000 per occurrence and \$1,000,000 in the annual aggregate. Coverage may be written on a claims made basis; provided that the retroactive date on the policy or any renewal policy shall be the effective date of this Agreement or prior, and that the extended reporting or discovery period shall not be less than 36 months following expiration of the policy. The City may waive the requirement for Professional Errors and Omissions Insurance whenever the Work does not warrant such coverage or the coverage is not available.
5. Each policy shall contain a provision that the policy shall not be canceled or materially changed without 30 days prior written notice to the City.

Upon written request to the City, the insurer will furnish, before or during performance of any Work, a copy of any policy cited above, certified to be a true and complete copy of the original.

B. Before the Consultant performs any Work, Consultant shall provide the City with a Certificate of Insurance acceptable to the City Attorney evidencing the above-required insurance and naming the City of Snoqualmie, its officers, employees and agents as Additional Insured on the Commercial General Liability Insurance policy and the Business Automobile Liability Insurance policy with respect to the operations performed and services provided under this Agreement and that such insurance shall apply as primary insurance on behalf of such Additional Insured. Receipt by the City of any certificate showing less coverage than required is not a waiver of the Consultant's obligations to fulfill the requirements.

C. Consultant shall comply with the provisions of Title 51 of the Revised Code of Washington before commencing the performance of the Work. Consultant shall provide the City with evidence of Workers' Compensation Insurance (or evidence of qualified self-insurance) before any Work is commenced.

D. In case of the breach of any provision of this section, the City may provide and maintain at the expense of Consultant insurance in the name of the Consultant and deduct the cost of providing and maintaining such insurance from any sums due to Consultant under this Agreement, or the City may demand Consultant to promptly reimburse the City for such cost.

9. Independent Contractor. The Consultant is an independent Contractor responsible for complying with all obligations of an employer imposed under federal or state law. Personnel employed by Consultant shall not acquire any rights or status regarding the City.

10. Employment. The Consultant warrants that it did not employ or retain any company or person, other than a bona fide employee working solely for the Consultant, to solicit or secure this Agreement or pay or agree to pay any such company or person any consideration, contingent upon or resulting from the award or making of this Agreement. For breach or violation of this warranty, the City shall have the right either to terminate this Agreement without liability or to deduct from the Agreement price or consideration or to otherwise recover, the full amount of such consideration.

11. Audits and Inspections. The Consultant shall make available to the City during normal business hours and as the City deems necessary for audit and copying all of the Consultant's records and documents with respect to all matters covered by this Agreement.

12. City of Snoqualmie Business License. Consultant shall obtain a City of Snoqualmie business license before performing any Work.

13. Compliance with Federal, State and Local Laws. Consultant shall comply with and obey all federal, state and local laws, regulations, and ordinances applicable to the operation of its business and to its performance of the Work.

14. Waiver. Any waiver by the Consultant or the City of the breach of any provision of this Agreement by the other party will not operate, or be construed, as a waiver of any subsequent breach by either party or prevent either party from thereafter enforcing any such provisions.

15. Complete Agreement. This Agreement contains the complete and integrated understanding and agreement between the parties and supersedes any understanding, agreement or negotiation whether oral or written not set forth herein.

16. Modification of Agreement. This Agreement may be modified by a Change Order as provided in Paragraph 1, or by a writing that is signed by authorized representatives of the City and the Consultant.

17. Severability. If any part of this Agreement is found to be in conflict with applicable laws, such part shall be inoperative, null and void, insofar as it is in conflict with said laws, the remainder of the Agreement shall remain in full force and effect.

18. Notices.

A. Notices to the City of Snoqualmie shall be sent to the following address:

City of Snoqualmie
Attn: Jeff Hamlin, Interim Public Works Director
38624 SE River Street
P.O. Box 987
Snoqualmie, WA 98065

B. Notices to the Consultant shall be sent to the following address:

Kennedy Jenks
Chris Baersten
1500 NE Irving Street, Suite 200
Portland, OR 97232

19. Venue. This Agreement shall be governed by the law of the State of Washington and venue for any lawsuit arising out of this Agreement shall be in King County.

IN WITNESS WHEREOF, the City and Consultant have executed this Agreement as of the date first above written.

CONSULTANT: Please fill in the spaces and sign in the box appropriate for your business entity.

CITY OF SNOQUALMIE,
WASHINGTON

By: _____
Its: Mayor
Date: _____

Corporation

[Consultant's Complete Legal Name]

By: _____
Typed/Printed Name: _____
Its: _____
Date: _____

ATTEST:

Deana Dean, City Clerk
Date:

APPROVED AS TO FORM:

David Linehan, City Attorney
Date: _____

Exhibit A
Scope of Work

EXHIBIT A: SCOPE OF WORK

Project Title: Water Reclamation Facility Effluent Mixing Zone Study

Introduction

The City of Snoqualmie (City) owns and operates a water reclamation facility (WRF) that discharges treated municipal wastewater to the Snoqualmie River through Outfall 001, which is about 1,700 feet upriver of Snoqualmie Falls (river mile [RM] 40.4). Outfall 001 is permitted by the Washington State Department of Ecology (Ecology) under National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit No. WA0022403 (Permit) (Ecology 2021a). The current version of the Permit (version 6) was issued May 19, 2021, and is effective July 1, 2021, through June 30, 2026 (Ecology 2021a).

To establish effluent limits for the current Permit, Ecology used simple volumetric equations to estimate the amount of mixing of effluent from Outfall 001 with receiving water and the potential for violation of surface water quality standards at the edge of the mixing zone (Ecology 2021b). Permit Special Condition S9 requires the City to perform a mixing study that will more accurately determine mixing characteristics of the discharge by measuring or modeling those characteristics under conditions specified in the Permit to assess whether water quality is protected outside the mixing zones. The City submitted an Effluent Mixing Zone Plan of Study by the July 31, 2023, deadline which was prepared by Parametrix (Parametrix 2023). The City must submit an Effluent Mixing Report by July 31, 2024.

Scope of Work

Kennedy Jenks (CONSULTANT) has developed this scope of work at the request of the City that is envisioned for completing the Effluent Mixing Zone Study specific to Outfall 001. This work plan follows Guidance for Conducting Mixing Zone Analyses (Appendix C of Ecology's Water Quality Program Permit Writer's Manual [Ecology 2018]) and the protocols identified in Special Condition S9.C of the Permit (Ecology 2021a). The study will follow the Parametrix Mixing Study Plan submitted to and approved by Ecology.

The scope of work details the following tasks for the work to be performed:

- Task 1 – Existing Data Review and RFI
- Task 2 – Data Analyses
- Task 3 – Effluent Mixing Zone Study Report
- Task 4 – Reasonable Potential Analysis (RPA)
- Task 5 – Optional Services
- Task 6 – Project Management and Quality Assurance and Quality Control

Task 1 – Existing Data Review and RFI

CONSULTANT will review existing and available data and prepare Requests for Information (RFIs) for the City to provide information for the mixing study.

CONSULTANT Services:

- Integration of all the data provided by the City and other sources from Task 1

City Responsibilities:

- Provide required information in a timely manner in electronic format whenever possible. Anticipated information is not limited to but may include:
 - Flows and Loads in Excel format
 - Results of quarterly or other frequency testing in Excel format
 - Previous mixing zone studies (in Word or PDF format). Assume that AKART is already established in the last engineering report and will not be confirmed. The latest outfall evaluation to be used in the study as a documentation of the existing outfall condition. No outfall evaluation will be performed.
 - Effluent data for the past two years including but not limited to (in Excel format):
 - Temperature
 - Flow
 - pH
 - Record drawings of outfall showing water surface elevations in the vicinity of the outfall in PDF format.
 - Details on the change in waterfall weir elevations. Change in weir elevations will be used to estimate the current water surface elevations based on the record drawings.

Assumptions:

- Only one RFI will be compiled as needed for the mixing study (over Tasks 1 and 2).
- Record Drawings of the WRF from the City will be considered accurate and useable for the project and will be in PDF form.
- Data from the City will be in an easy-to-use electronic formats indicated above.

Deliverables:

- RFI in e-mail format

Task 2 – Data Analyses

CONSULTANT will perform data analyses of the data gathered as part of Task 1 for the mixing study.

CONSULTANT Services:

- Integration of all the data provided by the City and other sources from Task 1
- DFLOW modeling for calculating critical flow conditions from flow data of the various USGS gauge stations

City Responsibilities:

- None

Assumptions:

- Additional analysis, modeling, data requests, data collection, etc. will need a contract amendment to add this additional effort.

Deliverables:

- None (Information from RFI will be summarized in the mixing study report.)

Task 3 – Mixing Zone Study

CONSULTANT will perform an Effluent Mixing Zone Study for the City's WWTP discharge consistent with the Parametrix Mixing Study Plan submitted to and approved by Ecology.

CONSULTANT Services:

- Use the data to calculate the acute, chronic, and human health dilution factors at the regulatory mixing zones around the discharge using CORMIX.
- Conduct a sensitivity analysis of the CORMIX model to evaluate the effect of minor changes to the program inputs.
- Produce a report on the study and submit to the City and Ecology for review and comment. The report will include:
 - Descriptions of the data collection methods
 - Summaries of the data and tabulated data sets in appendices

- Discussion of the CORMIX model and the input parameters used
- Presentation of the CORMIX results, including graphics depicting the zone of initial dilution and mixing zone, and computer model output in an appendix
- Evaluation of the model sensitivity
- Conduct one coordination virtual meeting with the City to review results with up to 3 consultants attending. The calls will last for 1 hour with 1 hour of preparation and follow-up. The purpose of the meeting will just include review of the report.
- Conduct one coordination virtual meeting with Ecology as needed with up to 3 consultants attending. The calls will last for 1 hour with 3 hours of preparation and follow-up.
- QA/QC
 - Quality reviews of each major deliverable prior to submittal to City

City Responsibilities:

- Timely review and comment on deliverables.

Assumptions:

- If there is a need for additional hydraulic or other modelling, the modeling software will be at the discretion of CONSULTANT.
- For Mixing Zone calculations,
 - No field work will be conducted to gather data. Data can be reasonably gathered from existing sources.
 - If data gaps for the Mixing Study are identified in Task 2, additional data collection is not included in the scope of work but can be added by addendum.
 - The license of CORMIX will be purchased for a 6-month period and the mixing study modeling is conducted and completed within the 6-month period. If CORMIX is needed longer than the 6-month period, additional cost will be needed for purchase of additional license duration.

Deliverables:

- DRAFT Effluent Mixing Zone Study Report (No more than 20 pages, electronic copy delivered to both the City and Ecology)
- FINAL Effluent Mixing Zone Study Report (No more than 20 pages, excluding appendices, 1 hard copy and electronic copy delivered to both the City and Ecology).

Task 4 – Reasonable Potential Analysis

CONSULTANT will perform a Reasonable Potential Analysis to assess and plan for potential issues related to meeting water quality standards under the new dilution credits determined by the mixing study.

CONSULTANT Services:

- Conduct preliminary Reasonable Potential Analysis (RPA) using Ecology's template for up to 5 parameters for coordination with the District on discussions with Ecology.

City Responsibilities:

- Timely review and comment on deliverables.

Assumptions:

- Results of the RPA will be discussed with the City in Task 3.
- The parameters that will be evaluated during the Reasonable Potential Analysis (RPA) are copper, mercury, lead, zinc, and ammonia as measured using the test methods outlined in the current discharge permit. The selected parameters will be finalized after reviewing existing effluent data.
- This RPA analysis is solely for understanding the implications of the Mixing Zone Study and coordination between the Consultant and the District. Ecology will perform its own independent RPA.
- Further analysis such as more refined site-specific effluent limits using the biotic ligand model are not included in the scope of work but can be added by addendum.
- The RPA will use existing available background receiving water data. If there is insufficient data for the RPA, additional Snoqualmie River receiving water data collection may be required. This is not included in this scope of work but can be added by addendum.

Deliverables:

- RPA spreadsheet

Task 5 – Optional Services (Upon Future Amendment Approval)

At the direction of the City, CONSULTANT will perform additional services. Contemplated additional services are described below. Scope of additional services will be agreed to by the City and CONSULTANT and CONSULTANT will confirm that appropriate budget is remaining to complete the additional services. If additional services require additional budget, the City will issue an addendum for the additional budget.

Contemplated CONSULTANT Services:

- Investigation and evaluation of obtaining a variance for water quality standards.
- Evaluation of appropriate water quality standards for the outfall acknowledging the proximate waterfall downstream of Outfall 001.
- Conducting mixing zone modeling with new outfall configurations including multi-port diffusers or other configurations to increase mixing.
- Conceptual engineering evaluations for new outfall configurations including sizing, constructability, and cost estimating.

City Responsibilities:

- Timely review and comment on deliverables.

Assumptions:

- Budget is limited to \$5,000.

Deliverables:

- As agreed to by the City and CONSULTANT.

Task 6 – Project Management and Quality Assurance and Quality Control

CONSULTANT will manage the project with regards to scope compliance, budget control, timeline adherence, project team coordination, and quality reviews.

CONSULTANT Services:

- Team Oversight
- Budget Tracking and Monthly Invoicing

Invoices will include a summary of monthly activities.

- Schedule Confirmation and Schedule Tracking
- Change Management
- Project Manager will monitor project and use tools such as resource allocation, budget reallocation, and schedule reconfiguration to manage the overall delivery of the project within the timelines and budgets. PM will contact city to discuss any changes that impact deliverables and deadlines.
- Project status phone calls will be held with the City's team.

- QA/QC
 - Internal 'concept and criteria review' meeting to provide direction to team
 - Quality reviews of each major deliverable prior to submittal to City

City Responsibilities:

- Participate in regularly scheduled status phone calls.
- Provide input related to any changes to budget, schedule, etc.
- Make decisions based upon CONSULTANT's analysis.
- Provide CONSULTANT with feedback if anything isn't going to the City's satisfaction.

Assumptions:

- Project duration is assumed to be 6 months. Invoices will be sent monthly.
- Project status phone calls will be hosted by CONSULTANT. Phone call will be 30 minutes in length and up to three calls will be held.

Deliverables:

- Invoices

Fee Estimate:

- Fee Estimate is provided in Exhibit A and Schedule of Charges is provided in Exhibit B.

EXHIBIT B
COMPENSATION

Exhibit B-1: SCHEDULE OF CHARGES

Client/Address: City of Snoqualmie
P.O. Box 987
Snoqualmie, WA 98065

Contract/Proposal Date: 21 February 2024

PERSONNEL COMPENSATION

Classification	Hourly Rate
Engineer-Scientist-Specialist 1	\$130
Engineer-Scientist-Specialist 2	\$165
Engineer-Scientist-Specialist 3	\$175
Engineer-Scientist-Specialist 4	\$195
Engineer-Scientist-Specialist 5	\$215
Engineer-Scientist-Specialist 6	\$235
Engineer-Scientist-Specialist 7	\$255
Engineer-Scientist-Specialist 8	\$280
Engineer-Scientist-Specialist 9	\$290
CAD-Technician	\$135
Senior CAD-Technician	\$145
CAD-Designer	\$160
Senior CAD-Designer	\$165
Project Administrator	\$130
Administrative Assistant.....	\$95
Aide	\$85

In addition to the above Hourly Rates, an Associated Project Cost charge of \$8.00 per hour will be added to Personnel Compensation for costs supporting projects including telecommunications, software, information technology, internal photocopying, shipping, and other support activity costs related to the support of projects.

Direct Expenses

Reimbursement for direct expenses, as listed below, incurred in connection with the work, will be at cost plus five percent for items such as:

- a. Maps, photographs, 3rd party reproductions, 3rd party printing, equipment rental, and special supplies related to the work.
- b. Consultants, soils engineers, surveyors, contractors, and other outside services.
- c. Rented vehicles, local public transportation and taxis, travel and subsistence.
- d. Project specific telecommunications and delivery charges.
- e. Special fees, insurance, permits, and licenses applicable to the work.
- f. Outside computer processing, computation, and proprietary programs purchased for the work.

Reimbursement for vehicles used in connection with the work will be at the federally approved mileage rates or at a negotiated monthly rate.

If prevailing wage rates apply, the above billing rates will be adjusted as appropriate.

Overtime for non-exempt employees will be billed at one and a half times the Hourly Rates specified above.

Rates for professional staff for legal proceedings or as expert witnesses will be at rates one and one-half times the Hourly Rates specified above.

Excise and gross receipts taxes, if any, will be added as a direct expense.

The foregoing Schedule of Charges is incorporated into the agreement for the services provided from the effective date of the agreement through 31 December 2024. The Schedule of Charges may be adjusted annually up to four percent to reflect salary and benefit cost changes.

EXHIBIT B: COMPENSATION

Kennedy Jenks

Client Name: City of Snoqualmie

Project Name: Mixing Study

Date: 2/21/2024

Task 1 – Existing Data Review and RFI	\$6,510
Task 2 – Data Analyses	\$9,652
Task 3 – Effluent Mixing Zone Study Report	\$34,476
Task 4 – Reasonable Potential Analysis (RPA)	\$7,119
Task 5 – Optional Services	\$5,000
Task 6 – Project Management and Quality Assurance & Quality Control	\$11,208
TOTAL	\$73,965

Compensation will follow the Schedule of Charges in Exhibit B-1.

Water Reclamation Facility Outfall 001 Effluent Mixing Zone Plan of Study

Prepared for

City of Snoqualmie
38624 SE River Street
Snoqualmie, WA 98065

Prepared by

Parametrix
1019 39th Avenue SE, Suite 100
Puyallup, WA 98374
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CITATION

Parametrix. 2023. Water Reclamation Facility Outfall 001 Effluent Mixing Zone Plan of Study. Prepared for City of Snoqualmie by Parametrix, Puyallup, Washington. September 2023.

CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.



9-8-2023

Prepared by Brian Pippin, PE

Checked by Randy Raymond, PE

Approved by JC Hungerford, PE

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ACRONYMS AND ABBREVIATIONS

AKART	all known, available, and reasonable methods of prevention, control, and treatment
BOD ₅	5-day biochemical oxygen demand
CBOD ₅	5-day carbonaceous biochemical oxygen demand
CFU	colony-forming units
City	City of Snoqualmie
DMR	discharge monitoring report
Ecology	Washington State Department of Ecology
EIM	Environmental Information Management
lbs/day	pounds per day
MEC	maximum expected concentration
mg/L	milligrams per liter
MGD	million gallons per day
mL	milliliter(s)
MMDF	maximum month design flow
NPDES	National Pollutant Discharge Elimination System
PARIS	Permitting and Reporting Information System
Permit	Waste Discharge Permit No. WA0022403
RM	river mile
RWC	reasonable worst case
TCP	Traditional Cultural Property
TMDL	total daily maximum load
TSS	total suspended solids
USGS	U.S. Geological Survey
UV	ultraviolet light
WQC	water quality criteria
WRF	water reclamation facility

1. INTRODUCTION

The City of Snoqualmie (City) owns and operates a water reclamation facility (WRF) that discharges treated municipal wastewater to the Snoqualmie River through Outfall 001, which is about 1,700 feet upriver of Snoqualmie Falls (river mile [RM] 40.4). Outfall 001 is permitted by the Washington State Department of Ecology (Ecology) under National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit No. WA0022403 (Permit) (Ecology 2021a). The current version of the Permit (version 6) was issued May 19, 2021, and is effective July 1, 2021, through June 30, 2026 (Ecology 2021a).

To establish effluent limits for the current Permit, Ecology used simple volumetric equations to estimate the amount of mixing of effluent from Outfall 001 with receiving water and the potential for violation of surface water quality standards at the edge of the mixing zone (Ecology 2021b). Permit Special Condition S9 requires the City to perform a mixing study that will more accurately determine mixing characteristics of the discharge by measuring or modeling those characteristics under conditions specified in the Permit to assess whether water quality is protected outside the mixing zones. The City must submit an Effluent Mixing Zone Plan of Study by July 31, 2023, and an Effluent Mixing Report by July 31, 2024.

This document presents the plan of study for completing the Effluent Mixing Zone Study for Outfall 001. This work plan follows *Guidance for Conducting Mixing Zone Analyses* (Appendix C of Ecology’s Water Quality Program Permit Writer’s Manual [Ecology 2018]) and the protocols identified in Special Condition S9.C of the Permit (Ecology 2021a). Note that the mixing study will not address Class A reclaimed water discharged from Outfall 002, which is subject to different Permit terms and conditions.

1.1 Facility Description

The City’s WRF primarily serves residential customers and light commercial entities within city limits. The first wastewater treatment plant was a 6.7-acre facultative lagoon system that was constructed in 1967 and upgraded more than 20 years later to accommodate anticipated growth. The original facility was replaced by a new facility in 1997 to expand treatment capacity for a growing population and to reduce pollutant loadings to the Snoqualmie River. In addition to an advanced wastewater treatment system, the new facility included systems necessary to produce and distribute Class A reclaimed water for seasonal land application and irrigation (Outfall 002). The facility was further expanded in 2002, and several facility improvements were made in 2017 through 2019.

1.2 Current and Planned Process Wastewater Treatment System

For treated wastewater discharges to Outfall 001, the current WRF comprises a headworks facility (including screening and vortex grit removal), oxidation ditches, secondary clarifiers, an ultraviolet light (UV) disinfection system, and a solids handling facility. The solids handling facility comprises rotary drum thickening equipment, aerobic digesters, centrifuge dewatering equipment, and a truck bay to load Class B biosolids for off-site handling.

The Permit includes facility loading requirements based on the WRF’s design criteria:

- Maximum month design flow (MMDF): 2.15 million gallons per day (MGD).
- Influent loading for maximum month:
 - 5-Day biochemical oxygen demand (BOD₅): 5,220 pounds per day (lbs/day).
 - Total suspended solids (TSS): 5,220 lbs/day.
- Reclaimed Water Production MMDF: 1.56 MGD.

Production of reclaimed water generally occurs during the summer months (typically from sometime in May through sometime in September). During this period, discharges to Outfall 001 occur only if flows to the WRF exceed the limit for reclaimed water production or if any part of the reclaimed water system is offline for maintenance or repair.

The City recently updated its general sewer plan (RH2 Engineering 2022) for consistency with future population and employment growth projections, evaluated existing and projected future sewer flow and loadings, and determined whether the existing sewer system meets Ecology’s minimum requirements and the City’s policies and design criteria.

1.3 Snoqualmie River Characteristics

The Snoqualmie River originates on the west side of the Cascade Mountains in Washington. It flows about 45 miles from where its three tributary forks converge upriver from the city of Snoqualmie to where it meets the Skykomish River to form the Snohomish River near the city of Monroe. The river system drains about 700 square miles in King and Snohomish Counties. The lower basin below Snoqualmie Falls is primarily a mix of developed areas (residential, commercial, and industrial) and agricultural uses (dairies, berry fields, pastures, and row crops), while the upper basin above the falls is mostly privately and federally managed forestland with residential and commercial land uses along the Interstate 90 corridor and in the cities of North Bend and Snoqualmie (Stohr et al. 2011).

Above Snoqualmie Falls, where the City’s Outfall 001 is located, the Snoqualmie River has the following designated uses (Ecology 2021b):

- Freshwater aquatic life use: core summer salmonid habitat.
- Recreational use: primary contact recreation.
- Water supply uses: domestic, agricultural, industrial, and stock watering.
- Miscellaneous freshwater uses: wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

Development and loss of riparian vegetation within the Snoqualmie River basin has led to multiple water quality impairments of fecal coliform bacteria, nutrients, and temperature. As a result, total daily maximum loads (TMDLs) have been developed for these parameters. The studies supporting development of these TMDLs are listed below:

- Snoqualmie River Low Flow Water Quality Assessment, July-September 1989 (Joy et al. 1991).
- Snoqualmie River TMDL Study (Joy 1994).

- Quality Assurance Project Plan: Snoqualmie River TMDL Effectiveness Evaluation (Onwumere and Batts 2004).
- Snoqualmie River Basin Fecal Coliform Bacteria, Dissolved Oxygen, Ammonia-Nitrogen, and pH TMDL: Water Quality Effectiveness Monitoring Report (Sargeant and Svrjcek 2008).
- Snoqualmie River Basin TMDL – Water Quality Improvement Report and Implementation Plan (Stohr et al. 2011).

These studies include TMDL wasteload allocations for the City’s Outfall 001 discharge:

- Ammonia-nitrogen: 68.7 pounds per day for the August through October critical season (Joy 1994).
- 5-day carbonaceous biochemical oxygen demand (CBOD₅): 206 lbs/day for the August through October critical season (Joy 1994).
- Fecal coliform bacteria: 2.5 x 10¹⁰ colony-forming units (CFU) per day (Joy 1994).
- Temperature: 24.7°C from June 1 through September 30 (Stohr et al. 2011).

As noted in the fact sheet (Ecology 2021b) for fecal coliform bacteria, Ecology has routinely enforced technology-based limits as the required controls necessary to comply with the TMDL rather than the wasteload allocation specified in the TMDL.

Snoqualmie Falls, the water flowing over the falls, and the surrounding area were listed on the National Register of Historic Places in 2009 as a Traditional Cultural Property (TCP). This designation recognizes the cultural and religious significance of the falls and surrounding land to the Snoqualmie Indian Tribe, which has historically occupied the Snoqualmie Valley and areas around Snoqualmie Falls (Ecology 2021b). The WRF and Outfall 001 (including its authorized mixing zone) are located upstream of the TCP boundary.

1.4 Permit Effluent Limits

The Permit authorizes acute and chronic mixing zones, with dilution factors for acute and chronic aquatic life and carcinogenic and noncarcinogenic human health criteria. Ecology determined the dilution factors associated with the authorized mixing zones based on simple mixing of the effluent with the percentage of the river flow at critical conditions. The authorized chronic mixing zone is 42.5 feet wide and extends 310.5 feet downstream and 100 feet upstream of the outfall; it is based on dilution factors ranging from 35.5 to 183.3 (Table 1). The authorized acute mixing zone is limited to 42.5 feet in any horizontal direction from the outfall and extends 31.0 feet downstream and 10 feet upstream of the outfall; it is based on a dilution factor of 2.4 (Table 1). Both zones also extend vertically from the discharge port to the top of the water surface.

Table 1. Dilution Factors Associated with Authorized Mixing Zones for Outfall 001

Criteria	Dilution Factor
Acute Aquatic Life Criteria	2.4
Chronic Aquatic Life Criteria	35.5
Human Health Criteria – Carcinogen	183.3
Human Health Criteria – Noncarcinogen	49.3

Source: Table 3 in Ecology (2021b)

Effluent limits in the current Permit are set so that pollutant concentrations at the edge of the chronic mixing zone meet chronic aquatic life criteria and human health criteria and pollutant concentrations at the edge of the acute mixing zone meet acute aquatic life criteria. The Permit established effluent limits (concentrations and/or loads) for CBOD₅, TSS, pH, fecal coliform bacteria, total ammonia-nitrogen, and temperature (Table 2).

Table 2. Effluent Limits for Outfall 001

Parameter	Average Monthly	Average Weekly
CBOD ₅	25 mg/L 85% removal of influent CBOD ₅	40 mg/L
CBOD ₅ Mass <i>Effective November through July Only</i>	448 lbs/day	717 lbs/day
TSS	30 mg/L 538 lbs/day 85% removal of influent TSS	45 mg/L 807 lbs/day
Parameter	Minimum	Maximum
pH	6.3 standard units	9.0 standard units
Parameter	Monthly Geometric Mean	Weekly Geometric Mean
Fecal Coliform Bacteria	200/100 mL	400/100 mL
Parameter	Average Monthly	Maximum Daily
CBOD ₅ Mass <i>Effective August through October Only</i>	51.6 lbs/day	206 lbs/day
Total Ammonia Mass (as NH ₃ -N) <i>Effective August through October Only</i>	21.6 lbs/day	68.7 lbs/day
Temperature, Maximum 7-Day Running Average (7DADMax) <i>Effective June through September Only</i>	Not Applicable	24.7°C

Source: Table 2 in Ecology (2021a)

Notes: CBOD₅ = 5-day carbonaceous biochemical oxygen demand; mg/L = milligram(s) per liter; lbs/day = pounds per day; mL = milliliter(s).

Effluent limits for other conventional, nonconventional, or priority pollutants detected in the effluent were not specified because Ecology did not find any reasonable potential for those pollutants to violate water quality criteria at the mixing zone boundaries (Appendix D in Ecology 2021b).

2. DATA SOURCE SUMMARY

Parametrix compiled and reviewed available data to determine its suitability for use in dilution modeling and identify data gaps that will need to be addressed as part of the mixing zone study. Data sources reviewed to support plan of study development included the following:

- Permit WA0022403 (Ecology 2021a).
- Permit WA0022403 fact sheet (Ecology 2021b).
- U.S. Geological Survey (USGS) gage data and online calculations.
- TMDL documents (Joy et al. 1991; Joy 1994; Onwumere and Batts 2004; Sargeant and Svrjcek 2008; Stohr et al. 2011) and other publicly available reports.

- Discharge monitoring report (DMR) data.
- Priority pollutant sampling data.
- Whole effluent toxicity test results.
- Ecology’s Environmental Information Management (EIM) database.
- Ecology’s Water Quality Permitting and Reporting Information System (PARIS).
- General sewer plan (RH2 Engineering).
- Outfall inspection results.
- Record drawings.

Results of this review are summarized separately below for the outfall, effluent, and receiving water.

2.1 Outfall Data

Data for Outfall 001 are available from multiple sources, including:

- The Permit (Ecology 2021a) and Permit fact sheet (Ecology 2021b).
- General sewer plan (RH2 Engineering).
- 1996 hydraulic profile (KCM).
- Results of the 2018 outfall inspection.
- Record drawings.

The available data from these sources include descriptions, dimensions, and diagrams/drawings. Together, they provide sufficient location, orientation, and dimension information for the outfall. A summary of the available data is provided below.

Outfall 001 is located in the Snoqualmie River about 1,700 feet upstream of Snoqualmie Falls and just upstream of the Railroad Avenue (State Route 202) Bridge. Geographic coordinates for the outfall are 47.53916 degrees north latitude and 121.83222 degrees west longitude (Ecology 2021b). It is a 1,500-foot-long (from the WRF), 36-inch-diameter concrete pipe with a submerged ductile iron single port diffuser (RH2 Engineering 2022). It is anchored to the river bottom using “H” pilings and chains. The most recent inspection of the outfall (2018) found the following:

- The pipe, joints, and anchor were serviceable and intact with no visible signs of damage.
- The outlet pipe was flowing free and unobstructed, with no signs of sediment accumulation.
- The “H” pilings, wire rope, and shackles were intact and working as designed.

According to the Permit fact sheet, the outfall pipe extends about 30 feet from the north river bank; the first 15 feet of pipe is buried, and the rest is uncovered. The river is 10.5 feet deep at the 7Q10 flow where the outfall pipe terminates. The 1996 hydraulic profile indicates that the river surface elevation is 398 feet at the 7Q10 flow. The 2018 inspection indicated that the pipe was visible and exposed at a submerged depth of 4.5 feet at a distance of 11 feet from the river bank, the end of the outfall was about 50 feet offshore, and the top of the outfall was 6 feet below the water surface (i.e., the bottom of the outfall was 9 feet below the water surface).

2.2 Effluent Data

As summarized in the Permit fact sheet (Ecology 2021b), Ecology characterized Outfall 001 effluent using data from the May 2014 through October 2018 DMRs, annual priority pollutant scans, and inspection monitoring results. For this mixing study, effluent flow will be characterized using the most recent 3 years of DMR data. Because the critical discharge conditions for protection of aquatic life occur during the dry season (June through September), the daily maximum and monthly average flows for dry season discharge will be calculated. Appendix D to the fact sheet contains Ecology’s reasonable potential calculations for Outfall 001. No additional characterization of effluent quality is planned for this mixing study.

Because current discharge flows are less than 85% of the design flow, dilution associated with acute aquatic life standards will be modeled using maximum daily flow (dry season), dilution associated with chronic aquatic life standards will be modeled using maximum monthly flow (dry season), and dilution associated with human health standards will be modeled using average annual flow, as described in Appendix C of the Permit Writer’s Manual (Ecology 2018). Per Appendix C in the Permit Writer’s Manual (Ecology 2018), flow data from the previous 3 years will be used to characterize effluent flow. Mixing will also be analyzed using projected future effluent flow for 2040, which is the longest future projection in the sewer plan. For this analysis, effluent flows will be based on the design flow.

2.3 Receiving Water Data

Receiving water data are available from multiple sources, including:

- The Permit fact sheet.
- TMDL-related documents:
 - Snoqualmie River Low Flow Water Quality Assessment, July-September 1989 (Joy et al. 1991).
 - Snoqualmie River TMDL Study (Joy 1994).
 - Quality Assurance Project Plan: Snoqualmie River TMDL Effectiveness Evaluation (Onwumere and Batts 2004).
 - Snoqualmie River Basin Fecal Coliform Bacteria, Dissolved Oxygen, Ammonia-Nitrogen, and pH TMDL: Water Quality Effectiveness Monitoring Report (Sargeant and Svrjcek 2008).
 - Snoqualmie River Basin Temperature TMDL – Water Quality Improvement Report and Implementation Plan (Stohr et al. 2011).
- Ecology’s EIM database.

For characterizing critical conditions, the 7Q10 flow¹ and river depth at 7Q10 flow were obtained from Joy et al. (1991), and the 30Q5² and harmonic mean flows are calculated based on the 7Q10 flow. Additionally, the Permit fact sheet states that the river width at 7Q10 flow and river slope were estimated using aerial photo interpretation and topographic map measurements.

¹ 7Q10 is the lowest 7-day average flow that occurs (on average) once every 10 years.

² 30Q5 is the lowest 30-day average flow that occurs (on average) once every 5 years.

River discharge data from USGS stations will be analyzed to confirm critical flow conditions listed in the fact sheet. Data are available from the following nearby stations:

- 12144500 (SNOQUALMIE RIVER NEAR SNOQUALMIE, WA), downstream of Snoqualmie Falls
- 12142000 (NF SNOQUALMIE RIVER NEAR SNOQUALMIE FALLS, WA)
- 12144000 (SF SNOQUALMIE RIVER AT NORTH BEND, WA)
- 12141300 (MIDDLE FORK SNOQUALMIE RIVER NEAR TANNER, WA)

3. DILUTION MODEL SELECTION

Parametrix anticipates using the CORMIX dilution modeling program to evaluate the discharge for effluent flow rates under critical conditions specified in the Permit and resulting from our review of data. The CORMIX model operates by mapping physical characteristics of the outfall, discharge, and receiving water to flow classifications within the model. Preliminary modeling using data from the Permit fact sheet resulted in plausible CORMIX flow classifications for the discharge, suggesting that CORMIX should be an appropriate dilution model to use for the mixing study.

Dilution may also be calculated using Ecology’s RiverPlume6 spreadsheet model.

Although not planned at this time, a dye or tracer study may be considered if empirical validation or calibration of dilution modeling results is warranted.

4. MIXING STUDY OUTLINE AND APPROACH

The mixing study report will address the elements specified in Permit Special Condition S9.B, including the following:

- A statement confirming that all known, available, and reasonable methods of prevention, control, and treatment (AKART) have been applied.
- A description of outfall characteristics.
- A description of effluent discharge characteristics.
- A description of the ambient water characteristics, including critical flows, water quality, and currents.
- A discussion of how dilution modeling impacts the size and extents of the mixing zone.
- Identification and calculation of critical conditions used to determine dilution factors.
- Consideration of current on dilution factors.
- Summary of model results (dilution factors).

Additionally, any established information (e.g., outfall information) that is being used as part of this mixing study will be identified, restated, and/or referenced in the report. Based on the review of available information, sufficient data exist to complete the mixing study. No additional receiving water characterization or tracer, dye, or any other type of physical dilution study is planned at this time.

Parametrix will incorporate the mixing study findings into a report with the following or a similar outline:

EXECUTIVE SUMMARY

1. Introduction

- 1.1 Facility Description
- 1.2 Wastewater Treatment System
- 1.3 Snoqualmie River Characteristics
- 1.4 Mixing Zone Description

2. Dilution Modeling Data Summary

- 2.1 Data Source Summary
 - 2.1.1 Outfall Data
 - 2.1.2 Effluent Data
 - 2.1.3 Receiving Water Data

- 2.2 Dilution Model Selection
- 2.3 Dilution Model Input Summary

3. Discharge Characteristics

- 3.1 Effluent Characterization
 - 3.1.1 Current Conditions
 - 3.1.2 Projected Future Conditions

4. Mixing Zone Modeling Analysis

- 4.1 Sensitivity Analysis

5. Summary and Conclusions

6. References

APPENDICES

- A Effluent Characterization
- B CORMIX Input
- C CORMIX Output

5. REFERENCES

Ecology (Washington State Department of Ecology). 2018. Water Quality Program Permit Writer’s Manual. Publication No. 92-109. Manual revised July 2018. Appendices revised September 2018.

Ecology. 2021a. National Pollutant Discharge Elimination System Waste Discharge Permit No. WA0022403. May 19, 2021.

Ecology. 2021b. Fact Sheet for NPDES Permit WA0022403. May 19, 2021.

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MEMORANDUM

Date: February 9th, 2024

Subject: WRF Effluent Mixing Zone Study– Design Consultant Selection

After reviewing the qualifications of the following five vendors, **RH2 Engineering, Gray & Osborne Consulting Engineers, Parametrix, Tetra Tech, and Kennedy Jenks** selected from the MRSC roster. Staff have determined that **Kennedy Jenks** Statement of Qualifications is the best fit for the proposed WRF Effluent Mixing Zone Study.

The following criteria were considered in choosing **Kennedy Jenks** for this project.

- Demonstrated experience in preparing effluent mixing zone studies in Washington;
- Effective communication of technical information with City Staff;
- Quality of previous work products;
- Ability to meet contract deadlines for this fast-tracked deliverable;
- Responsiveness to City’s needs;
- References; and
- Staff readily available for the project

Andrew Vining, P.E.
City of Snoqualmie
Parks and Public Works

S1.B. Mixing zone authorization

Mixing zone for Outfall 001

