

RH2 TECHNICAL MEMORANDUM

Client: City of Snoqualmie
Project: Reclaimed Water Distribution System Improvements
Project File: SNQ 0220187.00.0006
Project Manager: Barney Santiago, PE
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Subject: Reclaimed Water Irrigation Pump Station
Date: August 1st, 2024



Signed: 08/01/2024

Background

The City of Snoqualmie (City) owns and operates a reclaimed water supply and distribution system that is 25 years old. The City's Water Reclamation Facility supplies Class A reclaimed water to Eagle Lake, where it is stored as irrigation supply for City-supplied customers and The Club at Snoqualmie Ridge Golf Course. City customers are supplied irrigation water from the City-owned Irrigation Pump Station (IPS) located near Eagle Lake. The Golf Course irrigation system is owned and operated by the Golf Course and is separate from City operations. The City currently is designing improvements for its reclaimed water system to meet updated National Pollutant Discharge Elimination System Permit requirements. Improvements include a new closed water reservoir to be located just east of SE Ridge Street and north of Hole 2 at the Golf Course.

The City asked RH2 Engineering, Inc., (RH2) to prepare this technical memorandum to evaluate the advantages and disadvantages of using the existing IPS or building a new IPS to serve end users from the new reclaimed water system reservoir.

Existing IPS

RH2's *Reclaimed Water Distribution System Engineering Report (2023)* (**Attachment 1**) assumed the City would reuse the existing IPS as part of the reservoir improvements. The main advantage of reusing the existing IPS is that it would reduce the cost of near-term improvements to the reclaimed water system. However, there are several disadvantages to continuing to operate the existing IPS, including the following:

- The existing IPS is aging and in poor condition. The suction side piping and irrigation pumps have deteriorated due to decades of withdrawing Class A water from Eagle Lake, resulting in expedited wear on the pump cans and related suction piping.
- A new control structure and clearwell would be required to hydraulically operate the existing IPS with the new reservoir.

- The existing IPS is structurally connected to the Golf Course's irrigation pump station. Operating the new reservoir with the existing IPS would require modifying the existing yard piping that is in close proximity to the Golf Course's primary irrigation piping.
- Connecting the existing IPS to the new reservoir would require additional irrigation force main to be installed on Eagle Lake Drive SE, which would disrupt homeowners and Golf Course activities during construction. Eagle Lake Drive SE is congested with buried utilities and construction of a new 10-inch irrigation force main in the right-of-way would be slow and complex.

The construction cost to extend the irrigation transmission main from the reservoir to the existing IPS as well as to construct ancillary control and clearwell structures would range between \$650,000 and \$900,000. The existing IPS pumps are approximately 25 years old and have limited useful life remaining. If the existing IPS is reconfigured to accommodate the new reclaimed water reservoir, the City would need to plan to replace the pumps in the next 5 to 10 years. This would be an additional cost of approximately \$200,000 to \$300,000.

Proposed IPS

A new IPS would be constructed at the reclaimed water reservoir site. Although constructing a new IPS would be more costly than reusing the existing IPS, there are several advantages, including the following:

- The existing IPS pumps have 5 to 10 years of useful life remaining.
- Additional features that increase operability and efficiency of the reclaimed water system could be implemented at a new IPS. These features include variable frequency drives for the pumps, connections to a portable backup power generator, and emergency chlorination.
- The new reclaimed water reservoir will slightly change the hydraulic grade of the reclaimed water system. The new IPS can be designed around the reservoir hydraulics to maximize efficiency.
- The proposed IPS equipment and piping will only convey high quality Class A reclaimed water instead of a mixture of Class A water and low-quality raw surface water currently drawn from Eagle Lake. Additionally, the new IPS will have the ability to dispose of Class A water to the sewer system if it does not meet specifications.
- The proposed IPS will be located at the secured reservoir site adjacent to the reservoir. This will limit the number of sites that operators and maintenance personnel must regularly visit.

The construction cost to implement a new IPS at the reservoir site would range between \$2,200,000 and \$2,800,000.

Recommendations

Based on the many advantages of building a new IPS at the reclaimed water reservoir site, RH2 recommends the City design and construct the proposed IPS. A new IPS would cost \$1,300,000 to \$1,600,000 more than reusing the existing IPS, and the City would have a new facility independent from Golf Course infrastructure dedicated to conveying high-quality Class A reclaimed water. If the City were to reuse the existing IPS, the transmission main to connect the reservoir to the existing IPS would be a costly and disruptive construction project that may be abandoned years after installation. It would be more economical to implement new irrigation infrastructure now than to invest in depreciating assets associated with the existing pump station that has limited useful life remaining.

Attachments

Attachment 1 – Reclaimed Water Distribution System Engineering Report

Attachment 1

**Reclaimed Water Distribution System Engineering
Report**



RECLAIMED WATER DISTRIBUTION SYSTEM ENGINEERING REPORT

Prepared for City of Snoqualmie

December 2023

SNQ 22-0187



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City of Snoqualmie

Reclaimed Water Distribution System

December 2023

Prepared by RH2 Engineering, Inc.

Prepared for City of Snoqualmie

Note: This Engineering Report was completed under the direct supervision of the following Licensed Professional Engineers registered in the State of Washington.

Sincerely,

RH2 ENGINEERING, INC.



Signed: 12/07/2023

City of Snoqualmie

Reclaimed Water Distribution System

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City of Snoqualmie

Reclaimed Water Distribution System

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City of Snoqualmie

Reclaimed Water Distribution System

Engineering Report

Introduction

This Engineering Report (Report) evaluates alternatives for the City of Snoqualmie (City) to improve its reclaimed water distribution system to meet the requirements of the Washington State Department of Ecology's (Ecology) Reclaimed Water Rule and to comply with Permit Section R8.A.1 of the City's current Reclaimed Water Permit. This Report includes the reclaimed water system alternatives analysis and the preliminary design of the preferred alternative.

Background

The City owns and operates a potable water system, a sanitary sewer system, and a reclaimed water system. The reclaimed water supply and distribution system finished construction in 1999. The City's Water Reclamation Facility (WRF) supplies Class A reclaimed water to Eagle Lake, where it is stored as irrigation supply for City-supplied customers and the Snoqualmie Ridge Golf Course (Golf Course). City customers are supplied irrigation water from the City owned Irrigation Pump Station (IPS) located near Eagle Lake. The Golf Course irrigation system is owned and operated by the Golf Course and is separate from City operations. **Figure 1** shows the reclaimed water transmission main from the WRF to Eagle Lake, as well as the City's reclaimed water system irrigation areas.

In 2021, Ecology issued the City's updated National Pollutant Discharge Elimination System (Permit) Permit (No. WA0022403), which included additional requirements for the City's reclaimed water system. These updates are based on the recently modified Reclaimed Water Rule, Chapter 173-219 Washington Administrative Code (WAC), which includes requirements that did not exist at the time the reclaimed water system was constructed. Through the NPDES Permit, Ecology is requiring the City to modify the reclaimed water distribution system to "...not allow contamination of reclaimed water by lower quality water, such as urban stormwater runoff." The purpose of this Report is to analyze alternatives and propose reclaimed water system improvements to fulfill Permit Section R8.A.1 submittal requirements. The use of reclaimed water is necessary to help meet the growing need for clean water for beneficial use. It is RH2 Engineering, Inc., (RH2) and the City's understanding that the goal of the Reclaimed Water Rule and the Permit, as it pertains to the City's Class A reclaimed water irrigation system, is to prevent degradation of reclaimed water quality from other sources.

The existing City irrigation system is a non-expanding reclaimed water system. At this time, the City has no intention to increase the service area or number of customers that receive reclaimed water.

Historical Irrigation Usage

Currently, reclaimed water is produced at the WRF, sent to Eagle Lake via the Reclaimed Water Transmission Main, and then pumped from the IPS to the City's irrigation distribution system. The municipal side of the IPS has three pumps that supply a 10-inch pipeline that connects to

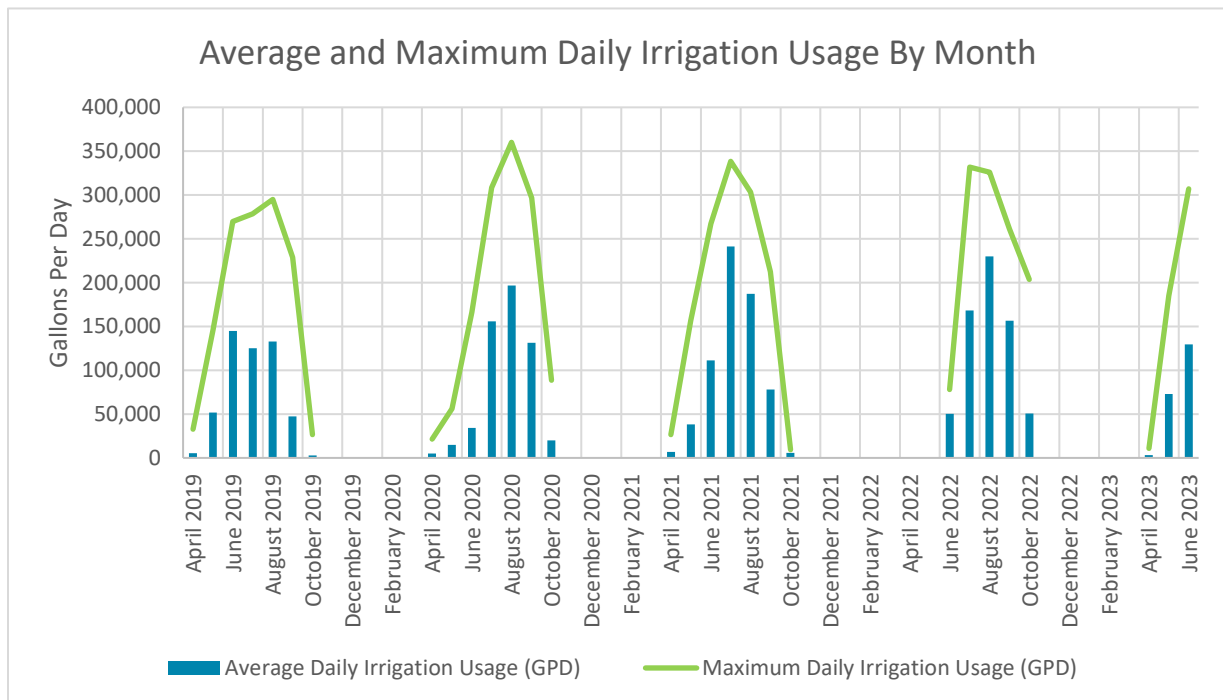
the City’s irrigation distribution system. **Table 1** shows the existing pumps’ capacity, total dynamic head, and horsepower.

Table 1
Existing Municipal Irrigation Pumps

Pump Quantity and Type	Pump Capacity (gpm)	Total Dynamic Head (ft)	Horsepower
(2) Vertical Turbine Pumps	500	400	75
(1) Jockey Pump	40	600	7.5

Historically, the City supplied Eagle Lake from two sources; Class A reclaimed water from the City’s WRF, and water from the City’s potable water system. In 2019, the City transitioned to using only reclaimed water for irrigation to help conserve potable water for beneficial use. **Figure 2** shows the average and maximum daily irrigation use for each month from April 2019 to June 2023 during irrigation season. During the 2019 through 2022 irrigation seasons, the average volume of irrigation water used for the City’s irrigation system was 17.9 million gallons (MG) per year. This is not total reclaimed water supply to Eagle Lake or does it include supply to the Golf Course irrigation system.

Figure 2
Average and Maximum Daily Irrigation Usage per Month



The existing City irrigation system controller is a Rain Bird Maxicom Central Control System with meters to the various points of connection to bill customers. This Maxicom system controls irrigation of City areas overnight between the hours of 10 PM and 6 AM. **Table 2** summarizes the daily irrigation water demands.

Table 2
City Irrigation Demands Summary

Condition	Criteria	Gallons
Average Daily Demand	Average Day Production in July and August 2019-2022	180,000
Maximum Daily Demand	Maximum Day Production from 2019-2022	360,000
Maximum Daily Irrigation Pump Capacity	Eagle Lake Pump Station capacity with two 500 gallons per minute (gpm) pumps continuously running for 8 hours each night	480,000

The City contracts with Extended Range Forecasting Company, Inc., (ERF, aka Water Management Group, Inc.) to manage the irrigation system. The irrigation system piping varies throughout distribution, and there are multiple pressure regulating valves which reduce pressure to the zone of application. The jockey pump operates intermittently to maintain a pressure setpoint within the system, a minimum of 70 pounds per square inch (psi).

Alternatives Analysis

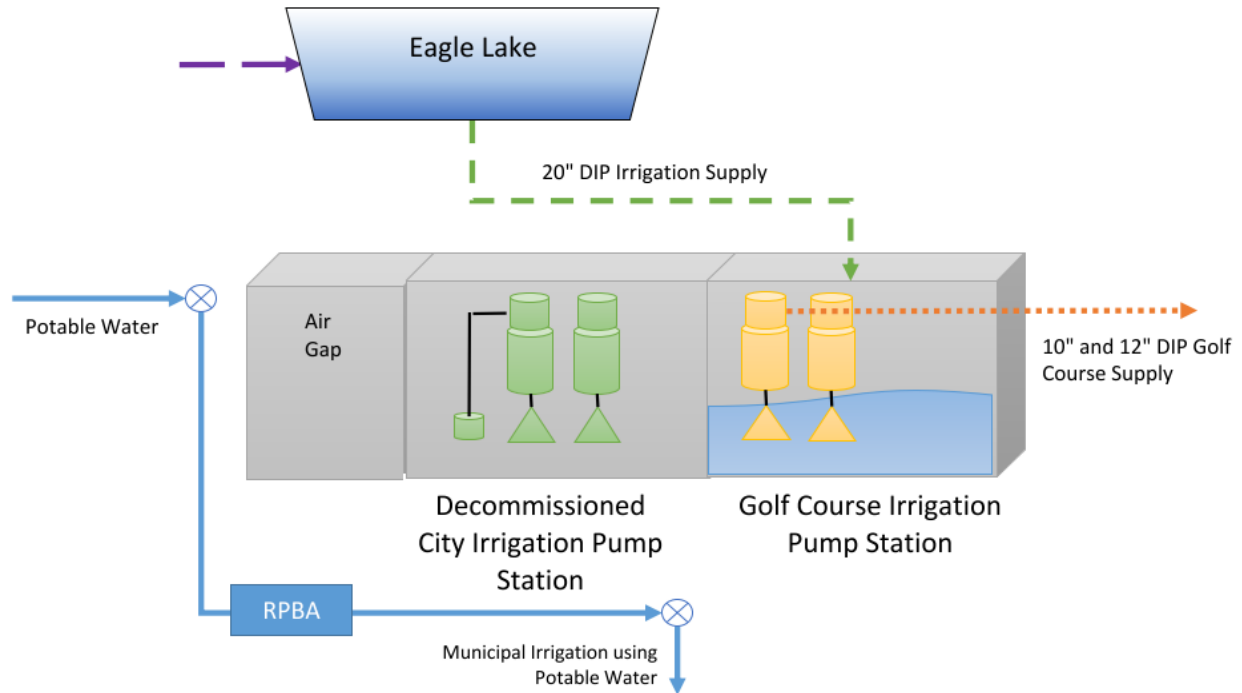
Ecology is requiring that the City’s irrigation system be separated from Eagle Lake so that it does not pump water that is comingled with other potential water sources. In addition, the Reclaimed Water Rule requires that any Class A reclaimed water generator or distributor must maintain a free chlorine residual greater than 0.2 milligrams per liter (mg/L) or a total chlorine residual greater than 0.5 mg/L “...from the facility to the point of use to prevent biological growth, prevent deterioration of reclaimed water quality, and to protect public health.” (WAC 173-219-370(1)). RH2 evaluated two distribution system improvement alternatives to comply with these regulations. Alternative 1 would transition the City’s entire municipal irrigation supply downstream of the IPS to potable water, which inherently has a chlorine residual. Alternative 2 would construct a closed reservoir to store and separate reclaimed water generated by the WRF from the Golf Course’s Eagle Lake. This alternative would either have a permanent chlorination system for disinfection or have appurtenances to implement emergency chlorination.

Alternative 1: Transition Irrigation Customers to Potable Supply

Alternative 1 would transition existing irrigation customers from reclaimed water to potable water. This can be accomplished by bypassing the IPS altogether and connecting the existing potable water supply directly to the 10-inch ductile iron pipe (DIP) municipal irrigation main. Piping associated with the municipal reclaimed IPS would be cut and capped. The existing 4-inch-diameter potable supply pipeline may need to be upsized to accommodate the new connection. A reduced pressure backflow assembly (RPBA) would be installed to prevent a cross connection to the domestic water system. The pipeline would be equipped with control valves

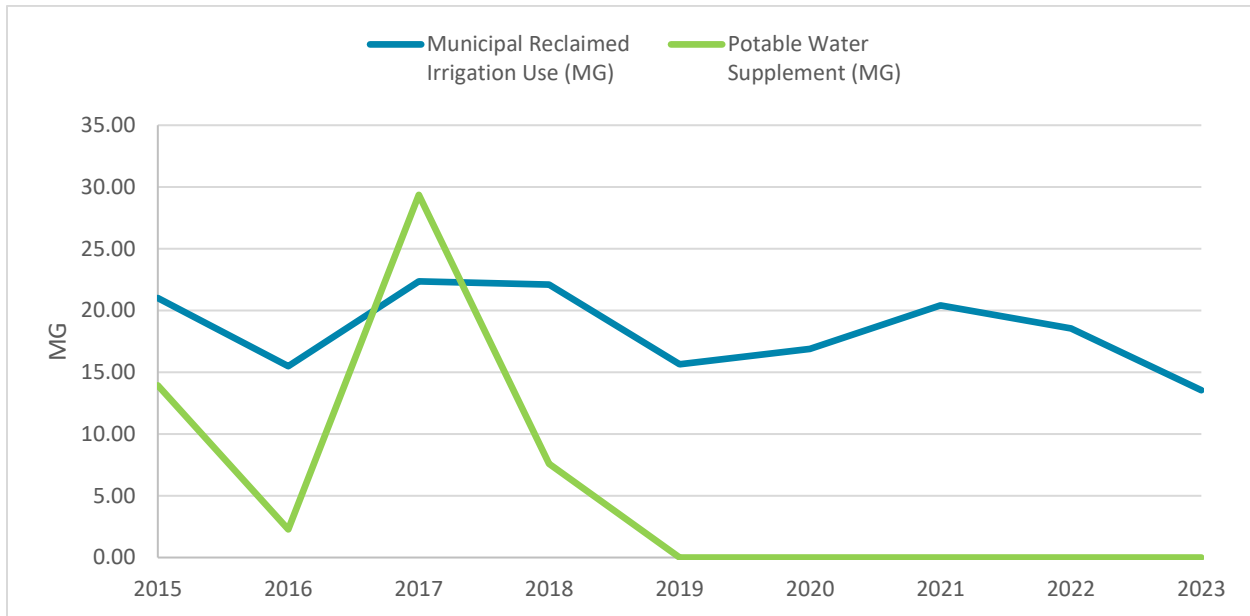
to regulate flow and a flow meter with a telemetry connection to allow the City to monitor water use. **Figure 3** shows a schematic of this alternative.

Figure 3
Alternative 1 Schematic



The City's Water Use Efficiency (WUE) Program, in accordance with the WUE Rule in the Municipal Water Supply – Efficiency Requirements Act, is helping to curtail excess potable water demands. Prior to 2019, potable water was used occasionally to supplement reclaimed water for irrigation. Since 2019, the City has not supplemented reclaimed water demands with potable water. **Figure 4** shows the historical annual municipal reclaimed water irrigation usage and potable water supplement. Converting municipal customers' irrigation supply from reclaimed water to potable water will result in higher potable water usage for irrigation. This will result in higher potable water usage for irrigation and may result in greater burden to water supply which has not been accounted for in water system planning.

Figure 4
Municipal Reclaimed Irrigation Use and Potable Water Supplement



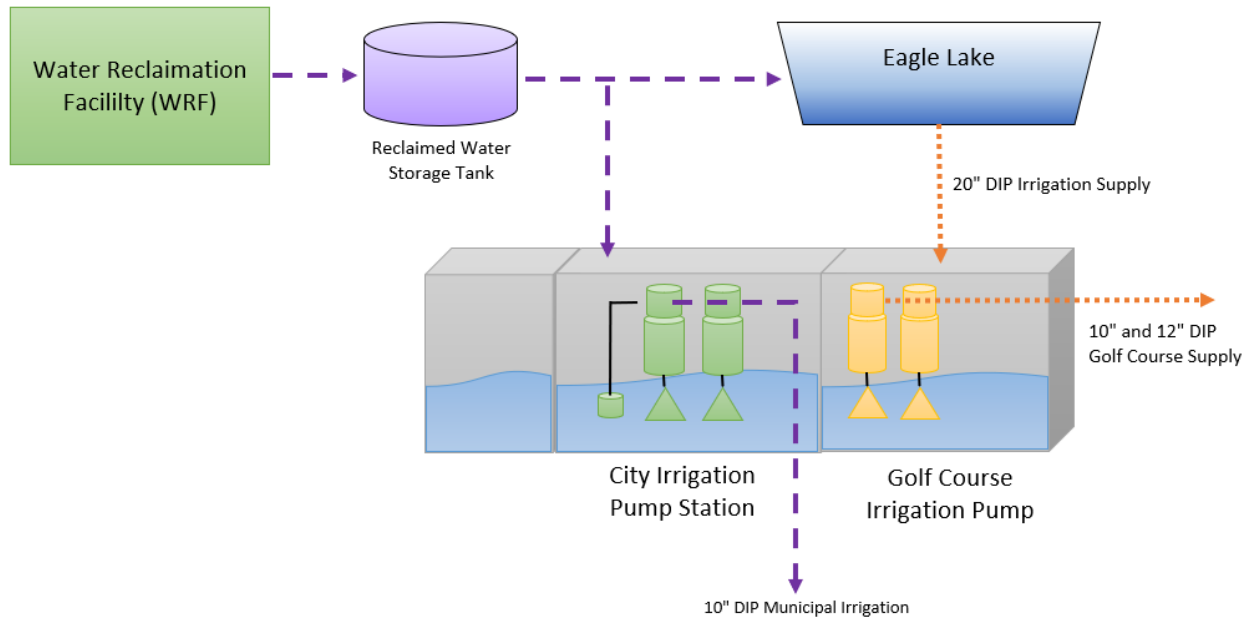
Converting the City’s irrigation supply to potable water also will cause an increase in prices for City customers currently billed for reclaimed water. Per City Ordinance 1187, the rate for retail customers of the municipal irrigation system for reclaimed water is a flat rate (based on the percent of total zones a customer owns) plus a volumetric rate of \$3.21 per 100 cubic feet (ccf) in 2023. The commercial water/potable irrigation rate is a flat rate (based on the size of the customer’s water meter) plus a volumetric rate of \$4.09/ccf in 2023 (assuming the usage falls within 300 to 801 ccf). Therefore, transitioning customers from reclaimed water to potable water would result in a cost increase of \$0.88/ccf in 2023.

The Water System Plan (WSP) details future water rights and source capacity limitations. Table 6-3 of the WSP shows that instantaneous water rights would be deficient by 2040 even factoring Water Use Efficiency (WUE). Table 7-2 of the WSP shows that projected water source capacity would be deficient by 2030. Due to the City’s population growth, limited water rights, and customer cost impacts, potable water is not a viable long-term solution for the City to comply with the Reclaimed Water Rule.

Alternative 2: Separation of City Reclaimed Water Irrigation System

Alternative 2 consists of constructing a new reclaimed water reservoir. Reclaimed water produced at the WRF would be stored in the reservoir and then connected to the irrigation distribution system at the IPS, thereby completely separating Eagle Lake from the municipal irrigation system. This alternative would provide the City with complete control of the reclaimed water quantity and quality as it leaves the WRF. Eagle Lake would continue to be supplied with reclaimed water for use by the Golf Course. **Figure 5** shows a schematic of this alternative.

Figure 5
Alternative 2 Schematic



Alternative 2A: Reclaimed Water Reservoir with Chlorination

To maintain a chlorine residual per WAC 173-219-370, a chlorination system would inject sodium hypochlorite into the City’s irrigation pump station discharge as the water is pumped to the municipal irrigation distribution system. The disinfection infrastructure would include a bulk sodium hypochlorite chemical storage and feed system, chlorine residual analyzers in the irrigation distribution system at key locations (to ensure a residual greater than 0.2 mg/L free chlorine or greater than 0.5 mg/L total chlorine), and electrical and control improvements.

The disadvantages of chlorinating reclaimed water not only include the additional capital and operational costs for the chemical feed system, but also the challenges and labor required to maintain a chlorine residual in this type of distribution system. As shown in **Figure 1**, unlike a potable water distribution system that typically loops fresh water throughout a system, the reclaimed water distribution system consists of a 10-inch-diameter transmission main to Eagle Lake and a branching network of irrigation lines from the pump station. This results in many dead-end, small diameter pipelines, each with their own extended water age issues. It would be challenging to monitor the various extents of the irrigation zones for chlorine residual. It would be even more challenging to consistently maintain a healthy chlorine residual in an intermittent system that only operates overnight and is dormant for most of the day. A fully looped irrigation system would require a complete rebuild of this distribution system.

Alternative 2B: Reclaimed Water Reservoir without Chlorination

WAC 173-219-370 allows for the distribution chlorine residual requirement to be waived or modified if the reclaimed water generator can demonstrate a benefit from reducing or eliminating the chlorine residual. The City previously requested a distribution chlorine residual waiver in a December 2015 Engineering Report under the condition that the chlorination disinfection system be maintained to either mitigate biological growth within the irrigation distribution system or provide disinfection in the event the ultraviolet (UV) disinfection system

cannot meet reclaimed water standards. In 2019, the City received formal approval from Ecology and the Washington State Department of Health (DOH) to waive the distribution chlorine residual requirement for the UV application. The City is requesting that Ecology and DOH continue to waive the distribution chlorine residual requirement for the proposed application of completely separating Eagle Lake from the municipal irrigation system by constructing a reclaimed water reservoir. The many benefits of not chlorinating the City's reclaimed water include the issues referenced previously. City operations staff would not need to operate and maintain the chlorine storage and feed equipment or monitor chlorine residual throughout the various dead-end irrigation zones overnight during the hours of irrigation.

One of the strongest reasons to not chlorinate is that the City has been operating this irrigation system for more than two decades without any recorded violations or public health concerns regarding the use of reclaimed irrigation water. The City has complete control of the irrigation system, there are no unauthorized users of the reclaimed water system, and the late-night hours of operation limit human exposure to the Class A reclaimed water. Augmenting this water with a chlorine residual would require extensive additional maintenance for City staff with minimal health benefit.

To provide disinfection flexibility, the City can keep the WRF reclaimed water pump discharge chemical injection point available if sodium hypochlorite is ever needed to sanitize the irrigation distribution system in an emergency. The City previously chlorinated Class A reclaimed water before the UV light disinfection system was implemented at the WRF.

Recommendation

Separating the City's reclaimed water allotment from Eagle Lake by installing a new closed water reservoir is the best solution to meet the updated Permit requirements. This will allow the City to have full control of the quality of reclaimed water generated by the WRF. Maintenance of a chlorine residual to comply with WAC 176-219-370 may require rebuilding the City's entire irrigation distribution system, as well as extensive operator labor to maintain and operate a chlorine storage and injection system and monitor chlorine residuals in dead-end zones overnight. The non-looped irrigation distribution system may not feasibly sustain a chlorine residual due to extensive water quality issues within dead-end pipes. The effort required for maintaining this residual has minimal benefit since the City has had no reported public health issues with humans interacting with this reclaimed irrigation water since 1999 when construction was completed. It would be challenging to estimate the costs of chlorinating reclaimed water while upgrading the reclaimed water distribution system to ensure a persistent chlorine residual. The City is formally requesting Ecology waive the requirement of maintaining a chlorine residual as outlined in WAC 173-219-370, since separation through a proposed reclaimed water reservoir will meet the intent of the NPDES Permit.

Reclaimed Water Reservoir Preliminary Design

Reservoir Sizing

The reservoir will be sized to provide at least enough storage to meet the maximum day demand of the existing system over the 8 hour irrigation period. The irrigation period is from 10 PM to 6 AM and most reclaimed water is produced during the day. **Table 3** shows the basis of design for the reservoir’s volume.

Table 3
Reclaimed Water Reservoir Volume Basis of Design

Condition	Criteria	Design Usage (gal)
Average Daily Demand	Average Day Demand (During Peak Irrigation Season)	180,000
Minimum Storage Volume	1.5 x Average Day Demand (per Reclaimed Water Facilities Manual)	270,000
Maximum Daily Storage Volume	Maximum Production from 2019-2022	360,000
Conservative Maximum Daily Storage Volume	Maximum Production with a 10% Safety Factor	400,000
Maximum IPS Pumping Condition	Eagle Lake Pump Station capacity with two 500 gpm pumps continuously running for 8 hours each night	480,000

The proposed reservoir should be sized to store approximately 400,000 gallons to provide some conservatism for the maximum daily volume. The exact size will be determined in a future phase of this project.

Reservoir Location

The proposed reclaimed water reservoir will be constructed along the reclaimed water transmission main that currently runs from the WRF to Eagle Lake. Reclaimed water will flow from the reservoir to the IPS and bypass Eagle Lake. A new control structure and clearwell also will need to be installed at the IPS. **Figure 6** provides six possible sites for the proposed reservoir. Sites 1 and 2 are preferable as they are out of the neighborhood’s public view; however, they are both within Bonneville Power Administration’s (BPA) easement and would require additional coordination and permitting prior to construction. If the BPA permitting timeline would prevent the tank from being constructed and operational by June 30, 2026, then Site 3 or 4 should be selected. Site 3 is within view of the Golf Course and many homeowners; therefore, it would require additional coordination with these stakeholders. Site 4 is at the WRF. This site would simplify operations and maintenance; however, due to hydraulic constraints, a reservoir at the WRF would have to be very shallow and would be significantly more expensive than the other sites. Site 5 would require constructing an additional clarifier at the WRF and utilizing it as a reclaimed water reservoir until City growth requires it to function as a clarifier to increase WRF treatment capacity. This option was eliminated as it is significantly more expensive than sites 1-3 and once a third clarifier is needed at the WRF, another reclaimed water reservoir also would be necessary. Site 6 is next to the IPS. This site was

eliminated due to the large number of existing utilities in the area. **Planning-Level Capital Costs** for all six sites are presented later in this Report.

Reservoir Access

The site will be developed to allow for large vehicles to drive to the infrastructure for any future work. The reservoir will be buried or partially buried depending on the selected location. There will be a single roof access hatch that will be a minimum of 30 inches in diameter for interior access and transport of any maintenance equipment inside the reservoir. The interior access ladder will be stainless steel and equipped with a safety climb system. The reservoir will be designed to prevent any stormwater intrusion to maintain the water quality of the reclaimed water.

Reservoir Mechanical

A control structure or mechanical piping system will be designed in a future phase of this project to split reclaimed water flows to the reservoir and to Eagle Lake. Due to the volume differences between the reservoir and Eagle Lake, the intent of the control structure would be to prioritize filling the reservoir first. The reservoir inlet pipe will be ductile iron outside of the reservoir, stainless steel under and through the reservoir foundation, and coated steel within the reservoir. The inlet pipe sizing and location will be determined during future phases of the project.

The separate outlet pipe also will be coated steel pipe inside the reservoir, stainless steel piping through the reservoir, and ductile iron piping outside the reservoir. There also will be new ductile iron piping from the reservoir outlet to the City's municipal irrigation pump station clearwell. The outlet pipe sizing will be determined during future phases of the project.

The reservoir control structure would direct any reservoir overflow water to Eagle Lake. This will be designed during future phases of the project. Reservoir drainage will also be determined during the design phase of the project and will account for the partially buried or completely buried structure, likely through piping or an accessory structure.

All pipes entering or leaving the reservoir will have expansion joints to allow for differential settling without putting strain on the pipes.

The reservoir will have one roof vent to move air during normal operation and provide vacuum protection for a major drawdown event. The vent system will be confirmed during the design phase of the project.

Reservoir Electrical, Telemetry, and Lighting

The reservoir instrumentation will communicate with the City's Supervisory Control and Data Acquisition (SCADA) system through fiber optic lines. The location of the existing wiring that can be extended to the site will be evaluated during future phases of the project.

The SCADA system at the reservoir site will monitor reservoir levels, notify staff of access hatch intrusion, and notify the City if there is an overflow event. Updates to the telemetry system at

the IPS will allow City operators to monitor and control water levels in Eagle Lake and the bypass control structure.

The reservoir will have site lighting to help facilitate City staff to access the reservoir anytime throughout the day. Additional security measures will be determined during future phases of the project.

Operations and Maintenance Considerations

City WRF staff would operate and maintain the proposed reservoir and control structure, but the required labor is expected to be minimal due to the passive nature of these distribution system improvements.

If irrigation water is required in early spring before the WRF starts producing Class A reclaimed water regularly, then the irrigation system should be configured to be supplemented with potable water through an air gap or an approved backflow prevention device for potable cross-connection control.

The City can plan on shock chlorinating the transmission main, reservoir, and pipeline routinely as a maintenance procedure to ensure sanitary conditions at the start of each irrigation season. The emergency chlorination injection point can be activated for this activity. At the end of each irrigation season, the irrigation distribution system can be flushed and drained as much as possible.

Once construction of the reclaimed water reservoir is complete, the City will update its *Reclaimed Water Operations and Maintenance Manual* per the NPDES Permit requirements. This will include shock chlorination and flushing protocols for the reclaimed water distribution system, updates to the sign maintenance program, and cross-connection control maintenance activities, such as proper backflow prevention assembly testing protocols.

Planning-Level Capital Costs

This section summarizes the capital costs of the reclaimed water storage tank alternatives presented in **Figure 6**. **Table 4** presents an opinion of probable construction and overall project costs for a proposed reservoir on Sites 1 through 3, as these three sites have similar capital costs related to being undeveloped with minimal existing infrastructure and utilities. **Table 5** presents an opinion of probable cost for Site 4, which is significantly higher than Sites 1, 2, and 3 due to the shallow and wide geometry of the proposed tank to make the WRF location feasible. **Table 6** presents an opinion of probable cost for Site 5, which constructs a new clarifier to function as a reclaimed water reservoir. **Table 7** presents an opinion of probable cost for Site 6, which locates the proposed reservoir directly adjacent to the IPS. Costs and contingencies will be further refined during future phases of the project.

Table 4
Engineer’s Opinion of Probable Capital Cost for Sites 1 through 3 (Greenfield Sites)

Item	Unit	Total Cost
Mobilization, Demobilization, Site Prep, and Cleanup (10%)	LS	\$265,000
Site Work	LS	\$275,000
Structural	LS	\$2,239,000
Utility	LS	\$100,000
Electrical, Telemetry, and Automatic Control	LS	\$100,000
Construction Cost Subtotal		\$2,979,000
Construction Contingency (30%)		\$894,000
Sales Tax (8.9%)		\$265,200
Total Estimated Construction Cost		\$4,139,000
Engineering Design, Survey, Geotechnical, Permitting, Bid-Phase Services, Construction-Phase Services		\$1,449,000
City Project Administration		\$621,000
Total Project Cost		\$6,300,000

Table 5
Engineer’s Opinion of Probable Capital Cost for Site 4 (at WRF)

Item	Unit	Total Cost
Mobilization, Demobilization, Site Prep, and Cleanup (10%)	LS	\$323,000
Site Work	LS	\$300,000
Structural	LS	\$2,688,000
Utility	LS	\$90,000
Electrical, Telemetry, and Automatic Control	LS	\$150,000
Construction Cost Subtotal		\$3,551,000
Construction Contingency (30%)		\$1,066,000
Sales Tax (8.9%)		\$316,000
Total Estimated Construction Cost		\$4,933,000
Engineering Design, Survey, Geotechnical, Permitting, Bid-Phase Services, Construction-Phase Services		\$1,727,000
City Project Administration		\$740,000
Total Project Cost		\$7,400,000

Table 6
Engineer’s Opinion of Probable Capital Cost for Site 5 (WRF Clarifier)

Item	Unit	Total Cost
Mobilization, Demobilization, Site Prep, and Cleanup (10%)	LS	\$302,000
Site Work	LS	\$450,000
Structural	LS	\$1,715,000
Utility	LS	\$450,000
Electrical, Telemetry, and Automatic Control	LS	\$400,000
Construction Cost Subtotal		\$3,317,000
Construction Contingency (30%)		\$996,000
Sales Tax (8.9%)		\$296,000
Total Estimated Construction Cost		\$4,610,000
Engineering Design, Survey, Geotechnical, Permitting, Bid-Phase Services, Construction-Phase Services		\$1,614,000
City Project Administration		\$692,000
Total Project Cost		\$7,000,000

Table 7
Engineer’s Opinion of Probable Capital Cost for Site 6 (at IPS)

Item	Unit	Total Cost
Mobilization, Demobilization, Site Prep, and Cleanup (10%)	LS	\$316,000
Site Work	LS	\$400,000
Structural	LS	\$1,910,000
Utility	LS	\$750,000
Electrical, Telemetry, and Automatic Control	LS	\$100,000
Construction Cost Subtotal		\$3,476,000
Construction Contingency (30%)		\$1,041,000
Sales Tax (8.9%)		\$309,000
Total Estimated Construction Cost		\$4,826,000
Engineering Design, Survey, Geotechnical, Permitting, Bid-Phase Services, Construction-Phase Services		\$1,687,000
City Project Administration		\$723,000
Total Project Cost		\$7,300,000

Sites 1, 2, and 3 are the lowest cost options for the proposed reclaimed water reservoir and are to be further explored during future phases of this project. Locating the reservoir at the WRF (Site 4) was eliminated since it is more expensive and would reduce the amount of expandable area at the WRF. While developing a third WRF clarifier (Site 5) would be more expensive than Sites 1 through 3, it has the benefit of being converted into a future clarifier when needed.

However, this option postpones a true reclaimed water storage solution for the future and has been eliminated. Building the reservoir directly at the IPS (Site 6) would require a massive reconstruction of below-grade utilities; this option has been eliminated due to the additional cost and unknown risks.

Conclusions and Next Steps

The recommended alternative to comply with the Reclaimed Water Rule is for the City to store reclaimed water in a proposed reservoir, separating this supply. The proposed reservoir should be located in an open area near the Golf Course away from existing infrastructure and utilities (proposed Sites 1, 2, and 3). The irrigation system is a non-expanding system with no proposed new reclaimed water users in the near future. The existing infrastructure was operated and maintained for more than two decades with no public health concerns since the City irrigates overnight to minimize human exposure. Implementing a chlorination system to provide a chlorine residual would incur extensive costs and labor for minimal benefit.

The predesign and site selection will be finalized in 2023. A preliminary environmental review and planning-level State Environmental Policy Act (SEPA) Checklist has been prepared to comply with WAC 173-240-060(3)(r) and is attached as **Appendix A**. The City's determination of nonsignificance (DNS) letter associated with that planning-level SEPA is attached as **Appendix B**. A project-level SEPA and other permitting will be completed concurrent with the design phase of this project after site selection. Design of the recommended improvements is anticipated to begin in 2024, with the goal to have construction complete by June 30, 2026, to comply with the milestones listed on the Permit. The preliminary design-level cost estimate for this project is between \$6,000,000 to \$7,000,000, depending on the selected tank location.

Figures








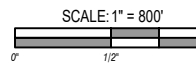
LEGEND	
	WATER RECLAMATION FACILITY
	CLASS A PUMP STATION
	10" RECLAIMED WATER CLASS A TRANSMISSION MAIN
	CITY RECLAIMED WATER SYSTEM IRRIGATION PIPING

FIGURE 1: EXISTING RECLAIMED WATER SYSTEM MAP

RECLAIMED WATER DISTRIBUTION SYSTEM
ENGINEERING REPORT



 SCALE: 1" = 800'
 DRAWING IS FULL SCALE WHEN BAR MEASURES 1"

PLOT DATE: 6/28/2023
 FILE PATH: J:\Data\SNOQ22-0187\CAD\dwg-4\fig1.dwg



FIGURE 6: POTENTIAL RESERVOIR LOCATIONS

RECLAIMED WATER DISTRIBUTION SYSTEM ENGINEERING REPORT



SCALE: NTS
 0" 1/2" 1"
 DRAWING IS FULL SCALE WHEN
 BAR MEASURES 1"

PLOT DATE: 9/11/2023
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Appendix A

SEPA Checklist

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization, or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. **You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown.** You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to **all parts of your proposal**, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for lead agencies

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B, plus the [Supplemental Sheet for Nonproject Actions \(Part D\)](#). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in "Part B: Environmental Elements" that do not contribute meaningfully to the analysis of the proposal.

A. Background

1. Name of proposed project, if applicable:

Reclaimed Water Distribution System Improvements

2. Name of applicant:

City of Snoqualmie (City) Public Works Department

3. Address and phone number of applicant and contact person:

Andrew Vining, PE, Project Engineer
City of Snoqualmie Public Works
38624 SE River Street
Snoqualmie, WA 98065
(425) 831-8919, ext. 3004

4. Date checklist prepared:

October 6, 2023

5. Agency requesting checklist:

City Planning Department and Washington State Department of Ecology (Ecology)

6. Proposed timing or schedule (including phasing, if applicable):

The *Reclaimed Water Distribution System Engineering Report* (Engineering Report) (RH2, 2023) is undergoing final review and pending approval with Ecology, which is planned to occur before the end of 2023. The predesign and site selection for the reservoir will be finalized in late 2023. Design of the recommended improvements is anticipated to begin in 2024, with the goal of having construction complete by June 30, 2026, to comply with the requirements of Ecology's Reclaimed Water Rule and with Permit Section R8.A.1 of the City's current National Pollutant Discharge Elimination System (NPDES) Permit.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

The existing City irrigation system is a non-expanding reclaimed water system. The City does not currently intend to increase the service area or number of customers that receive reclaimed water. Future improvements or expansion of the reclaimed water system would be covered in future State Environmental Policy Act (SEPA) review, as needed.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

The Engineering Report, which includes a reclaimed water system alternatives analysis and preliminary design information for a preferred site alternative, has been prepared in support of this project. This SEPA Checklist has been prepared to accompany the Engineering Report review through Ecology, as well as detail anticipated project

improvements to the extent they are presently defined. Additional environmental documentation is anticipated to be prepared for construction of a preferred alternative, as well as for compliance with permitting processes, including the State Environmental Review Process (SERP) through Ecology. SERP is anticipated to be completed for this project as a condition of receiving Clean Water State Revolving Fund (CWSRF) funding.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

No pending applications or approvals are known.

10. List any government approvals or permits that will be needed for your proposal, if known.

This SEPA will be processed by the City to accompany the Engineering Report. A project-level SEPA will be prepared following site selection and subsequent design. Approvals needed for the project include the following.

- Project Design/Construction Review and Approval – Washington State Department of Health (DOH) and Ecology
- SERP Compliance is anticipated to be required for the project pending award of CWSRF funding, including the following components – Ecology
 - Environmental Review (SEPA) (for project-level improvements)
 - Public participation/engagement
 - Section 106 National Historic Preservation Act (NHPA) Cultural Resources Review
 - Environmental Justice Review
 - Compliance with applicable federal cross cutters, as needed (e.g., Clean Air Act, Endangered Species Act, etc.)
- Proposed Use of Bonneville Power Administration (BPA) Right-of-Way Approval would be needed for select potential reservoir sites – BPA
- Clearing and Grading Permit – City
- Critical Areas Review would be needed for select potential reservoir sites – City
- Commercial Building Permit – City

11. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The City's Water Reclamation Facility (WRF) produces Class A reclaimed water and supplies it to Eagle Lake via a transmission main that traverses State Route (SR) 202 and Snoqualmie Parkway. Class A water is stored in Eagle Lake as irrigation supply for the City's Class A distribution system and the Snoqualmie Ridge Golf Course (Golf Course). Reclaimed water is

distributed to the above-mentioned sources via the City-owned Irrigation Pump Station (IPS) located near Eagle Lake.

In 2021, Ecology issued the City's updated NPDES Permit (No. WA0022403), which included additional requirements for the City's reclaimed water system. These updates are based on the recently modified Reclaimed Water Rule in Chapter 173-219 Washington Administrative Code (WAC), which includes requirements that did not exist at the time the reclaimed water system was constructed. Through the NPDES Permit, Ecology is requiring the City to modify the reclaimed water distribution system to "...not allow contamination of reclaimed water by lower quality water, such as urban stormwater runoff."

To comply with the 2018 update of the Reclaimed Water Rule, the City is proposing construction of a new closed reservoir to store and separate reclaimed water generated by the WRF from Eagle Lake. Reclaimed water produced at the WRF would be stored in the reservoir and then connected to the irrigation distribution system at the IPS, thereby completely separating Eagle Lake from the City's Class A distribution system. The proposed closed reservoir also would involve construction of a new reclaimed water pipeline to the IPS. Six potential reservoir sites are identified in the Engineering Report and four are being evaluated further to determine the optimal location for the new facility.

This SEPA Checklist is being included with the Engineering Report review and is intended to satisfy planning-level SEPA review. To the extent that details are known for the proposed alternative reservoir sites, they have been included; however, the City anticipates preparation of a project-level SEPA once the reservoir site is selected and subsequent design is completed.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

Potential reservoir sites identified in the Engineering Report are all within City limits. Potential reservoir sites 1, 2, and 3 are in the Snoqualmie Ridge neighborhood, near the Golf Course. Potential reservoir site 4 is within the footprint of the City's existing WRF. The proposed reclaimed water transmission main alignment would be dependent on the reservoir site selected, but generally would traverse along existing rights-of-way from the IPS to the new reclaimed water reservoir. These reservoir sites are in the eastern half of Section 25, Township 24 North, Range 07 East.

Potential reservoir sites 1 and 2 are located within the BPA overhead power line corridor on parcel no. 2524079001, which encompasses the Golf Course. These sites are along an unnamed private road that spans south to north from Snoqualmie Parkway to SE Ridge Street through the Golf Course and is primarily used for Golf Course operations and maintenance.

Potential reservoir site 3 is located on parcel no. 2624079045, northwest of Eagle Lake, on the northwest side of Eagle Lake Drive SE and southwest of the existing IPS.

Potential reservoir site 4 is on parcel no. 3024089079 at the existing WRF site, on the north side of the Snoqualmie River and north of SE Stearns Road, approximately 1.5 miles east of Eagle Lake. Potential reservoir site 4 was determined to have a much higher cost of design and construction due to hydraulic limitations and is omitted from further discussion in this SEPA Checklist.

Refer to the attached **Potential Reservoir Locations** map showing the potential reservoir sites and possible reclaimed water transmission main alignment.

B. Environmental Elements

1. Earth

a. General description of the site:

Circle or highlight one: Flat, rolling, hilly, steep slopes, mountainous, other:

b. What is the steepest slope on the site (approximate percent slope)?

The steepest slope on potential reservoir site 1 is associated with the hillside north of Snoqualmie Parkway and is approximately 5 percent. Potential reservoir site 2 is generally flat with some gentle hills. The steepest slope on potential reservoir site 3, associated with the Golf Course and the road embankment of Eagle Lake Drive, is approximately 13 percent.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them, and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

According to the Natural Resources Conservation Service soil survey data, the potential reservoir sites are entirely within the Tokul gravelly medial loam, 8 to 15 percent slopes, soil map unit, which is comprised of a moderately well drained gravelly medial loam that develops from volcanic ash mixed with loess over glacial till on hillslopes or till plains. This soil is classified as a farmland of statewide importance and is not hydric.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Earthwork would be needed to construct a new approximately 480,000-gallon water reclamation reservoir, install a reclaimed water transmission main from the new reservoir to the existing IPS and install associated power and communication lines between the new reservoir and the existing IPS. Earthwork quantities vary between the potential reservoir sites and will be further detailed in the planned project-level SEPA.

f. Could erosion occur because of clearing, construction, or use? If so, generally describe.

Erosion could occur during construction and clearing activities; however, construction best management practices (BMPs) will be included in the project design to reduce the chance for erosion, water quality impacts, and sedimentation resulting from construction activities.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Some impervious surfaces, associated with roadways and existing facilities, are present in the existing site areas. The proposed improvements would construct a partially buried reclaimed water reservoir, potentially increasing impervious surfaces. The project-level SEPA will detail anticipated impervious surface percentages associated with the selected reservoir site.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any.

During construction, appropriate temporary erosion and sedimentation control (TESC) measures will be implemented to limit the potential for erosion resulting directly from construction activities (e.g., proper soil cover, dust control, inlet protection, sediment control, etc.). TESC measures will be included on the design plans to address erosion control planning for construction of the project. The finished project is not expected to result in erosion.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Temporary exhaust and dust emissions from construction equipment and vehicles are anticipated during construction but would not be present post-construction.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No.

c. Proposed measures to reduce or control emissions or other impacts to air, if any.

Construction equipment and vehicles shall conform with Washington State standards for air quality, including using properly functioning equipment and vehicles that have passed emissions testing, using clean-burning fuels when possible, limiting diesel exhaust, limiting vehicle idling, etc.

3. Water

a. Surface Water:

1. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Eagle Lake is an approximately 5-acre manmade waterbody surrounded by residential neighborhoods near the center of the Golf Course. Eagle Lake is a closed depression that is currently supplied by Class A reclaimed water from the City's WRF and has no natural outlet. Reclaimed water is stored and pumped from Eagle Lake via the IPS for land application of irrigation water at the Golf Course and throughout the City. Upon project completion, water allocated for the City's Class A distribution system will bypass Eagle Lake and be stored in the new reclaimed water reservoir.

Wetland and/or stream habitat may be present adjacent to some of the potential reservoir sites; however, site selection and subsequent design is needed to accurately determine project proximity and impacts to these features.

Water in the surrounding region generally drains to the Snoqualmie River, which flows to the northwest. Eagle Lake and drainage associated with the Golf Course do not flow into the Snoqualmie River; therefore, the Snoqualmie River will be unaffected by this proposal.

- 2. Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

Reservoir site selection and additional design is needed to determine proximity and/or impacts to streams or wetlands. It is anticipated that project design will occur in a manner that minimizes impacts to these critical areas.

No impacts to Eagle Lake or the Snoqualmie River are anticipated for any of the potential reservoir sites during construction and upon project completion.

- 3. Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

None. The project will not involve fill or excavation within wetlands or waters of the state.

- 4. Will the proposal require surface water withdrawals or diversions? Give a general description, purpose, and approximate quantities if known.**

No.

- 5. Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

No Federal Emergency Management Agency mapped flood zones occur on or within proximity to the project sites.

- 6. Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

No.

b. Ground Water:

- 1. Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the**

well. Will water be discharged to groundwater? Give a general description, purpose, and approximate quantities if known.

No.

2. Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (domestic sewage; industrial, containing the following chemicals...; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

Not applicable.

c. Water Runoff (including stormwater):

1. Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Surface water in the area is currently and will remain intercepted and routed directly to existing stormwater infrastructure associated with residential neighborhoods, public roadways, and the Golf Course. The completed project will not impact the existing runoff patterns of the site.

2. Could waste materials enter ground or surface waters? If so, generally describe.

No.

3. Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

No.

4. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any.

BMPs will be implemented to avoid and minimize potential impacts to nearby areas during project construction. Project design will be completed to adhere to applicable local, state, and federal regulations that provide standards to reduce and control impacts to surface, ground, and storm waters and drainage patterns.

4. Plants

- a. Check the types of vegetation found on the site:

deciduous tree: alder, maple, aspen, other

evergreen tree: fir, cedar, pine, other

shrubs

grass

pasture

crop or grain

orchards, vineyards, or other permanent crops.

wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other

water plants: water lily, eelgrass, milfoil, other

other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Varying amounts of common lawn grasses and/or disturbed weedy vegetation will be removed for construction of the proposed reclaimed water reservoir. The amount and type of vegetation to be removed is dependent on the selected reservoir site, and this will be further detailed in a project-level SEPA.

c. List threatened and endangered species known to be on or near the site.

Based on a review of U.S. Fish and Wildlife Service (USFWS) Endangered Species Act maps and data, Washington State Department of Natural Resources Natural Heritage Data, and Washington Department of Fish and Wildlife Priority Habitats and Species data, the potential reservoir sites and surrounding areas do not support threatened or endangered plant species.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any.

To be determined with subsequent project design and detailed in subsequent project-level SEPA.

e. List all noxious weeds and invasive species known to be on or near the site.

According to the King County iMap GIS database, tansy ragwort (*Senecio jacobaea*), a King County Class B noxious weed, was observed near the potential reservoir sites.

5. Animals

a. List any birds and other animals that have been observed on or near the site or are known to be on or near the site.

Examples include:

- Birds: hawk, heron, eagle, songbirds, other:
- Mammals: deer, bear, elk, beaver, other:
- Fish: bass, salmon, trout, herring, shellfish, other:

b. List any threatened and endangered species known to be on or near the site.

According to USFWS Information for Planning and Consultation database, gray wolf (*Canis lupus*), North American wolverine (*Gulo gulo luscus*), marbled murrelet (*Brachyramphus marmoratus*), yellow-billed cuckoo (*Coccyzus americanus*), bull trout (*Salvelinus confluentus*), and monarch butterfly (*Danaus plexippus*) may be present in the area. However, based on the developed nature of the site, suitable habitat for these species is not present on or in the immediate vicinity of the project site. No threatened or endangered species or their habitats are anticipated to be present on or near the site.

c. Is the site part of a migration route? If so, explain.

The project area is within the Pacific Flyway migration route; therefore, it may provide habitat for migratory bird species. USFWS data shows five migratory species recognized as Birds of Conservation Concern that may be found in the project area (e.g., evening grosbeak, olive-sided flycatcher, rufous hummingbird, etc.).

d. Proposed measures to preserve or enhance wildlife, if any.

None anticipated at this time.

e. List any invasive animal species known to be on or near the site.

None known.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Gasoline and oil will be used to fuel equipment for construction of the project. Electric energy will continue to be used to operate pumps for the IPS.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any.

None known at this time.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur because of this proposal? If so, describe.

No.

1. Describe any known or possible contamination at the site from present or past uses.

None known.

a. Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None known.

b. Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Industrial paint coatings may be applied to the reservoir surface. Appropriate environmental containment will be implemented during construction.

Construction of the project will utilize oil- and gas-fueled equipment and may require temporary fuel storage onsite. These uses do carry some risk of spill; however, the risk should be minimized with the implementation of spill control methodologies to be outlined in the project design and technical specifications in accordance with Washington State pollution control standards.

c. Describe special emergency services that might be required.

No special emergency services are anticipated.

d. Proposed measures to reduce or control environmental health hazards, if any.

No additional measures beyond those mentioned previously.

b. Noise

1. What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Traffic noise, associated with Eagle Lake Drive SE and other roadways, is present at the site but is not anticipated to impact the project.

2. What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site)?

Temporary construction noise will occur to install the proposed reclaimed water reservoir. The contractor will need to follow regulations set forth in Snoqualmie Municipal Code (SMC) 9.36.020, including controlling the level and timing of construction noise. The completed project will not produce noise disturbance above ambient levels at the site.

3. Proposed measures to reduce or control noise impacts, if any.

No additional measures beyond those mentioned previously.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

All potential reservoir sites are along the City's existing 10-inch reclaimed water Class A transmission main alignment. Land uses near the potential reservoir sites include public and private roadways, the BPA overhead power line corridor, and Golf Course operations. Additional design and project-level SEPA completion will further define land uses in proximity to the selected reservoir site, as well as potential impacts to current surrounding land uses.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses because of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

No.

- 1. Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?**

No.

- c. Describe any structures on the site.**

Potential reservoir sites 1 and 2 contain few above-ground structures including BPA overhead power lines and associated power poles, buildings that house Golf Course facilities and equipment, and other miscellaneous structures. No above-ground structures are present at potential reservoir site 3.

- d. Will any structures be demolished? If so, what?**

No.

- e. What is the current zoning classification of the site?**

According to the City's Official Zoning Map 2016, the entire project is within the Mixed Use (MU) local zoning classification.

- f. What is the current comprehensive plan designation of the site?**

The current comprehensive plan designation of the site is MU.

- g. If applicable, what is the current shoreline master program designation of the site?**

Not applicable.

- h. Has any part of the site been classified as a critical area by the city or county? If so, specify.**

Wetlands and/or streams could be present adjacent to select potential reservoir sites.

- i. Approximately how many people would reside or work in the completed project?**

None.

- j. Approximately how many people would the completed project displace?**

None.

- k. Proposed measures to avoid or reduce displacement impacts, if any.**

None proposed.

- l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.**

The proposed project is consistent with existing and projected land uses. With subsequent design, project land use approval, including review of consistency with existing and projected land uses, will be completed by the City's Community Development Department

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any.

None proposed.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any.

Not applicable.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The proposed reclaimed water reservoir is anticipated to be approximately 24 feet tall, with up to 10 feet of the structure above grade. No other above-ground structures are proposed.

b. What views in the immediate vicinity would be altered or obstructed?

None.

c. Proposed measures to reduce or control aesthetic impacts, if any.

Following site selection, design of the selected reclaimed reservoir site will be conducted to minimize aesthetic impacts. Specific measures will be detailed in a project-level SEPA.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

c. What existing off-site sources of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light and glare impacts, if any.

None proposed.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Potential reservoir sites 1, 2, and 3 are located within the Golf Course.

Additionally, Snoqualmie Falls, a popular scenic attraction, is located approximately 1 mile northeast of Eagle Lake. Associated with the 270-foot waterfall is a 2-acre park, gift shop, observation deck, and the Salish Lodge.

b. Would the proposed project displace any existing recreational uses? If so, describe.

The project will not impact the continued use of existing recreational opportunities in proximity to the site.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any.

None proposed.

13. Historic and Cultural Preservation

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

Approximately 1.25 miles to the east of the potential reservoir sites is the Snoqualmie Falls Hydroelectric Power Plant Historic District and the Snoqualmie Falls Cavity Generating Station, both listed on the National Register of Historic Places and the Washington Heritage Register. The proposed improvements will not affect either of these historic places.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

None known. According to the Washington State Department of Archaeology and Historic Preservation's (DAHP) Washington Information System for Architectural and Archeological Records Data (WISAARD) predictive model database, the proposed reservoir project sites are within an area with moderately low risk of containing as-yet unidentified archaeological sites. However, construction in the project footprint will occur primarily in previously disturbed areas associated with the Golf Course, so the probability of inadvertent discovery is anticipated to be minimal. A Cultural Resources Assessment will be prepared and reviewed as part of the project.

- c. **Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.**

It is anticipated a professional cultural resources consultant will conduct a background review, contact DAHP and area Tribes, conduct field investigations, and prepare a report, as necessary, to identify archaeological and historic evidence in the selected reclaimed water reservoir project location and evaluate the potential for the project to affect cultural resources.

- d. **Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.**

Specific cultural resources review and minimization measures will be detailed in a subsequent project-level SEPA.

14. Transportation

- a. **Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.**

The potential reservoir sites can be accessed via Snoqualmie Parkway. All potential reservoir sites are serviced by SR 202 and Interstate 90.

- b. **Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?**

The nearest transit stop to the project is located at Ridge Street and Fairway Avenue, located approximately 1/4 mile from the site.

- c. **Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).**

None proposed.

- d. **Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

No.

- e. **How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?**

None.

- f. **Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.**

No.

g. Proposed measures to reduce or control transportation impacts, if any.

None proposed.

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

No.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Not applicable.

16. Utilities

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other:

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Proposed utilities to be installed at the selected reclaimed water reservoir site include a Class A reclaimed water reservoir, pipeline, and power and communication lines.

C. Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

X 
Andrew Vining (Oct 9, 2023 4:02 PDT)

SEPA Responsible Official

Type name of signee: Andrew Vining, PE

Position and agency/organization: Project Engineer/City of Snoqualmie

Date submitted: 10/9/2023

Redline comments reflect updates to the checklist based on public comments received on Monday November 27th, 2023.

D. Supplemental sheet for nonproject actions

IT IS NOT REQUIRED to use this section for project actions.

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

This proposal would not directly increase discharges to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise. The site selection alternatives outlined in the Engineering Report will divert reclaimed water currently conveyed to Eagle Lake to a new closed reservoir for separate storage and City Class A reclaimed water use, thereby preventing comingling of City irrigation water with other sources and reducing the amount of reclaimed water discharged to Eagle Lake in the long-term.

- **Proposed measures to avoid or reduce such increases are:**

The proposed Engineering Report and subsequent reclaimed water system improvements will bring the City's reclaimed water system into compliance with the requirements of its current NPDES Permit. The changes are prompted by the 2018 modifications to the Reclaimed Water Rule, Chapter 174-219 WAC. Improvements and preliminary design described in the Engineering Report shall be compliant with local, state, and federal laws governing discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

The Engineering Report and reclaimed reservoir site selection alternatives have been developed with consideration for avoidance and minimization of impacts to plants, animals, fish, and marine life. Site selection alternatives are in areas of previous disturbance, including the Golf Course, roadways, improved roadside shoulder areas, and along the alignment of the existing Class A reclaimed water transmission main and other utilities. Since the sites are entirely in previously disturbed areas, which coincide with areas providing low habitat value, impacts to plants, fish, and other wildlife are anticipated to be minimal.

- **Proposed measures to protect or conserve plants, animals, fish, or marine life are:**

No additional measures, as it pertains to the Engineering Report and preliminary design information, are proposed to protect, or conserve plants, fish, and other wildlife currently. After the preferred site alternative has been selected, and during design, the City will evaluate potential impacts to plants, animals, fish, or marine life. These proposed Class A reclaimed water improvements will be designed in accordance with City critical areas regulations and state and federal laws governing the protection of natural resources and fish and wildlife. The City will prepare a project-level SEPA,

once the reservoir site is selected and subsequent design is complete, that will include a further review of potential vegetation and wildlife impacts.

3. How would the proposal be likely to deplete energy or natural resources?

Findings from the Engineering Report indicate that no impacts to energy or natural resources are anticipated for any of the potential reservoir sites. The proposed alternatives utilize existing pumps for irrigation water; therefore, no additional permanent energy needs are anticipated.

- **Proposed measures to protect or conserve energy and natural resources are:**

None proposed.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection, such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

The site selection alternatives identified in the Engineering Report avoid and minimize, to the maximum extent possible, impacts on environmentally sensitive areas or areas designated for governmental protection. Impacts to wetlands and/or wetland buffers and areas containing cultural resources are possible, dependent on the site alternative selected; however, the City anticipates preparation of a project-level SEPA, once subsequent design is complete, that will include a further review of potentially impacted environmentally sensitive areas or areas designated for governmental protection.

- **Proposed measures to protect such resources or to avoid or reduce impacts are:**

Specific critical areas and cultural resources review and minimization measures will be detailed in a subsequent project-level SEPA. No additional measures to avoid or reduce impacts to environmentally sensitive areas or areas designated for governmental protection are proposed currently.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

The improvements provided in the Engineering Report are compatible with existing land use plans, including the *Snoqualmie Comprehensive Plan 2032*, *Snoqualmie Ridge II Development Standards*, and the *Snoqualmie Ridge Class "A" Water System and Irrigation Plan*. Improvements will not impact land or shoreline use in the region.

- **Proposed measures to avoid or reduce shoreline and land use impacts are:**

The proposed Engineering Report and reclaimed water system improvements would continue to allow all permissible land and shoreline uses in the Mixed Use zone of the City. No additional measures to avoid or reduce shoreline and land use impacts are proposed.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

The proposal is not likely to increase demands on transportation or public services and utilities. The existing City irrigation system is a non-expanding reclaimed water system

and the proposed improvements described in the Engineering Report would only serve to separate the City's reclaimed water storage from the Golf Course supply.

- **Proposed measures to reduce or respond to such demand(s) are:**

No measures to reduce or respond to such demands are proposed currently. In the event that the City experiences an increase in service area or number of customers that receive reclaimed water, improvements or expansion of the reclaimed water system would be covered in future SEPA review, as needed.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The proposed Engineering Report and subsequent improvements are being developed to comply with state requirements for protection of the environment, including Chapter 173-219 WAC. Through the City's NPDES Permit, Ecology is requiring the reclaimed water system to be modified to "... not allow contamination of reclaimed water by lower quality water, such as urban stormwater runoff." The proposed Engineering Report analyzes alternatives and proposes reclaimed water system improvements to fulfill NPDES Permit requirements. No conflict with any other local, state, or federal laws or requirements are anticipated because of this proposal.

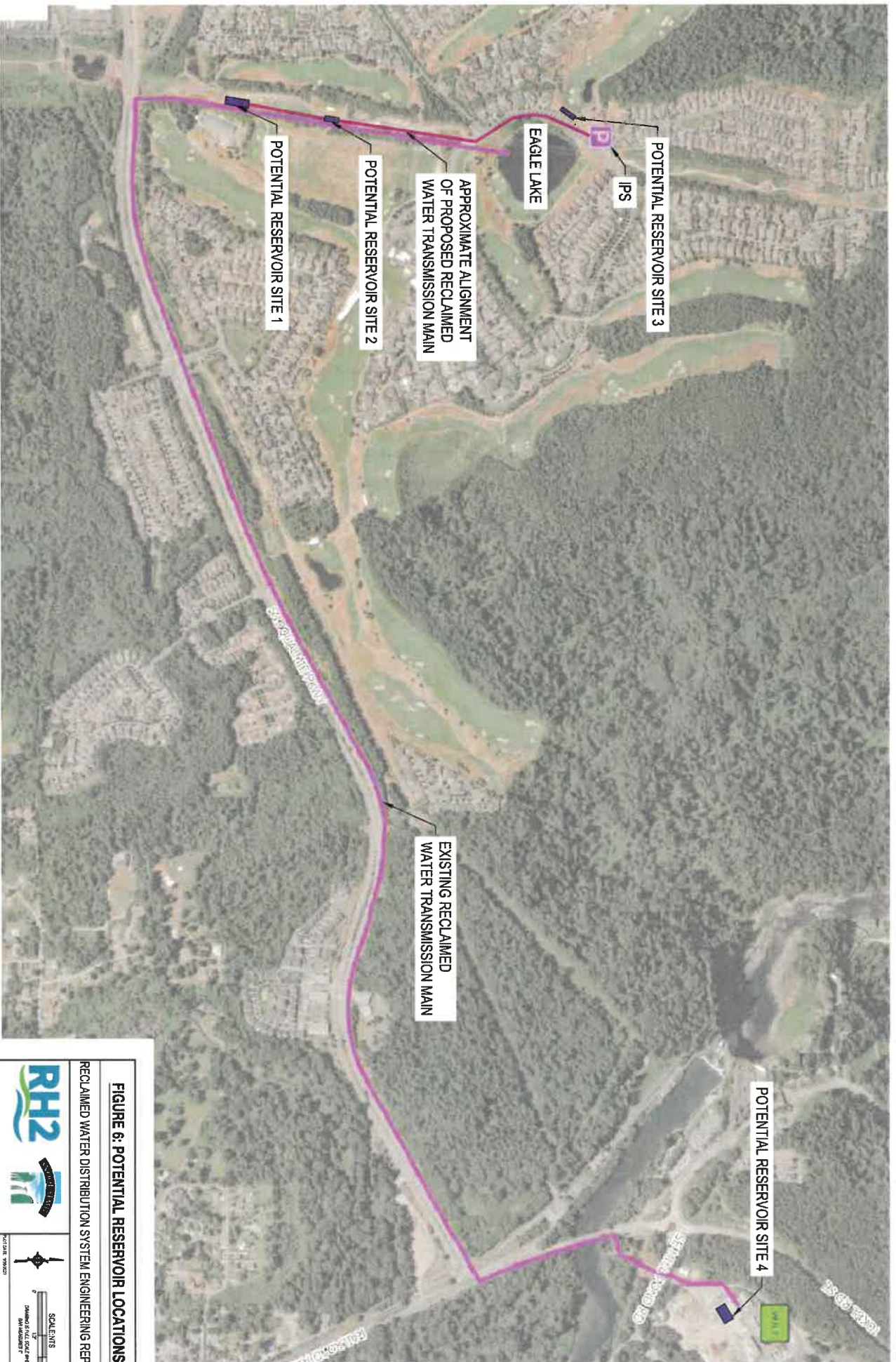
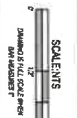


FIGURE 6: POTENTIAL RESERVOIR LOCATIONS

RECLAIMED WATER DISTRIBUTION SYSTEM ENGINEERING REPORT



DATE: 10/20/2011 10:28:21 AM





SNQ_Reclaimed Water Reservoir_SEPA Checklist 10092023

Final Audit Report

2023-10-09

Created:	2023-10-09
By:	Andrew Vining (AVining@snoqualmiewa.gov)
Status:	Signed
Transaction ID:	CBJCHBCAABAA6nvdFyxNJbulvvDeqsKjPRv6UJFD_eb0

"SNQ_Reclaimed Water Reservoir_SEPA Checklist 10092023" History

-  Document created by Andrew Vining (AVining@snoqualmiewa.gov)
2023-10-09 - 4:01:15 PM GMT
-  Document emailed to Andrew Vining (AVining@snoqualmiewa.gov) for signature
2023-10-09 - 4:01:50 PM GMT
-  Document e-signed by Andrew Vining (AVining@snoqualmiewa.gov)
Signature Date: 2023-10-09 - 4:02:24 PM GMT - Time Source: server
-  Agreement completed.
2023-10-09 - 4:02:24 PM GMT

Appendix B

DNS Letter



COMMUNITY DEVELOPMENT DEPARTMENT

38624 SE River Street
PO Box 987
Snoqualmie, WA 98065

Office: 425-888-5337
Fax: 425-831-6041

www.snoqualmiewa.gov

DETERMINATION OF NONSIGNIFICANCE (DNS)

- Project Name:** Reclaim Water Reservoir
- File Number:** SEPA2023-0005
- Issuance Date:** November 22, 2023
- Publication Date:** November 22, 2022
- Proponent:** City of Snoqualmie, Parks and Public Works Department P.O. Box 987 Snoqualmie, WA 98065
- Description of Proposal:** The City of Snoqualmie is considering various sites for the construction of a closed reservoir and a new reclaimed water pipeline to store and separate reclaimed water generated by the WRF from Eagle Lake.
- Project Location:** Potential reservoir sites under consideration include parcels numbers 2524079001, 2624079045 and 3024089079.
- Lead Agency:** City of Snoqualmie
- Existing Environmental Documents:** Reclaimed Water Distribution System Engineering Report by RH2, dated October 2023, SEPA Checklist dated, October 9, 2023.
- Threshold Determination:** The City of Snoqualmie has determined the proposal does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision is made after review of a completed environmental checklist and other information on file with the city. This information is available to the public on request, email: communitydevelopment@snoqualmiewa.gov, phone: 425-888-5337. This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days after the date of issuance. Legal notice is provided pursuant to RCW 43.21C.080.
- Responsible Official:** Emily Arteche, AICP, Community Development Director, 38624 SE River Street PO Box 987 Snoqualmie, WA 98065, PH: 425-888-5337.
- Public Comment:** Comments on the DNS may be submitted until December 5, 2023, by 5:00 PM via e-mail: communitydevelopment@snoqualmiewa.gov or mail: City of Snoqualmie, Community Development Department, PO Box 987 Snoqualmie, WA 98065. Please include File Number: SEPA 2023-0005 in the comment. The city will not take final action on this proposal until after the end of the comment period. The issuance of this DNS should not be interpreted as acceptance or approval of this proposal as presented. The City of Snoqualmie (City) reserves the right to deny or approve said proposal subject to conditions if it is determined to be in the best interest of the City and/or necessary for the general health, safety, and welfare of the public.
- APPEAL:** This DNS may be appealed, pursuant to WAC 197-11-680.

Emily Artocha

SIGNATURE: _____ DATE: November 22, 2023