CASCADE WATER ALLIANCE

Water System Plan

Adopted xx, 2025

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Acknowledgements

Cascade Board Members

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Angela Birney, Vice Chair, Mayor, Redmond
Mary Lou Pauly, Secretary/Treasurer, Mayor, Issaquah
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Certification

Cascade Water Alliance
2025 Water Plan

The Water System Plan for Cascade Water Alliance has been prepared under the direction of the following Registered Professional Engineer.

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Abbreviations and Acronyms

Abbreviation or Acronym	Definition
2012 Joint Agreement	*2012 Cascade Water Alliance Joint Municipal Utility Services Agreement*
2012 TPU Agreement	*Amended and Restated Agreement for the Sale of Wholesale Water* (between Tacoma and Cascade)
2025 Market-Priced Agreement	*2025 Agreement for Market-Priced Wholesale Water Supply Between the City of Tacoma, Department of Public Utilities, Water Division and Cascade Water Alliance*
2025 Wholesale Agreement	*2025 Agreement for Wholesale Water Supply Between the City of Tacoma, Department of Public Utilities, Water Division and Cascade Water Alliance*
AFY	Acre-feet per year
BIP	Bellevue-Issaquah Pipeline
BKR	Bellevue-Kirkland-Redmond
Block Contract	*2nd Amended and Restated Declining Block Water Supply Agreement Between the City of Seattle and Cascade Water Alliance*
Board	Cascade Water Alliance Board of Directors
Cascade	Cascade Water Alliance
CERU	Cascade equivalent residential units
CFS	Cubic feet per second
CIP	Capital improvement program
CWSP	Coordinated Water System Plans
DOH	Washington State Department of Health
ERU	Equivalent residential units
Four Cities	Auburn, Bonney Lake, Buckley, and Sumner
GDPC	Gallons per day per capita
GPD	Gallons per day

Abbreviation or Acronym	Definition
GPM	Gallons per minute
MGD	Millions of gallons per day
MIT	Muckleshoot Indian Tribe
PSE	Puget Sound Energy
PTI	Puyallup Tribe of Indians
RCFC	Regional capital facilities charge
R&R	Repair and replacement
SPU	Seattle Public Utilities
SMP	Cascade's Shortage Management Plan
TCP	Tacoma-Cascade Pipeline
TPU	Tacoma Public Utilities
WRLTR	White-River Lake Tapps Reservoir
WRMA	White River Management Agreement
WSCP	Seattle Public Utilities' Water Shortage Contingency Plan

Executive Summary

Cascade Water Alliance (Cascade) is a municipal corporation formed under the authority of the Joint Municipal Utility Services Act (Chapter 39.106 RCW) to provide water supply to its Members: Bellevue, Issaquah, Kirkland, Redmond, Sammamish Plateau Water, Skyway Water & Sewer District, and Tukwila. Cascade's mission is to provide safe, clean, and reliable water to its Members in a cost-effective and environmentally responsible way through regional leadership and strong relationships.

This Water System Plan fulfills Cascade's responsibility to submit a water system plan to the Washington State Department of Health (DOH). In addition, it supplements information on regional supply presented in each Member's individual water system plan.

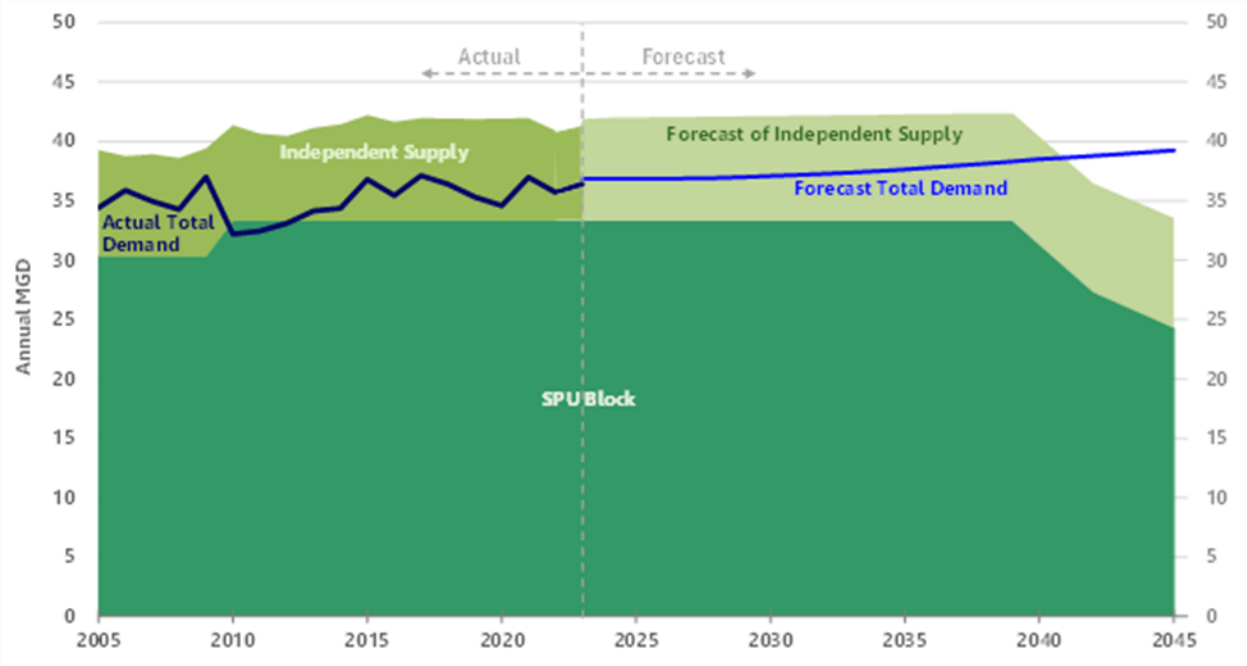
Cascade contracts with Seattle Public Utilities (SPU) for delivery of water to its Members, receiving 33.3 million gallons per day (MGD) annual average. The current contract (Block Contract) contains a declining block of supply that will be reduced in stages, beginning in 2040. In addition to its SPU supply contract, four Members of Cascade have independent water supplies, with a total average annual day capacity of 9.53 MGD. Cascade also contracts with Tacoma Public Utilities (TPU) for up to eight (8) MGD of water supply. To date, Cascade has not requested any water under the TPU agreement.

In 2009, Cascade purchased the White River-Lake Tapps Reservoir Project (WRLTR Project) from Puget Sound Energy (PSE), with a plan to develop the reservoir as a source of future municipal water. Water rights originally issued in December 2010 authorize Cascade to produce 48.5 MGD as an annual average for municipal supply deliveries. This water right augments Cascade's current supplies to meet its Members' long-range supply needs and also provides the opportunity to improve reliability of water supplies for the Central Puget Sound region, particularly in the context of climate change concerns.

Water demand in the Cascade service area has been relatively stable since 2000, ranging from approximately 32 to 37 MGD. Looking forward, total annual average water demand is projected to remain around 37 MGD through 2030 before beginning a gradual rise to 39.3 MGD by 2045. While Cascade's population and employment are expected to grow 31% between 2025 and 2045 (1.2% per year), its water demand is projected to increase by much less, just 6.5% (0.3% annually). This is because the collective effects of adopting conservation rate structures, increasing water rates, federal and state plumbing codes and appliance efficiency standards, Cascade's conservation programs, and improved water system operations have resulted in a steady decline in water consumption per capita for SPU's regional system.

The combination of supply from SPU and Members' independent supplies will provide approximately 42 MGD through 2039, which is enough to meet Cascade's projected demand. However, once the Block Contract amount from SPU begins to decline, that will no longer be the case, and Cascade will need an additional source of water to meet demand after 2041. Figure ES-1 illustrates this.

Figure ES-1. Cascade Demand Forecast Under Current Block Contract (2023-2045)

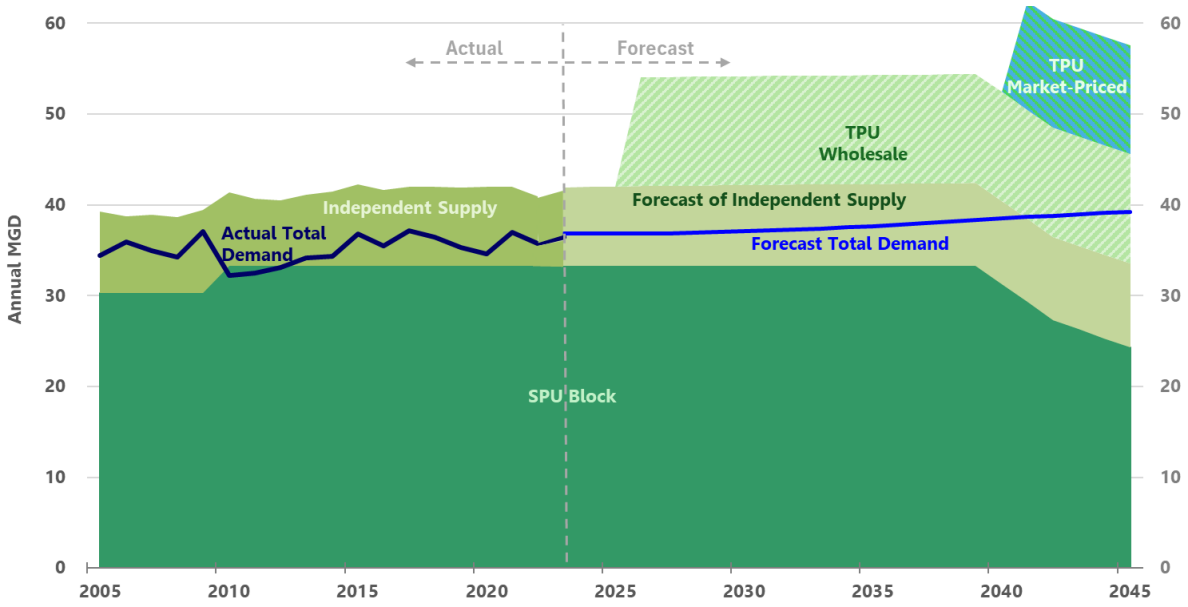


Based on SPU's, TPU's, and Everett's current water system plans, water supply in the region should be ample through at least 2060. Cascade's business model calls for the use of available regional water to bridge demand until the Lake Tapps Reservoir is developed for municipal supply. Coupled with needing an estimated 20 years or more to develop the Lake Tapps Reservoir, in July 2021, Cascade's Board of Directors (Board) directed staff to pursue supply contracts with SPU and TPU.

After nearly three years of discussions with SPU and TPU, in May 2024, Cascade's Board directed staff to develop new supply contracts with TPU. Both SPU's and TPU's proposed contract terms would allow Cascade to cost-effectively defer development of the Lake Tapps Reservoir. However, TPU's proposal offered longer supply certainty, greater financial benefit, and an opportunity to move towards a regionalized water system.

Cascade and TPU are currently finalizing two separate and complementary agreements: the Agreement for Market-Priced Wholesale Water Supply (2025 Market-Priced Agreement) and the Wholesale Water Supply Agreement (2025 Wholesale Agreement), with the intention of signing both agreements by the end of the first quarter of 2025. The 2025 Market-Priced Agreement provides temporary supply through 2062 while the 2025 Wholesale Agreement provides permanent supply. Figure ES-2 shows Cascade's projected demand and supply through 2045 with TPU supply. Although the figure shows TPU supply available in 2026, Cascade plans to phase into TPU's delivery starting in 2041, as supply from SPU's Block Contract gradually declines below what is needed to meet Cascade's demand. By 2060, Cascade will receive 24 MGD on average from TPU. After 2062, Cascade will receive up to 15 MGD peak day from TPU.

Figure ES-2. Cascade Demand and Supply Forecast with TPU Supply (2023-2045)



Pending the two new supply agreements with TPU, Cascade anticipates needing to have the Lake Tapps Reservoir in service by the early 2060s. In the 2018 Transmission and Supply Plan Extension, Cascade projected developing the reservoir as early as the mid-to-late 2030s.

Cascade is responsible for constructing the facilities necessary to connect Cascade's system with the TPU system -- the Tacoma-Cascade Pipeline (TCP) Program. The TCP Program will involve constructing a transmission pipeline, regional distribution pipelines, and associated facilities. More specifically, the TCP Program will likely include the following elements: the Central Pipeline segment, the North Pipeline segment, the Bellevue-Kirkland-Redmond (BKR) Pipeline, a pipeline that runs parallel to the Bellevue-Issaquah Pipeline (BIP), booster pump station(s), storage facility(s), and connections. The TCP Program cost is estimated to be $1 billion in 2023 dollars.

Over the next two-to-three years, Cascade will focus on developing the TCP Facilities Plan. The TCP Facilities Plan will be the scope of work that forms the basis of design and requirements to construct the facilities necessary to connect the Cascade and TPU systems. This Water System Plan covers the same period as Cascade's facilities planning phase of the TCP Program.

Once the TCP Facilities Plan is completed, Cascade will commence design, environmental, and permitting work for the Central and North Pipeline segments and associated facilities and connections. Construction is anticipated to start around 2030 for the Central Pipeline segment and the mid-2030s for the North Pipeline segment. Design and construction of the Intown transmission pipes and other infrastructure (BKR Pipeline, Parallel BIP, booster pump station(s), storage facility(s), and connections) are expected to commence in the 2040s.

The capital needs for the TCP Program, as well as for upgrading or replacing assets in the WRLTR Project, will be met through a variety of funding sources, including existing funding

streams and potential future funding opportunities. As part of its fiscal policies, Cascade will develop a project funding plan specific to the TCP Program, which will further refine the plan for the funding sources as well as potential federal or state grant and loan programs.

Cascade's overall financial position is strong, with sufficient liquidity to finance operations and sufficient debt capacity to finance future capital asset acquisitions. Cascade is financed by equity and long-term debt. Since Cascade serves its Members on a wholesale basis, its rates and charges do not include retail rates. Cascade's charges to Members reflect the fixed nature of much of Cascade's costs, whether currently under SPU's Block Contract or as anticipated with debt service related to financing the TCP Program. As a means of mitigating financial risk, Cascade's rate structure is primarily fixed in nature.

Consistent with its fiscal policies, Cascade updates its 10-year rate forecast on a biennial basis as part of its budget process. Additionally, Cascade prepares a long-term financial forecast at least once every 10 years.

This Water System Plan is organized into six chapters.

- Chapter 1: Cascade's history, membership, service area, supply commitment to Members, governance, organizational structure, regulatory compliance, and relationships to Member's Water System Plans.

- Chapter 2: Cascade's current contracted supply, infrastructure, Member supplies, water quality regulatory compliance, shortage management, water rights self-assessment, and related plans and agreements.

- Chapter 3: Cascade's historical, current, and projected water demand; future sources of supply; and reclaimed water.

- Chapter 4: Cascade's water efficiency program and water savings goal.

- Chapter 5: Cascade's capital planning and improvement program for the WRLTR Project, the BIP, and the TCP Program.

- Chapter 6: Cascade's financials, including total cost of providing water service and the mechanisms through which Cascade recovers these costs, funds new improvements, and demonstrates the financial viability of Cascade both currently and in the long term.

Once Cascade completes the TCP Facilities Plan, it will develop and submit a new 10-year Water System Plan to DOH with a planned submittal date of September 30, 2028. The alternatives for sizing and routing transmission facilities and other key recommendations from the TCP Facilities Plan will be incorporated into Cascade's next Water System Plan. Cascade will communicate regularly with DOH on the progress of its TCP Facilities Plan and the anticipated timeline for its next 10-year Water System Plan.

Chapter 1. Cascade Overview

Cascade Water Alliance (Cascade) is unique among Washington water suppliers in that it serves exclusively as a wholesale supplier to its Members. Its mission is to provide safe, clean, and reliable water to its Members in a cost-effective and environmentally responsible way through regional leadership and strong relationships.

This chapter provides background information on Cascade and summarizes its history, membership, service area, supply commitment to Members, governance, and organizational structure. It also briefly describes Members' regulatory compliance and the relationship between Cascade's and Members' water system plans.

1.1. History

Cascade was formed in April 1999 as a public body via an Interlocal Agreement. From 1999 through 2012, Cascade functioned as a watershed management partnership to provide essential governmental functions on its Members' behalf. In 2011, the Washington Legislature enacted the Joint Municipal Utility Services Act (Chapter 39.106 RCW), which provides for the conversion of an existing intergovernmental entity formed under the Interlocal Cooperation Act into a joint municipal utility services authority.

On July 12, 2012, Cascade completed the necessary steps to convert to a joint municipal utility services authority and become a municipal corporation, no longer functioning as a watershed management partnership.

Cascade's purposes are listed in the 2012 Cascade Water Alliance Joint Municipal Utility Services Agreement ("2012 Joint Agreement") and generally include: contracting with other regional water suppliers on behalf of its Members; developing and operating water supply facilities; providing regional water conservation services; and planning for the water needs of its Members (including long-range and short-term plans for emergencies or water shortages).

Water deliveries from Cascade began on January 1, 2004. Cascade delivers water to its Members entirely on a wholesale basis. Each Member is responsible for distributing water to its residents, businesses, and other retail customers. Members own and operate their local distribution systems for these purposes. Some Members also have independent water supplies and meet a portion of their demands separately from the wholesale supply provided by Cascade.

1.2. Membership and Service Area

Cascade currently has seven Members: Bellevue, Issaquah, Kirkland, Redmond, Sammamish Plateau Water, Skyway Water & Sewer District, and Tukwila. All seven Members participated in the formation of Cascade. Covington Water District was a founding Member of Cascade but withdrew from Cascade in 2012.

Cascade's current service area for delivery of wholesale water supplies is located entirely within the boundaries of King County, Washington. The service area may change from time to time, as Member water systems adjust their service area boundaries. The current service area is shown in Figure 1.1.

Based on data from the Puget Sound Regional Council, the combined population of the Cascade service area was estimated to be 405,000 people in 2023, as seen in Table 1.1. The population shown below refers to population within each Member's water service area and differs from City limits and City populations. This data, in addition to households, employment, and Cascade Equivalent Residential Units (CERUs) are used to forecast water demand and are discussed in Chapter 3.

Table 1.1: Cascade Service Area Population

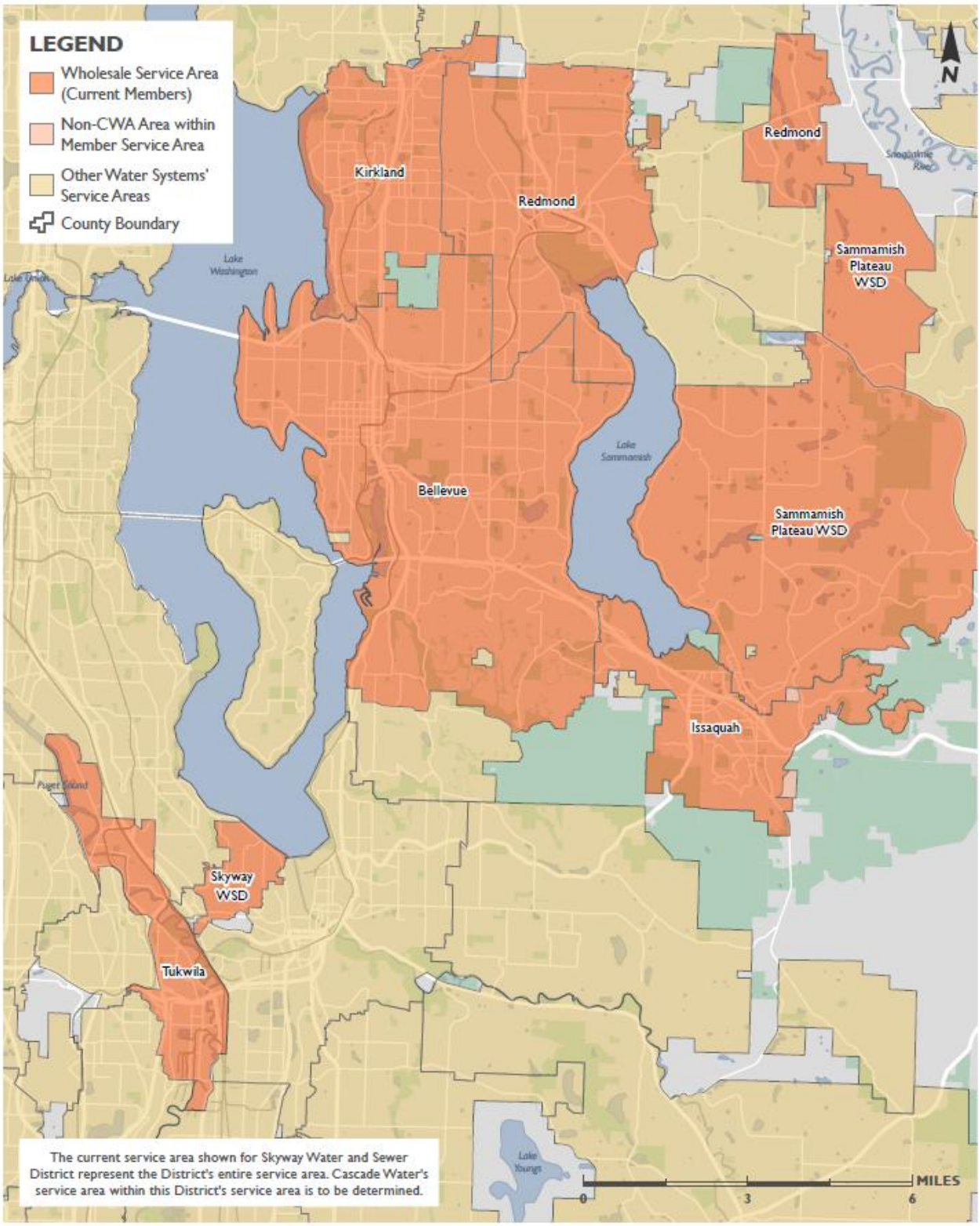
Member	2023 Population
Bellevue	162,200
Issaquah	29,000
Kirkland	49,200
Redmond	85,600
Sammamish Plateau Water	59,300
Skyway Sewer & Water District	12,500
Tukwila	7,500
Total	**405,300**

1.3. Supply Commitment to Cascade Members

Cascade Members are parties to the 2012 Joint Agreement. The Agreement outlines Cascade's water supply commitment to its Members and is summarized as follows:

- Cascade must provide a full supply commitment to each of the current Members and meet each Member's water needs, except for the portion met by the Member's independent supply and subject to certain limitations (as outlined below).
- Cascade is obligated to provide water supply to the entire service area of each Member.
- Cascade is not obligated to provide water supply to service area expansions in or outside the urban growth boundary, unless Cascade agrees to this.
- Cascade's full supply commitment to its Members is subject to water shortages, Cascade's ability to implement its Water System Plan, and each Member's audited independent supply. If Cascade cannot fully meet its Members' needs during a shortage, Members share the shortage per Cascade's Shortage Management Plan.
- Cascade must provide for supply system development to meet the needs of additional water customers of Members, subject to consistency with applicable state law, Cascade's Water System Plan, orderly asset development, reasonable cost, and financing capacity.

Figure 1.1: Cascade's Service Area Map



1.4. Governance and Organizational Structure

Cascade is governed by a Board of Directors (Board) consisting of one representative appointed by each Member. Members can also appoint alternates to the Board. Each Board Member and Alternate Board Member must be an elected official of the Member organization.

The Board has authority over all actions taken by Cascade. The 2012 Joint Agreement defines voting procedures and also indicates certain actions that require ratification by the elected bodies of each Cascade Member.

Figure 1.2. Organizational Chart

Cascade's approved staff positions for 2025-2026 are shown in the organizational chart in Figure 1.2. Staff members are employees of Cascade and are neither elected officials nor employees of Cascade's Member agencies. Staff members carry out functions of the organization, coordinate with Cascade Member staffs, and oversee services provided by consultants, contractors, and other external service providers.

Cascade purchases its water from SPU, and local distribution is handled by Cascade Members, as described in Chapter 2. Because of this, Cascade's functions do not include direct operation of municipal water supply facilities, and Cascade is not required to maintain operator certification for any of its employees under DOH regulations.

1.5. Regulatory Compliance by Cascade Members

Each Cascade Member is responsible for complying with state, local, and federal regulations regarding public water supply within its individual service area. Members delegate a portion of these responsibilities to Cascade, including water sources, treatment of water supplies, and regional storage and transmission facilities. Some of these responsibilities, in turn, are implemented through Cascade's contract for regional supply from SPU (see Chapter 2).

Cascade Members operate and maintain their individual water distribution systems. This includes, as applicable, water treatment for their independent water sources, maintenance of water quality within their reservoirs and distribution systems, and local monitoring of water quality conditions (some monitoring is shared with regional water suppliers).

1.6. Relationship to Members' Water System Plans

Each Cascade Member is responsible under State law to prepare a water system plan every 10 years. Within their respective water system plans, each Cascade Member is individually responsible for system-specific information. However, regional planning for water supply sources is delegated to Cascade, documented in this Water System Plan, and summarized in the individual Member water system plans submitted to the DOH.

Chapter 2. Current Water Supplies and Operations

This chapter summarizes Cascade's current contracted supply, Cascade-owned infrastructure, Cascade Member supplies, water quality regulatory compliance, Cascade's shortage management plan, Cascade's water rights self-assessment, and related plans and agreements. Projections of future water demand, current water usage, and water supplies for future uses are covered separately in Chapter 3.

2.1 Contracted Supply

Cascade contracts with SPU for delivery of water to its Members. The current Block Contract (2nd Amended and Restated Declining Block Water Supply Agreement Between the City of Seattle and Cascade Water Alliance) became effective on January 1, 2004 and was amended in 2008 and again in 2013. The contract contains a declining block of supply that will be reduced in stages, beginning in 2040. It also includes a supplemental block that is available to Cascade through 2044. Supply quantities are shown in Table 2.1. The Block Contract allows for higher peak usage quantities, based on peaking factors identified in Table 2.2.

Table 2.1: Supply Quantities in SPU Declining Block Contract

Year	Size of Block (in MGD)		
	Base	Supplemental	Total
2004-2023	30.3	3	**33.3**
2024-2029	29.3	4	**33.3**
2030-2034	26.8	6.5	**33.3**
2035-2039	24.3	9	**33.3**
2040	24.3	7	**31.3**
2041	24.3	5	**29.3**
2042	24.3	3	**27.3**
2043	24.3	2	**26.3**
2044	24.3	1	**25.3**
2045	24.3	0	**24.3**
2046	23.3	0	**23.3**
2047-2063	1 less than prior year	0	**1 less than prior year**
2064	5.3	0	**5.3**

Table 2.2: Peaking Allowances in SPU Declining Block Contract

Period	Peaking Factor
Peak Season Factor[1]	1.35
Peak Month	1.69
Peak Week	1.86
Peak Day	2.00

Peak Season: June 1 through September 30

Under the Block Contract, SPU is responsible for maintaining and operating source, treatment, transmission, and storage facilities needed to deliver the contracted supply, as well as regulatory compliance for those facilities.

Water is drawn from SPU's Cedar and Tolt River watersheds and delivered to individual Cascade Members at approximately 35 delivery points along SPU's various transmission pipelines, including portions of SPU's Tolt and Cedar transmission systems. SPU is required to provide water that meets state and federal drinking water quality standards at the delivery points.

Each delivery point has a wholesale meter that measures deliveries to individual Members. Both SPU and Cascade track total deliveries to Cascade Members on a monthly basis. Some of the water received by individual Members is wheeled through the Members' distribution system to another Member. For example, some of the water delivered to Kirkland is wheeled to Redmond, and some of the water delivered to Bellevue is wheeled to Redmond and Issaquah.

Consistent with its supply contracts, Cascade provides a wholesale level of service to its Members. It does not provide service that meets all retail service level obligations, such as fire flow or emergency backup.

The SPU delivery points also represent interties in the context of Washington requirements for water system plans. Table 2.3 lists these supply interties. Some Members also have interties among themselves that are used to move a portion of the SPU supply from one Member service area to another. These are referred to as Member-to-Member interconnections. Cascade Members also have emergency interties with adjacent water systems to provide water in the event of emergency water shortages. These local interties are identified in the individual Member's water system plans.

In addition to its SPU Block Contract, Cascade contracts with TPU for up to eight (8) MGD of water supply (Amended and Restated Agreement for the Sale of Wholesale Water or 2012 TPU Agreement). To date, Cascade has not requested any water under this agreement. Planned future use of TPU supply is discussed in Chapter 3. Cascade and TPU plan to construct system interconnections for delivery and acceptance of TPU water supply, which would be detailed and proposed in a future water system plan or facilities plan for the TCP Program.

Table 2.3: Interties Between Cascade Members and SPU (from Management Agreement #11, Exhibit II)

Exhibit II

CASCADE POINTS OF DELIVERY[1], MINIMUM HYDRAULIC GRADIENTS, AND MAXIMUM FLOW RATES OF WATER SUPPLIED

POINT OF DELIVERY (POD)							MINIMUM HYDRAULIC GRADIENT UPSTREAM OF SEATTLE METER (FEET NAVD-88 Datum) [3]	MAXIMUM FLOW UP TO WHICH HYDRAULIC GRADIENT IS GUARANTEED UNDER THE AGREEMENT [3] [4] (gpm)
SEATTLE METER LOCATION	CASCADE MEMBER OPERATING DOWNSTREAM OF POD	SEATTLE STATION NUMBER	SEATTLE PIPELINE SEGMENT NUMBER	SEATTLE METER SIZE (IN.)	CASCADE MEMBERS SERVED	SIZE OF CASCADE MEMBER METER(S), (IN.) [2]		
132nd Ave. NE & NE 113th Street	Kirkland	74	1	10"	Kirkland, Redmond	12"	555	3,540
132nd Ave. NE & NE 85th Street	Kirkland	75	1	16"	Kirkland, Redmond	None	535	4,890
140th Ave. NE & NE 70th Street	Kirkland	72	2	12"	Kirkland, Redmond	12"	520	1,430
140th Ave. NE & 40th Street	Bellevue	65	2	10"	Bellevue, Redmond	18"	500	15,500
132nd Ave. NE & Bel-Red Road	Bellevue	62	2	12"	Bellevue	12"	470	
132nd Ave. NE & NE 24th Street	Bellevue	63	2	10"	Bellevue	12"/8" [5]	455	
140th Ave NE & NE 8th Street	Bellevue	198	2	12"	Bellevue	12"	460	
152nd Ave. NE & NE 8th Street	Bellevue	61	2	24"	Bellevue, Redmond	16"	460	
145th Pl SE & SE 28th Street	Bellevue	58	3	12"	Bellevue	16"	470	4,400
14509 SE Newport Way	Bellevue	60	3	10"	Bellevue, Issaquah	12"	525	
14509 SE Newport Way	Bellevue	182	3	10"	Bellevue, Issaquah, Sammamish Plateau	12"/8"/8" [6]	525	5,810
132nd Ave SE & SE 26th ST	Bellevue	59	8	8"	Bellevue	8"	425	2,725
128th Ave. SE & Newport Way	Bellevue	56	8	8"	Bellevue	8"	435	
128th Ave SE & SE 56th ST	Bellevue	47	8	8"	Bellevue	6"	440	
128th Ave SE & Newport Way	Bellevue	55	8	6"	Bellevue	6"	435	
128th Ave SE & SE 70th ST	N/A	52	8	12"	Bellevue	N/A	445	1700 [7]

Exhibit II

CASCADE POINTS OF DELIVERY[1], MINIMUM HYDRAULIC GRADIENTS, AND MAXIMUM FLOW RATES OF WATER SUPPLIED

POINT OF DELIVERY (POD)							MINIMUM HYDRAULIC GRADIENT UPSTREAM OF SEATTLE METER (FEET NAVD-88 Datum) [3]	MAXIMUM FLOW UP TO WHICH HYDRAULIC GRADIENT IS GUARANTEED UNDER THE AGREEMENT [3] [4] (gpm)
SEATTLE METER LOCATION	CASCADE MEMBER OPERATING DOWNSTREAM OF POD	SEATTLE STATION NUMBER	SEATTLE PIPELINE SEGMENT NUMBER	SEATTLE METER SIZE (IN.)	CASCADE MEMBERS SERVED	SIZE OF CASCADE MEMBER METER(S), (IN.) [2]		
East Channel Bridge Pipeline & 108th Ave. SE	Bellevue	66	9	8"	Bellevue	4"/10"	420	2,200
124th Ave SE & SE 38 PL	Bellevue	124	9	8"	Bellevue	8"	425	
Cornell Ave S & S 112th Street	Skyway	172	4	6"	Skyway	None	375	Backup service [8]
84th Ave. S & S 134th Street	Skyway	1	10	8"	Skyway	None	455	210
Beacon Ave S & S 124th Street	Skyway	5	10	8"	Skyway	8"	455	720
W Marginal Place & S 102nd ST	Tukwila	170	5	12"	Tukwila	12"	300	300
51st Ave S & S Leo Street	Tukwila	169	12	8"	Tukwila	8"	455	70
47th Ave S & S Victor Street	Tukwila	173	12	6"	Tukwila	6"	425	Backup service
South Center Parkway & Tukwila Parkway	Tukwila	13	13	10"	Tukwila	10"	460	800
West Valley Hwy & S 162nd Street	Tukwila	14	13	8"	Tukwila	8"	460	Backup service
Christensen Rd. & Baker Rd	Tukwila	15	13	8"	Tukwila	10"	460	840
53rd Ave S & S 160th Street	Tukwila	16	13	6"	Tukwila	6"	460	20
E Marginal Way & S 112th Street	Tukwila	183	15	12"	Tukwila	12"	445	900
7749 E Marginal Way S	Tukwila	168	20	12"	Tukwila	12"	N/A	Backup service [8]
Trilogy Parkway NE & NE 125 Street (East meter)	Redmond	164	28	10"	Redmond, Sammamish Plateau	16"	610	2,900
Trilogy Parkway NE & NE 125 Street (West Meter)	Redmond	186	28	10"	Redmond, Sammamish Plateau	16"	610	

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CASCADE POINTS OF DELIVERY[1], MINIMUM HYDRAULIC GRADIENTS, AND MAXIMUM FLOW RATES OF WATER SUPPLIED

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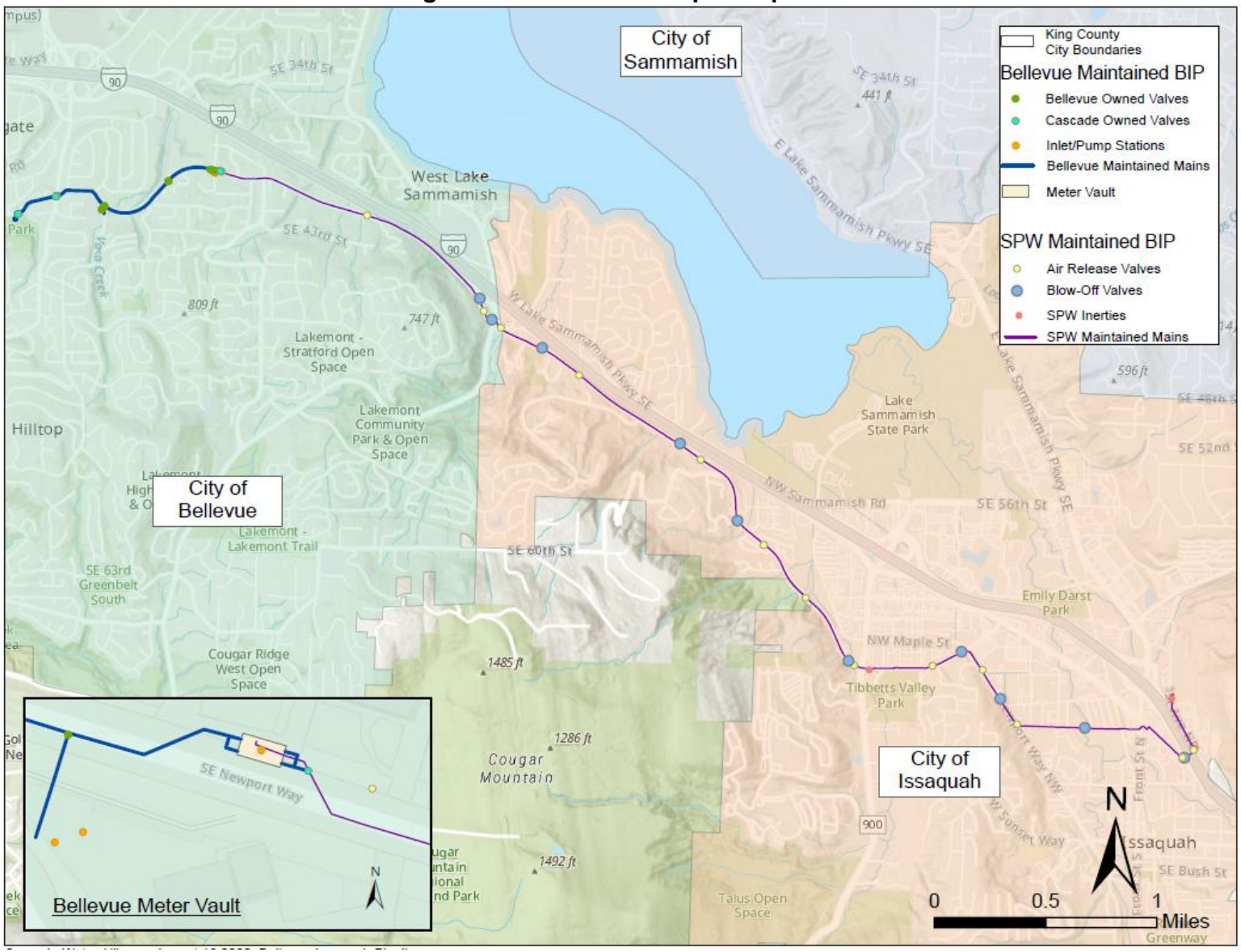
160th Ave NE & NE 104th Street	Redmond	165	28	10"	Redmond	16"	515	2,420
NE 172nd Street & Tolt Pipeline No. 2	Redmond	185	28	6"	Redmond	16"	515	
							TOTAL:	51,375

Notes:

1. All Points of Delivery (PODs) provide a wholesale level of service. Seattle bears no responsibility for retail service level obligations, such as fire flow or emergency backup.
2. This column is for informational purposes only, i.e., there are no related terms or conditions under the Agreement. Cascade will be responsible for providing Seattle with updated Cascade Member information from time to time.
3. These minimum hydraulic gradients and maximum flows relate to contractual conditions under the Agreement, but do not necessarily reflect practical or operational limits at particular PODs.
4. Except as provided in Note 7 below, all or some of the maximum flows allocated to each POD may be reallocated to another POD on the same Pipeline Segment Number, including those PODs designated as Backup Services. In that case, minimum hydraulic gradients are not guaranteed.
5. Flow branches into two metered Bellevue pipelines downstream of Station 63.
6. The 12" Bellevue meter is located at 4112 161st Ave SE. The two 8" meters that each serve Issaquah and the Sammamish Plateau are located at 16104 SE Newport Way in a single meter vault.
7. The maximum flow shown is the portion serving Bellevue via Coal Creek Utility District. All or a portion of this maximum flow may be reallocated from this POD to other PODs on the same Pipeline Segment Number, but additional flows from other PODs may not be reallocated to this POD.
8. When a Backup Service is the only POD on a Pipeline Segment Number, the Cascade Member operating the Backup Service can re-allocate all or portions of the maximum flows from other PODs it operates to that Backup Service, regardless of Pipeline Segment Number. In that case minimum hydraulic gradients are not guaranteed.

Figure 2.1. Bellevue-Issaquah Pipeline



2.2 Cascade-Owned Infrastructure

To perform its responsibilities for regional water deliveries, Cascade purchased the BIP from Bellevue and Issaquah in 2004 and 2006, respectively. Currently, the BIP is the only piece of infrastructure Cascade owns that is used to deliver municipal water supply to end users. Its location is shown in Figure 2.1.

The BIP conveys water from SPU's Tolt Eastside Supply Line and Eastside Reservoir to Issaquah and Sammamish Plateau Water. It is made of ductile iron, is 24-inches in diameter, is approximately 7.2 miles long, and extends from near the easterly city limits of Bellevue, along the south side of Interstate 90, and then continues through Issaquah to its terminus at the Sammamish Plateau Water turnout. The portion of the BIP located within Bellevue was constructed in the 1960s. The remainder of the BIP was constructed in 2000 and became operational in 2006.

Cascade has agreements with Bellevue and Sammamish Plateau Water to maintain the BIP. Bellevue maintains 1.20 miles of the BIP, and Sammamish maintains 5.93 miles of it.

Cascade's adopted 2025-2030 CIP includes a project to relocate the BIP. This is being driven by the Washington State Department of Transportation's Lewis Creek culvert replacement project, which will require relocation of the BIP.

Beyond 2030, Cascade expects the BIP will need new valves and seismic upgrades to pipe segment joints. In 2020, Cascade completed a Risk and Resiliency Assessment (RRA) of the BIP as part of the America's Water Infrastructure Act (AWIA). The RRA determined the costs of mitigation measures to address potential threats to the BIP, such as seismic events, outweigh the benefits. Given this, Cascade plans to make improvements when repairs are needed.

Cascade also owns the WRLTR Project in Pierce County. This resource is available for future production of drinking water supply and is discussed in Chapter 3.

2.3 Cascade Member Supplies

Four Cascade Members (Issaquah, Redmond, Sammamish Plateau Water, and Skyway Water & Sewer District) have independent water supplies. These supplies are used only within the service area of the Member (except as noted in Members' individual water system plans).

Each of the independently supplied Members has water rights or supply contracts, or both, separate from Cascade. These are documented in each Member's individual water system plan and submitted to DOH.

For purposes of planning long-range supplies for Cascade as a whole, Cascade recognizes the availability of the water supplies of the independently supplied Members. Since Members face constraints on pumping in some places and at some times, the amount considered by Cascade is not always the same as the quantity authorized in Member water rights. Cascade Members owning independent supply have committed to meeting production

requirements pursuant to the 2012 Joint Agreement and the Cascade Code. Independent supply quantities are listed in Table 2.4 below. These quantities come from Cascade's 2022 audits of Member independent supplies.

Table 2.4. Member Independent Supply Capacity (MGD)

	Annual Average Day	Peak-Season Day	Peak Day Capacity
Issaquah†	1.74 MGD	2.96 MGD	3.70 MGD
Redmond	2.60 MGD	3.51 MGD	3.90 MGD
Sammamish Plateau Water	4.89 MGD	7.90 MGD	9.88 MGD
Skyway Water & Sewer District	0.30 MGD	0.50 MGD	0.63 MGD
Total	**9.53 MGD**	**14.87 MGD**	**18.11 MGD**

† Issaquah independent supply is currently reduced during the planning, design, and construction of a water treatment facility for PFAS.

2.4 Water Quality Regulatory Compliance

As described earlier, water supplies currently used by Cascade Members include a combination of independent supplies owned and operated by Members and regional supply contracted by Cascade from SPU.

For Member independent supplies, all water treatment, water quality monitoring, and associated reporting under state and federal drinking water regulations are the responsibility of the respective Members who own and operate the supply. In addition, all seven Members have responsibility for maintaining and reporting water quality within their local distribution systems.

Under the 2012 Joint Agreement, Cascade is responsible to its Members for delivering water that meets state and federal standards at the point of delivery from Cascade to the Member. Currently, most of the points of delivery are taps along SPU's transmission pipelines. Article V of Cascade's contract with SPU stipulates SPU shall "supply water to Cascade that meets or exceeds federal and state drinking water quality standards, as those standards may change from time to time". Cascade communicates regularly with SPU and Cascade Members regarding water quality conditions and monitoring. SPU performs all treatment, monitoring, and regulatory reporting of water quality conditions with regard to the regional supply.

2.5 Shortage Management Plan

Cascade's Shortage Management Plan (SMP) outlines how Cascade will respond to a shortage affecting its regional water supply. Cascade's primary role in the event of a water shortage is to coordinate responses between Cascade Members and SPU. Therefore, the SMP focuses on communication and coordination actions.

The SMP identifies four stages of water curtailment, reflecting increasingly severe shortage conditions that match the stages from SPU's Water Shortage Contingency Plan (WSCP). These are the Advisory Stage, Voluntary Stage, Mandatory Stage, and Emergency Curtailment Stage. For each stage of curtailment, Cascade's SMP identifies objectives,

triggers, public messages, communication actions, and operating actions that are specific to Cascade. The SMP also identifies a range of actions that Cascade Members and their retail water customers can take to reduce water usage.

Under the 2012 Joint Agreement, Cascade Members "must respond to water shortages in a collective, shared fashion". The Agreement allows the Cascade Board to impose penalty charges or a disproportionate reduction in supply on any Cascade Member who does not comply with the SMP during a shortage. However, the agreement also indicates Members are not required to impose Cascade's SMP in areas not served by Cascade's regional supply and Members with independent supply may decline to participate in Cascade's shortage management program without penalty if they cease taking Cascade water during the period of the emergency or shortage.

A complete copy of Cascade's SMP is included in Exhibit A.

2.6 Water Right Self-Assessment

In 2009, Cascade purchased the WRLTR Project from PSE as the key element of Cascade's long-term water supply portfolio. The reservoir serves as a potential source of municipal water, and it not only provides an insurance policy for future needs but also allows Cascade Members to be a part of future regional water supply decisions.

This section evaluates the water rights held by Cascade. Water rights held by SPU, TPU, and Cascade Members are evaluated in those entities' respective water system plans.

2.6.1 History of the White River-Lake Tapps Reservoir Project Water Rights

- 2003: The Washington Department of Ecology (Ecology) published three Draft Reports of Examination (ROEs) for three water right applications filed by PSE to facilitate development of its White River Hydroelectric Project as a municipal water supply. The 2003 ROEs were remanded back to Ecology when PSE announced it was ceasing hydropower generation at that location.

- 2005: PSE submitted a change/transfer application for its pre-code water right claim. All water right applications were included in the assets acquired by Cascade from PSE for Cascade's WRLTR Project. That purchase of the WRLTR Project closed in December 2009.

- 2006: Ecology issued a Draft ROE (in response to the remand of the 2003 ROEs) and took public comment. Cascade proposed adjustments and additional mitigation measures for the WRLTR Project, and Ecology issued new Draft ROEs for review and comment in 2010. Specifically, Cascade amended the applications to reduce the total quantity to be diverted from the White River and the reservoir from 100 cfs and 72,400 acre-feet (PSE's original request) down to 75 cfs and 54,300 acre-feet.

- 2008-2010: Cascade entered into a set of agreements, the terms of which were incorporated into the Draft ROEs:

    - **Tribal Agreement**: August 2008: Cascade entered into the 2008 White River Management Agreement (WRMA) with the Puyallup Tribe of Indians (PTI) and the Muckleshoot Indian Tribe (MIT), which established parameters related to the management of the White River flows. The WRMA Recommended Flow Regime for the White River was included in the water rights (described below).

    - **Lake Tapps Homeowners Agreement**: May 2009: Cascade entered into the 2009 Agreement Regarding Lake Tapps Between Cascade Water Alliance and the Lake Tapps Community. The 2009 Agreement includes Cascade's commitment to the maintenance of Lake Tapps Reservoir's surface level within a range of elevations called "Normal Full Pool" during an extended Recreational Season, which were included in the water rights (described below).

    - **Four Cities Letter and Agreement**. February 2010: Cascade and the Cities of Auburn, Bonney Lake, Buckley, and Sumner (Four Cities) entered into the 2010 Lake Tapps Area Resources Agreement that provides for the Regional Reserved Water Program for the Lake Tapps Region. This program was included in a portion of the water rights (described below) as a mechanism for a portion of Cascade's water rights to be used by the cities to mitigate impacts of their application for new water rights or changes to existing water rights.

- September 2010: Ecology issued final ROEs approving the WRLTR Project.

- December 2010: Ecology issued final water right permits providing for Cascade to divert water from the White River, store water in the Lake Tapps Reservoir, and withdraw water for both municipal water supply and a reservation of water. These water rights are listed in Table 2.5, and the place of use for municipal supplies is shown in Figure 2.2. Cascade agreed to dramatically reduce the quantity of water that could be diverted into the Lake Tapps Reservoir and to donate the majority of the perfected, historical water right used to fill the Lake Tapps Reservoir.

- 2014: Cascade and Ecology entered the Lake Tapps Trust Water Rights Agreement. Under this Agreement, Cascade took actions to satisfy Condition 19 of the water rights issued in December 2010, including the following:

    - Cascade made a permanent donation to the Trust Water Rights Program and deeded to Ecology a portion of Surface Water Claim 160882 in an instantaneous quantity of 988 cubic feet per second (CFS) and an annual quantity of 684,571 acre-feet.

    - Cascade donated to the Trust Water Rights Program on a temporary basis a portion of Surface Water Claim 160882 in the annual quantity of 154,751 acre-feet per year (AFY). Cascade retains the right to divert and use some or all of the temporary donation in the event of adverse conditions.

- June 2015: Ecology issued a Superseding Certificate of Change of Water Right, Number S2-CV1-2P168(B), amending the diversion right under Claim Number 160822 to 246,710 AFY.

- February 23, 2022: Ecology granted an Extension Request for Water Right Permit Nos S2-29920, R2-29935, and S2-29934 with a development schedule extended as follows:

  Beginning Construction: December 31, 2065, conditioned upon:

  The permittee is required to provide Ecology progress reports every five (5) years beginning December 31, 2027. Progress reports will consist of describing efforts made on project in the previous five (5) year period and if the project is progressing on schedule. Any changes in point of contact must also be updated.

The Water Rights are attached as Exhibit B. The Source Type, Source Location, Purpose of Use, and Place of Use are included in Table 2.5 and Figures 2.2 (Schematic) and 2.3 (Place of Use Map). In addition, Exhibit C includes the Water Rights Self-Assessment.

Table 2.5. Lake Tapps Water Rights Issued to Cascade Water Alliance

Number	Source Type	Source Location	Purpose of Use	Place of Use
Permit S2-29920(A) (Priority date June 20, 2000)	Surface water	White River	Authorizes diversion of up to 54,300 acre-feet per year for municipal water supply, including for industrial and commercial purposes.	See Figure 2.3
Permit R2-29935 (Priority Date September 15, 2000)	Surface water	White River	Authorizes storage of water in the Lake Tapps Reservoir limited to 46,700 acre-feet.	Lake Tapps Reservoir
Permit S2-29934 (Priority Date September 15, 2000)	Surface water	Lake Tapps Reservoir	Authorizes withdrawal of up to 54,300 acre-feet per year from in the Lake Tapps Reservoir for municipal water supply, including for industrial and commercial purposes.	See Figure 2.3
Claim 160882 (Priority Date 1895) As reduced by Water Right Trust Program donations	Surface water	White River	Authorizes withdrawal of 246,710 acre-feet per year to provide recreational water levels in the Lake Tapps Reservoir, maintain the reservoir in the winter, and protect and enhance fish and wildlife.	Lake Tapps Reservoir
Permit S2-29920(B) (Priority date June 20, 2000, but junior to Permit No S2-29920(A))	Surface water	White River	Establishes a Regional Reserved Water Program to be used by Auburn, Bonney Lake, Buckley, and Sumner as a mechanism for a portion of Cascade's water rights to be used by the cities to mitigate impacts of their application for new water rights or changes to existing water rights.	White River

Figure 2.2: Schematic of Cascade's Water Rights

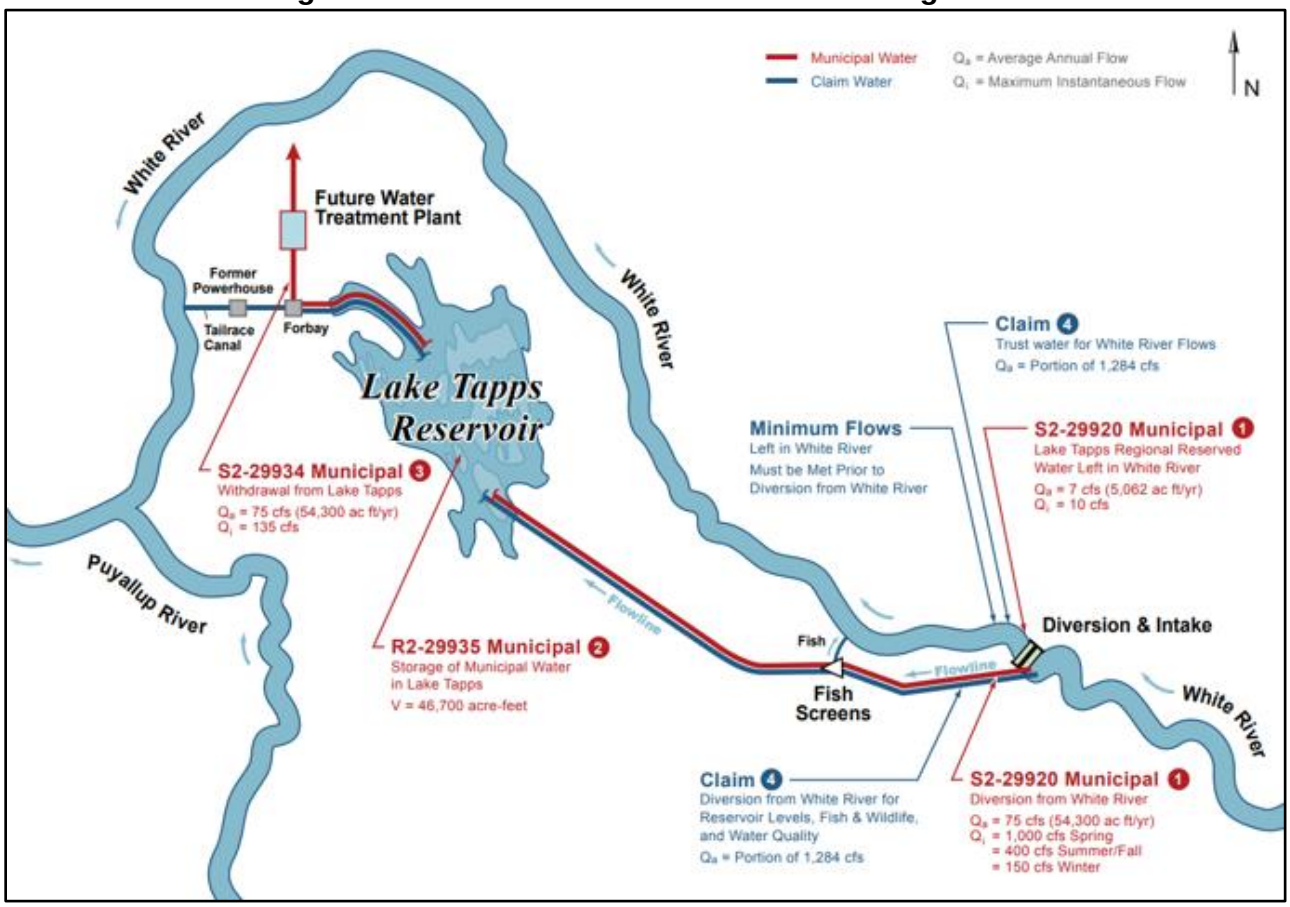
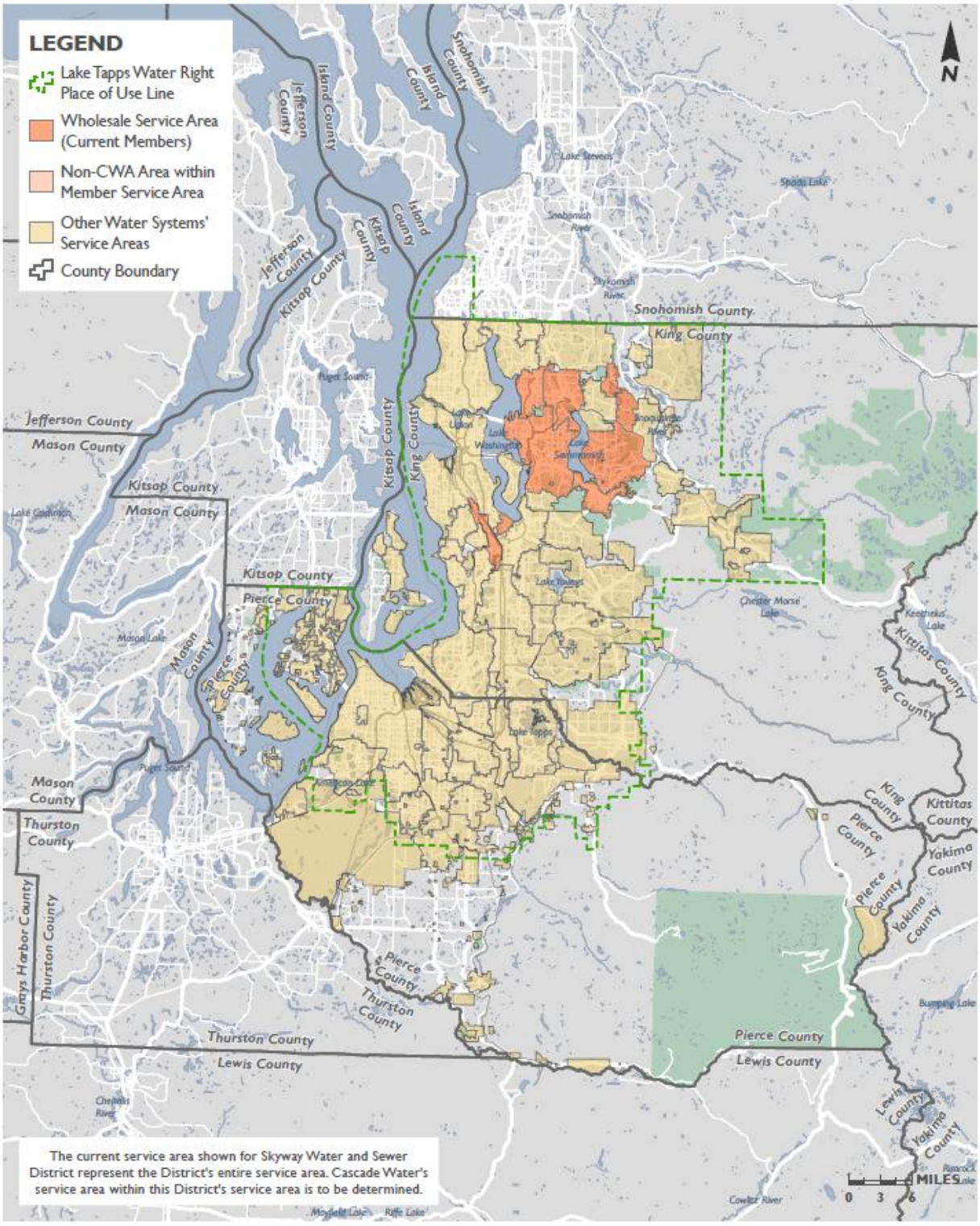


Figure 2.3. Place of Use Map

Figure 2.3 shows Place of Use for Permit No S2-29920(A) and Permit No S2-29934. The place of use for these water rights "is the combined service areas described in the most recent Water System Plans approved by the Washington State Department of Health for Cascade Water Alliance, the City of Seattle and the City of Tacoma."



2.7 Related Plans and Agreements

Several agreements affect Cascade's water system planning, current supplies, and operations. These include:

- Cascade's **2012 Joint Agreement** serves as the foundational agreement that created Cascade and guides its activities.

- **Membership Audit Acceptance Agreements** were developed to establish the quantity of supply that those Members having their own water supplies will produce. The Members that have local supplies are listed in Table 2.4. Each audit establishes a commitment by the Member to produce a certain quantity of water for its own needs.

- **BIP Agreements** with Bellevue and Sammamish Plateau Water designates the two Members to perform operations, maintenance, repair, and emergency response services for the BIP.

- The **Block Contract** with SPU provides for purchase of water on a wholesale basis, as described in Section 2.1. It includes the terms and conditions associated with this water supply.

- The **2012 TPU Agreement** provides for the purchase of water on a wholesale basis and for the sale of excess capacity to the Four Cities. To date, no water has been delivered under this agreement. Cascade and TPU are currently developing new agreements for TPU to provide Cascade with supply in the early 2040s. The new agreements will replace the 2012 TPU Agreement. Since the new agreements are for future supply, they are discussed in Chapter 3.

In addition to agreements, the following plans affect Cascade's planning, supplies, and operations.

- **SPU's 2019 Water System Plan** outlines its programs to provide safe and reliable drinking water throughout its retail and wholesale service area. The plan identifies Cascade as a wholesale customer and describes the Block Contract. The plan includes sections on SPU's water resources, water quality and treatment program, and the transmission system that delivers water to Cascade and other wholesale customers.

- **TPU's 2018 Water System Plan** outlines TPU's programs to provide safe and reliable drinking water throughout its retail and wholesale service area. The plan identifies Cascade as a wholesale customer within its service area.

- **Member Water Systems Plans**. Each Cascade Member is responsible under State law to prepare a water system plan every 10 years. However, regional planning for water supply sources is delegated to Cascade, documented in this WSP, and summarized in the individual Member water system plans submitted to DOH.

- **County and City Land Use Plans**. County and city land use plans determine the extent and nature of development that can occur on lands within King County and its many cities. Land use plans also provide a means to implement provisions of Washington's Growth Management Act. Each of the five cities that is a member of Cascade has a land use plan (comprehensive plan). King County's land use plan regulates development in areas that are outside the various cities, including unincorporated lands within the water service areas of Cascade's Members.

    - The **Coordinated Water System Plans** (CWSP) affecting the Cascade service area include East King County and Skyway Water & Sewer District. The East King County CWSP was prepared in 1989 and updated in 1996. It identified water supply needs in the eastern part of the county and developed a list of supply options to potentially meet those needs. It addressed expected growth and development, design standards, service areas, satellite system management, and additional topics. Cascade Members in the area addressed by this plan include Bellevue, Issaquah, Kirkland, Redmond, and Sammamish Plateau Water. Each of these Members has established policies and design criteria that meet or exceed the requirements of this CWSP.

    - The **Skyway Coordinated Water System Plan** was prepared in 1988 and updated in 1999. It defines water service area boundaries in an area where Seattle, Tukwila, Renton Water District 125, and Skyway Water & Sewer District provide water to the public. It contains provisions for transferring service from one water system to another, reestablishing boundary lines, and resolving service area disputes. Service area changes are made from time to time but do not require an update or amendment of the plan.

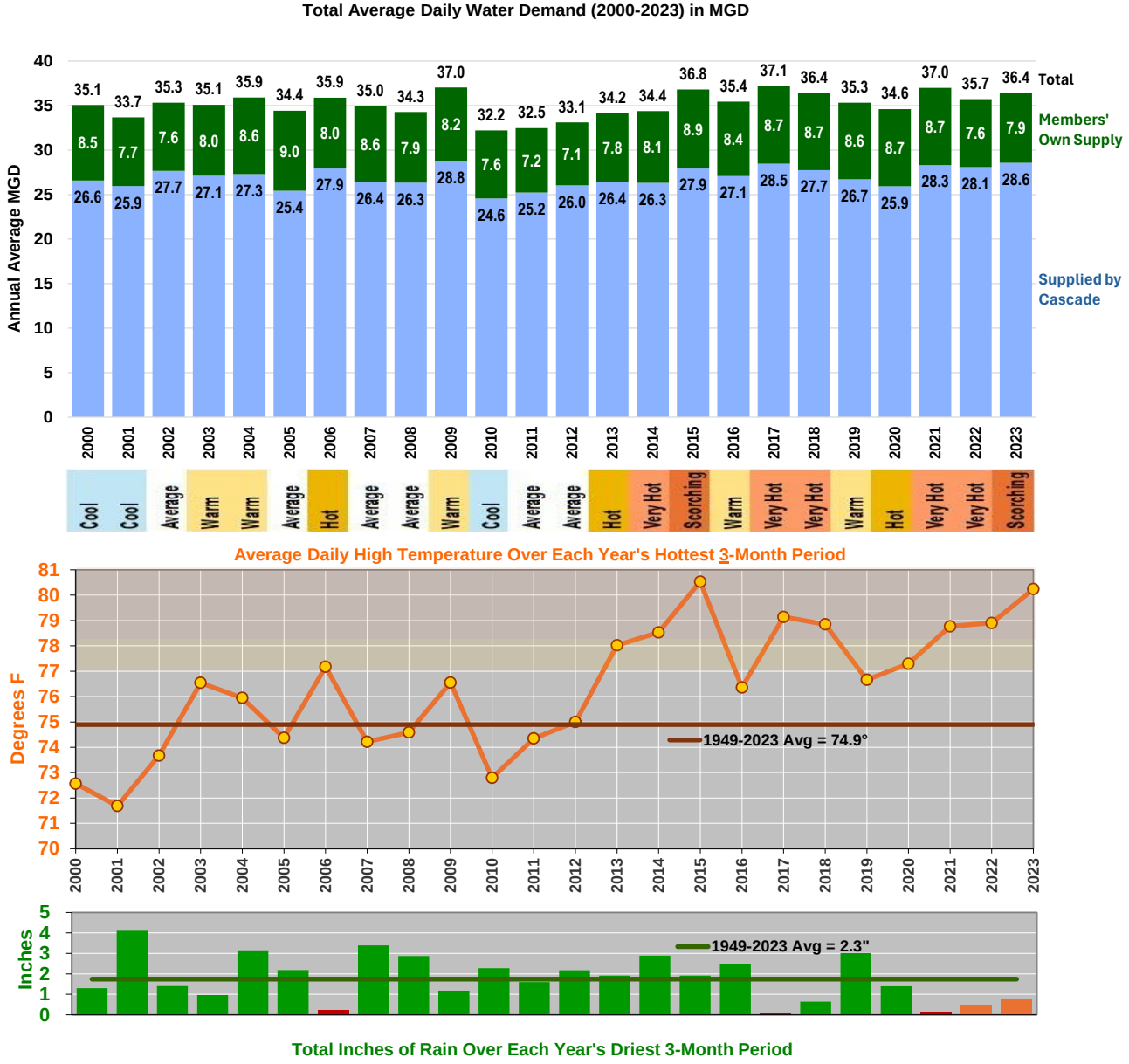
Chapter 3. Water Demand and Future Supplies

This chapter summarizes Cascade's water demand and future supply. Specifically, it describes current demand and production, historical water consumption, projected demand through 2045, future water supplies through 2045 and beyond, and reclaimed water as a potential source of supply.

3.1. Water Demand and Production

Water demand in the Cascade service area has been relatively stable since 2000, ranging from approximately 32 to 37 MGD despite population and employment growth in the service area. Figure 3.1 shows total average-day demands, including both water purchased by Cascade and water obtained from Cascade Member independent supplies. It also shows that much of the year-to-year variation over Cascade's past 24 years can be explained by summer weather with cooler and/or wetter peak seasons roughly correlated with lower water demand.

Figure 3.1. Average Daily Water Demand, Temperatures, and Rainfall



Sources: Cascade records of water purchased from SPU 2004-2023; SPU records of deliveries to Cascade Members 2000-2003, and data provided annually by Cascade Members on their independent supply production. National Weather Service. Note that: (1) the demand of more than 1 MGD from the part of Coal Creek Utility District annexed by Bellevue in 2004 is included for the years 2000-2003 and (2) demand from Covington Water District, a Cascade member until 2012, is not included.

Table 3.1. Demand and Supply

	Annual Average (MGD)
Cascade Demand	35.1
Available SPU Supply	33.3
Available Member Independent Supply	9.5
Surplus (Deficit)	**7.7**

Water use in the Puget Sound region and the Cascade service area exhibits a summer peaking pattern. Higher temperatures and drier conditions in the summer induce various activities that increase water demand, the most significant being landscape irrigation. Figure 3.2 displays the monthly pattern of water demand from both Member independent supplies and the Cascade regional supply contracted from SPU in the most recent year for which data is available, 2023. Also shown are the one-month and four-month peak factors. Figure 3.3 shows the same for the average over the period 2005-2023.

Figure 3.2 Demand from Cascade Members (2023)

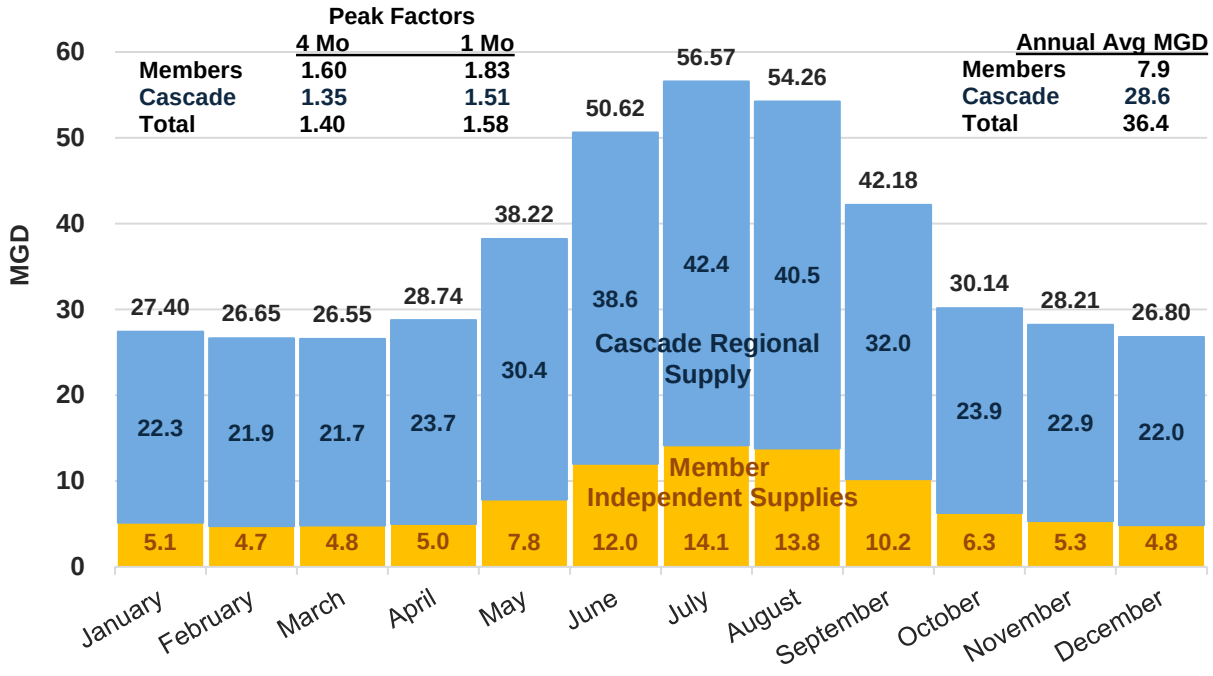
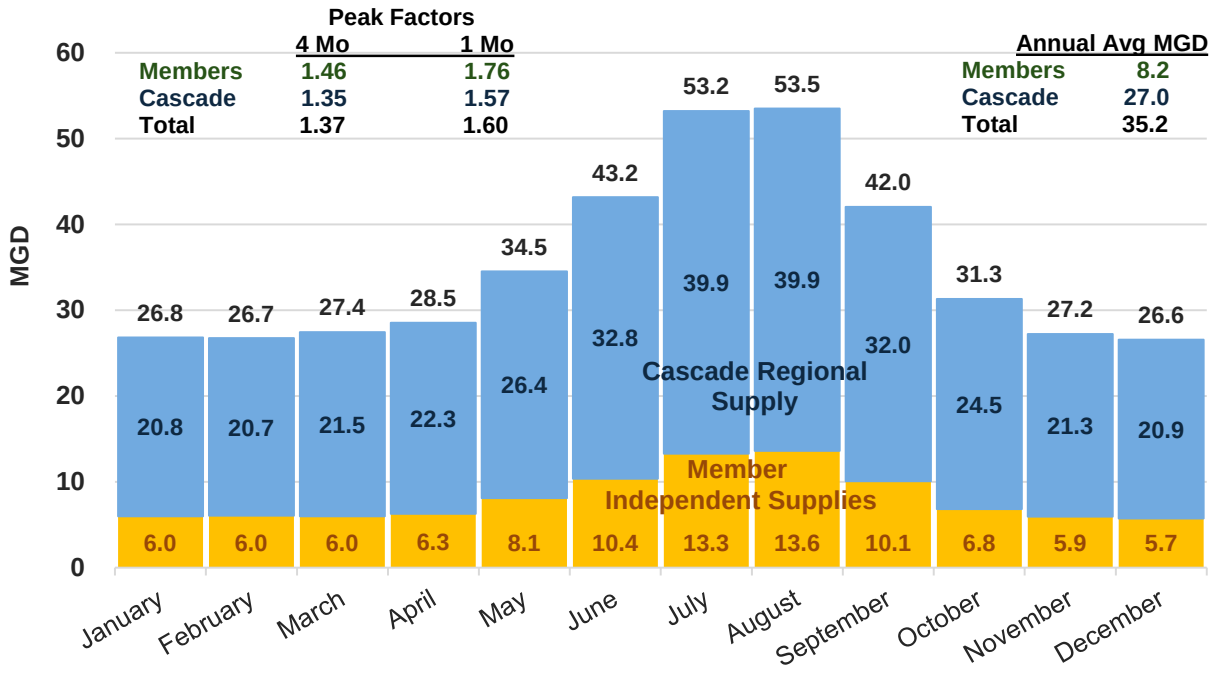


Figure 3.3. Demand from Cascade Members (2005-2023 Average)

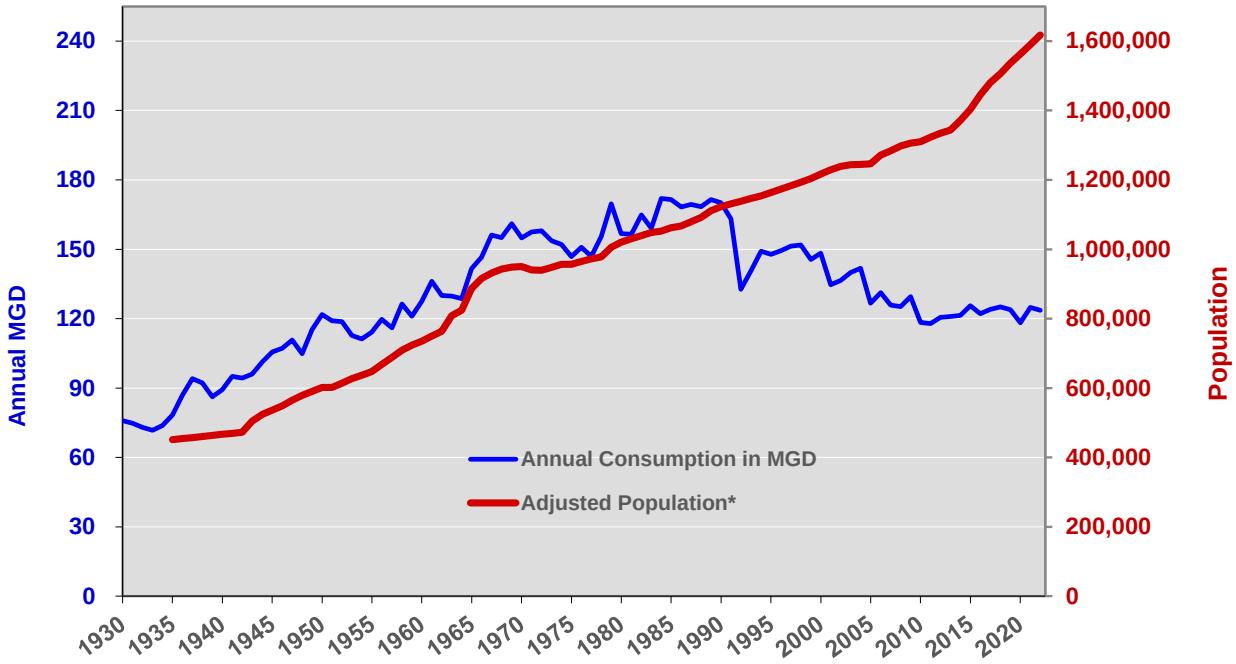


3.2. Historical Water Consumption

For most of this region's history, water consumption increased with population growth. However, that link was broken around 1990 when consumption reached its highest level. Since then, water consumption has declined despite continued population growth. Currently, regional consumption is lower than it has been since the 1950's when the population served was only half of what it is now. Figure 3.4 displays the Seattle Regional System[1] water consumption and population since 1930. While population has steadily risen, water demand leveled off during the 1980's before dropping off sharply in 1992 due to a drought and mandatory curtailment measures. Since then, the combined effects of higher water and sewer rates, new federal and state plumbing codes, utility conservation programs, and improved system operations have kept water consumption significantly below pre-1990 levels. Between 1990 and 2023, consumption decreased by 28% while population increased by 46%. Total water consumption per person is now 50% less than it was in 1990. After 20 years of steady decline, regional system water consumption leveled off around 2010 and has remained relatively flat since then.

[1] Historical consumption and population data in the Seattle Regional System include all Cascade Members except Issaquah and Sammamish Plateau Water.

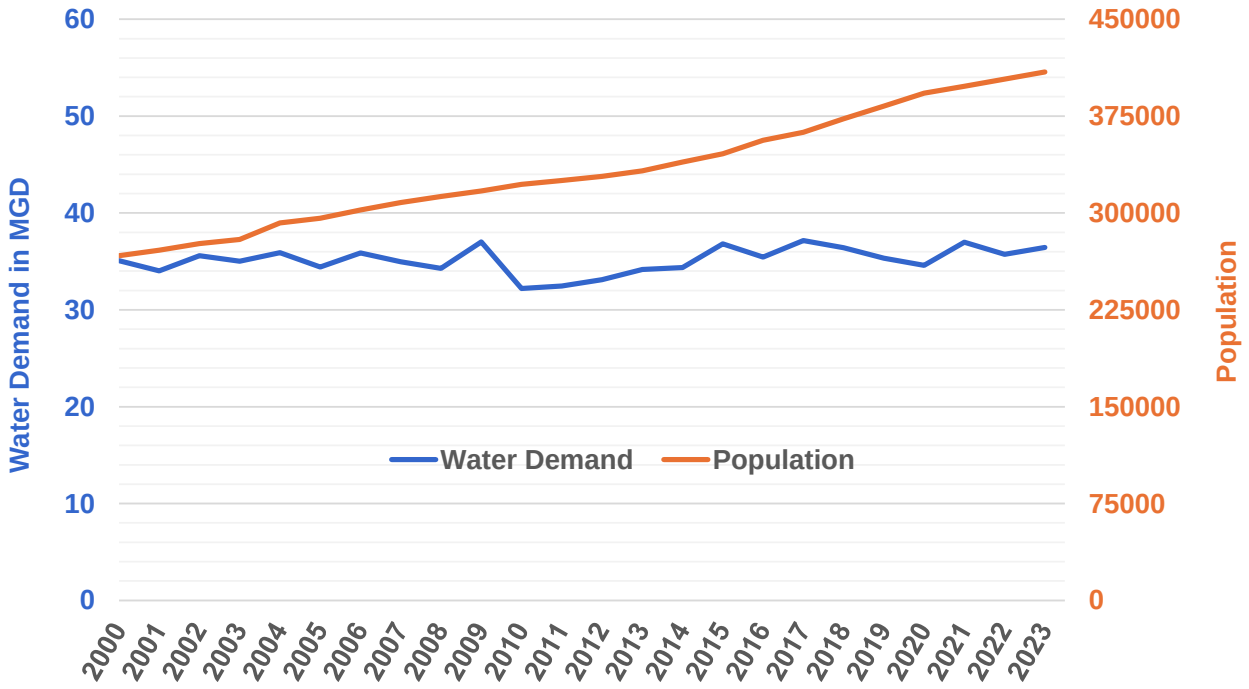
Figure 3.4. Total Seattle Regional Water System Annual Demand (1930-2022)



*** Adjusted to reflect that some wholesale customers have other sources of supply in addition to what they purchase from SPU.**

Figure 3.5 shows the population and water consumption of current Cascade Members since it was formed in 1999. While population has grown by 53%, water consumption has been essentially flat over the whole period, averaging 35 MGD. This suggests the rate at which water use efficiency has been improving (due to efficiency codes and standards, Cascade conservation programs, increasing water rates, and other factors) has roughly offset the impact of forces putting upward pressure on water consumption (growth in population and the economy). As a result, water demand per capita has declined by 33%.

Figure 3.5. Cascade Water Demand and Population (2000-2023)



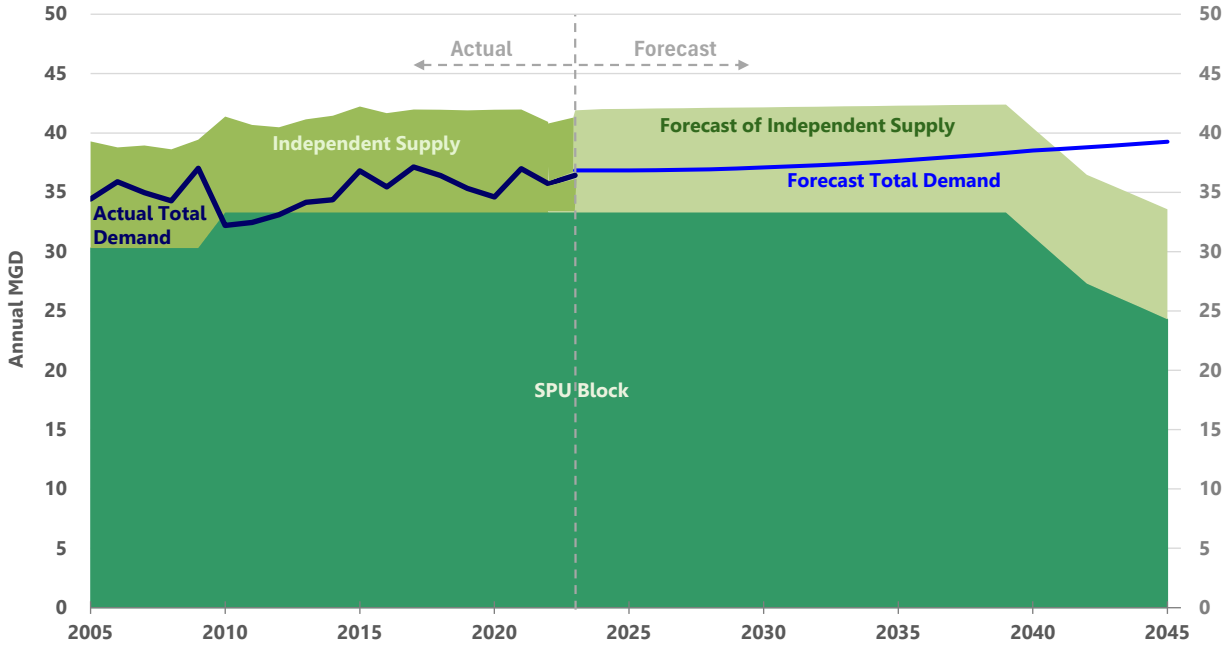
3.3. Projected Demand

Long-term water demand forecasting is critical for water system planning. Cascade adopted a forecast model known as a “variable flow factor model”. This model incorporates the best features of various model types found in applicable literature. Like simple “fixed flow factor” models, the Cascade model is easy to understand and has relatively modest data requirements. However, like more complex econometric models, the model reflects the impacts of variables such as price, income, and conservation on water use factors over time. This approach takes advantage of past econometric analysis to provide estimates of how price and income affect demand. A separate end-use model is used to estimate the impacts of plumbing code and appliance efficiency standards on water use factors over time.

A key driver of the forecast is the future growth in households and employment as projected by the Puget Sound Regional Council in its latest Land Use Vision forecast released in 2023. For each Cascade Member, the model calculates current levels of water consumption per household or per employee in the single family, multifamily, and non-residential sectors and then projects how those flow factors are expected to change over time due to increased water rates, growth in household income, and efficiency codes and standards for water fixtures and appliances. The forecasts of flow factors are applied to the corresponding forecast of households or employment to obtain sector forecasts, which are summed, along with a forecast of non-revenue water, for each member. Member forecasts are then summed to obtain the total Cascade forecast of demand. More detail on the methodology is provided in Exhibit D. This demand forecast was developed prior to Member comprehensive plan updates, zoning changes in response to House Bill 1110

(Middle Housing), and any PSRC updates post-2023. Cascade intends to update its demand forecast methodology as part of its future water system planning to incorporate these anticipated updates.

Figure 3.6. Cascade Water Demand Forecast (2023-2045)



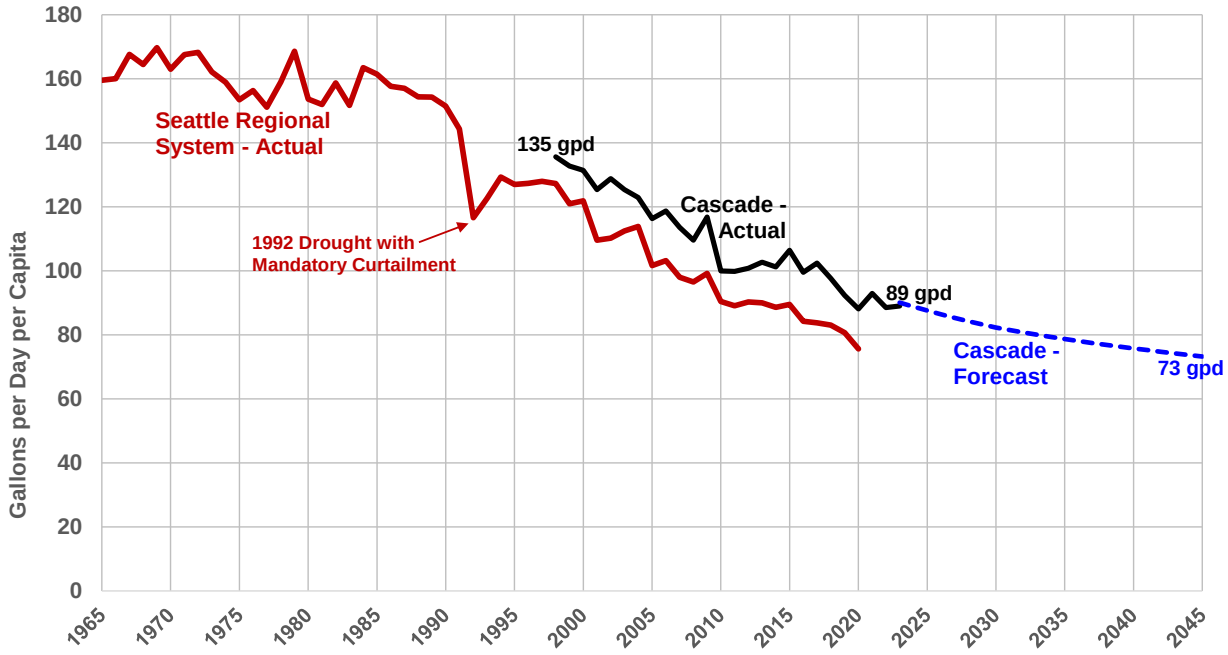
Cascade's water demand forecast is presented above in Figure 3.6. Total annual average water demand is projected to remain essentially flat at around 37 MGD through 2030 before beginning a gradual rise to 39.3 MGD by 2045. The combination of supply from SPU and Members' independent supplies will provide about 42 MGD through 2039 and enough to meet Cascade's projected demand. However, once the Block begins to decline (as described in Section 2.1), that will no longer be the case. Under the current Block Contract, Cascade will need an additional source of water to meet demand after 2041.

While Cascade's population and employment are expected to grow 31% over the 20-year forecast period (1.2% per year), its water demand is projected to increase by much less, just 6.5% (0.3% annually) through 2045.[2] This is because most of the factors in the model (with the exception of household income) that influence water use have a dampening effect on demand and are thus expected to offset much of the impact of demographic and economic growth. This is a phenomenon that has already been experienced in the region since the mid-1980s. As discussed earlier in this chapter and shown in Figure 3.7, the combined effects of adopting conservation rate structures, increasing water rates, federal

[2] Note this is in contrast to Cascade Members' forecasts of their own demand. The sum of Member forecasts through 2040 grows at about 1.2% per year, the same as the underlying growth rate in forecast population suggesting most Members use constant flow factor models in their own forecasting. In addition to methodological differences, it is common to observe differences between forecasts developed for regional supply and retail-level demands, as the retail-level forecast necessarily includes more conservatism regarding where growth will occur.

and state plumbing codes and appliance efficiency standards, utility conservation programs, and improved water system operations have resulted in a steady decline in water consumption per capita for the Seattle regional system, dropping from 161 gallons per day per capita (GPDPC) in 1985 to 76 GPDPC in 2020 – more than a 50% decline. Less historical data is available for Cascade's service area, but since the late 1990s, consumption per capita has decreased by one third. The forecast model projects continued decline, though not as steeply as before, from 89 gallons per day (GPD) in 2023 to 73 GPD in 2045.

Figure 3.7. Actual and Forecast Water Consumption Per Capita



Cascade is currently developing new plans for its future water use efficiency program. At this point, the savings goals of this program have not been determined, and therefore, the demand forecast does not try to account for the possible effects of the program on demand. More generally though, Cascade has long been involved in encouraging ever more efficient water fixture and appliance codes and standards, including the more rigorous statewide code that went into effect in 2021. The impact of current and anticipated future efficiency codes and standards is reflected in the forecast of Cascade demand which, by 2045, is 5.1 MGD less than what it would otherwise be.

3.3.1. Dealing with Uncertainty

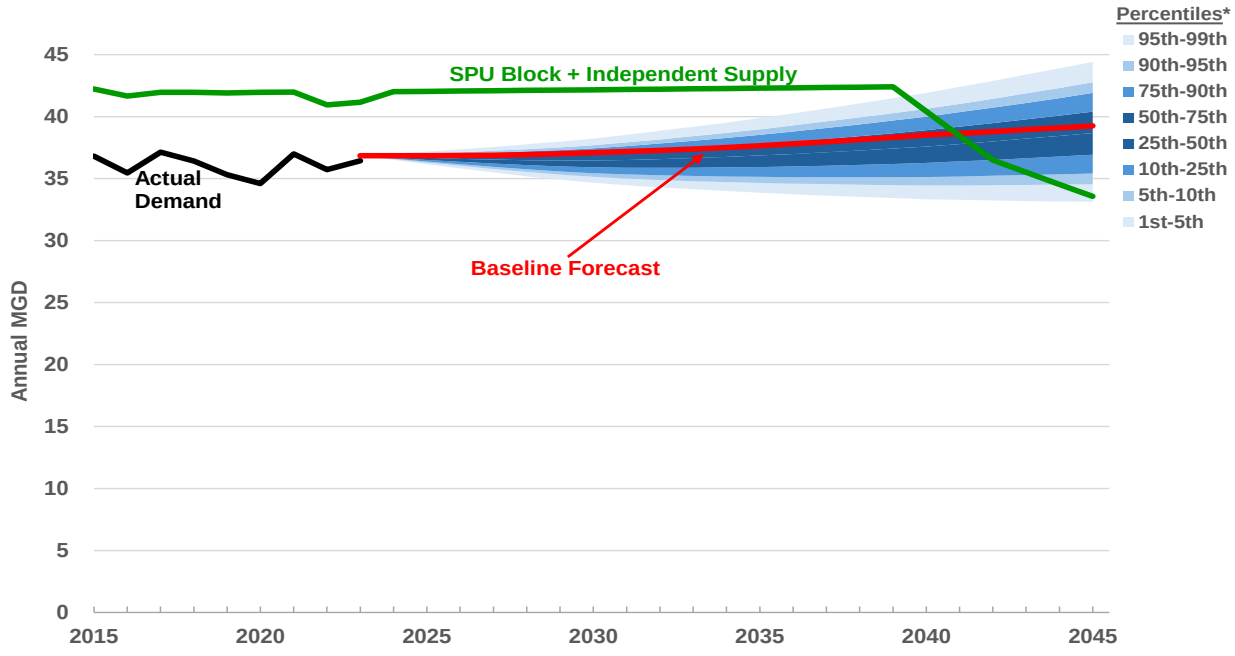
Forecasting water demand is a speculative endeavor. Displaying the forecast as a line on a graph implies a degree of certainty that does not exist; Cascade's water demand in 2045 will most likely *not* be exactly 39.3 MGD. It is better to think of the forecast as a range of possible values that widens with time. The challenge is to define and quantify the uncertainty and put reasonable bounds around the forecast.

The forecast of water demand is itself based on forecasts of other factors that affect it (growth in income, water prices, households, employment, and the use of more water efficient fixtures and appliances), all of which are subject to uncertainty. Similarly, uncertainty surrounds the model's assumptions about price and income elasticities. The baseline demand forecast represents Cascade's best guesses about the future. However, it is prudent, especially in long-term planning, to consider the many uncertainties that could cause demand to be different from what is projected in the baseline forecast.

Uncertainty has been modeled by positing probability distributions for each source of uncertainty. These distributions are inputs to an aggregate uncertainty model employing a Monte Carlo simulation[3] to characterize uncertainty associated with the baseline demand forecast.

The results of the Monte Carlo simulation are displayed in Figure 3.8. The bands indicate the range of uncertainty associated with the baseline forecast. Each band represents a percent increase from the band immediately below it in the probability that actual demand will be equal to or less than the level shown. For example, the bottom of the lowest band represents the first percentile, meaning there is an estimated 1% chance actual demand will be at or below that level (i.e., 33.1 MGD in 2045) and, thus, a 99% chance it will be above. The top of the uppermost band is the 99th percentile, corresponding to an estimated 99% probability that actual demand will be at or below that level (i.e., 44.4 MGD in 2045).

Figure 3.8. Water Demand Forecast with Ranges of Uncertainty (2023-2045)



* Percentiles represent the probability that demand is less than the value shown. Ranges reflect uncertainty in projected household, employment, price and income growth; price and income elasticities; and conservation.

[3] A Monte Carlo simulation calculates multiple scenarios of a model by repeatedly sampling values from the probability distributions for the uncertain variables. The data generated from the simulation can be represented as probability distributions or confidence intervals.

The green line in Figure 3.8 represents the water available to Cascade through the current SPU Block Contract (33.3 MGD) plus Cascade Members' own independent supplies (8.7 to 9.3 MGD). It shows that beginning in 2040, the SPU block will decline by 2.0 MGD a year through 2042 and then 1.0 MGD each year thereafter. Total water from these sources is expected to drop from 42.4 MGD in 2039 to 33.6 MGD in 2045. The graph reveals that once the SPU block begins ramping down, Cascade's water demand soon surpasses the available supply. Under the baseline demand forecast, this will happen in 2041. Even when taking the full range of demand uncertainty as modeled above into account, additional supply would be needed sometime between 2039 and 2045. This relatively narrow window is due to being in the declining block portion of the SPU Block Contract.

3.4. Future Supplies

As described in Section 3.3, supply under the current SPU Block Contract, in combination with Members' independent supplies, is sufficient to meet demand until about 2041. Without a source of supply to supplement SPU's declining Block Contract, Cascade would need to develop and put the Lake Tapps Reservoir in service by the early 2040s.

3.4.1. Supply Through 2045

Based on SPU's, TPU's, and Everett's current water system plans, water supply in the region should be ample through 2060. Cascade's business model calls for the use of available regional water to bridge demand until the Lake Tapps Reservoir is developed. With an estimated 20-year planning horizon to develop the Lake Tapps Reservoir, in July 2021, Cascade's Board directed staff to pursue potential supply contracts with SPU and TPU. The objectives of the contract discussions were as follows:

1. 20-year (or longer) extension of contract supply.
2. Extension sufficient to defer development of the Lake Tapps Reservoir.
3. Reasonable and predictable costs.
4. Net economic and/or rate benefit versus developing Lake Tapps Reservoir.
5. Flexibility to allow for future variation in supply and demand.
6. Possible further extensions if mutually beneficial given supply/demand status.
7. Possible partnership opportunities for assets of regional significance.

In May 2024, after nearly three years of discussions with both SPU and TPU, Cascade's Board directed staff to develop a new supply contract with TPU. SPU and TPU both proposed contract terms that would allow Cascade to cost-effectively defer development of the Lake Tapps Reservoir. However, TPU's proposal offered longer supply certainty, greater financial benefit, and an opportunity to move towards a regionalized water system.

Cascade and TPU are currently drafting two separate and complementary agreements -- the Agreement for Market-Priced Wholesale Water Supply (2025 Market-Priced Agreement) and the Wholesale Water Supply Agreement (2025 Wholesale Agreement) -- with the intention of finalizing both by April 2025. Cascade plans to phase into TPU's delivery, starting around 2041, as supply from SPU's Block Contract declines and demand begins to exceed SPU's contractual supply.

The following are key supply terms in each agreement:

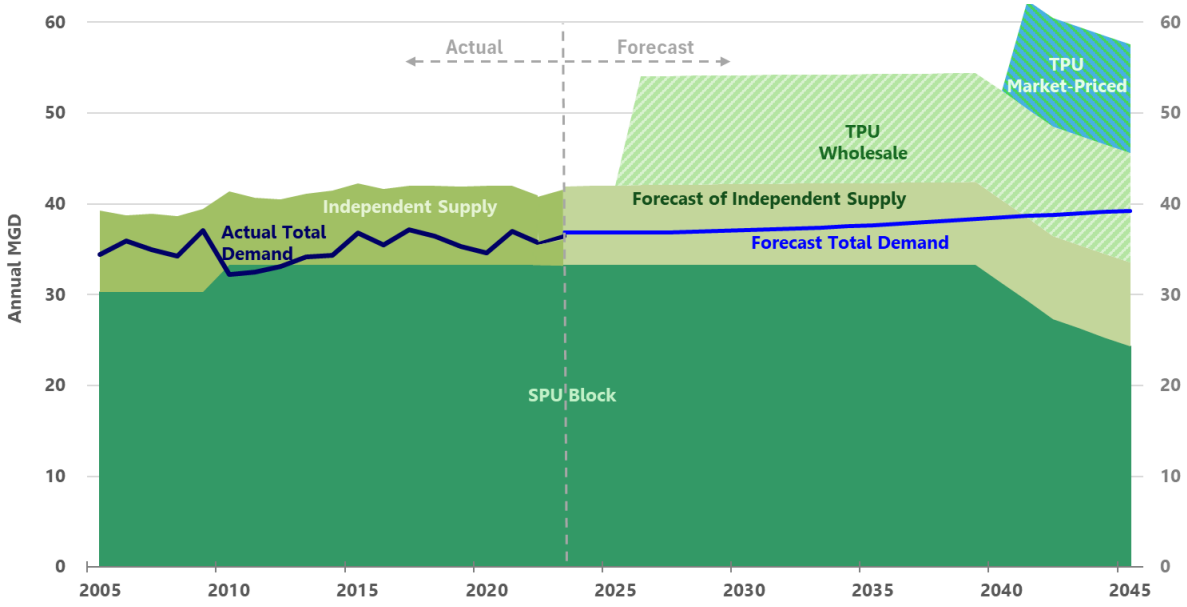
- 2025 Market-Priced Agreement (temporary supply)
  - Restates and replaces the 2012 TPU Agreement that provides up to eight (8) MGD of water.
  - Provides water supply from 2041 through 2062 and may be extended upon mutual agreement.
  - Provides up to 12 MGD annual average and 17.5 MGD peak day supply.

- 2025 Wholesale Agreement (permanent supply)
  - Commences on the agreement signature date and remains in effect until TPU ceases making wholesale water sales.
  - Provides up to 15 MGD peak day water supply.

Cascade is responsible for constructing the facilities necessary to connect Cascade's system with the TPU system. More information on the capital planning activities Cascade will embark upon in the next few years is provided in Chapter 5, Section 5.3.

In addition to the existing supply from SPU and new supply from TPU, Cascade will continue to rely on Members' independent supplies to meet future demand. Independent supply yields are expected to remain between 8.7 to 9.3 MGD. Figure 3.9 shows the combined sources of supply and forecasted demand through 2045. Although the figure shows TPU supply available in 2026, Cascade plans to phase into TPU's delivery starting in 2041, as supply from SPU's Block Contract gradually declines below what is needed to meet Cascade's demand. By 2060, Cascade will receive 24 MGD on average from TPU. After 2062, Cascade will receive up to 15 MGD peak day from TPU.

Figure 3.9. Cascade Water Demand and Supply Forecast (2023-2045)

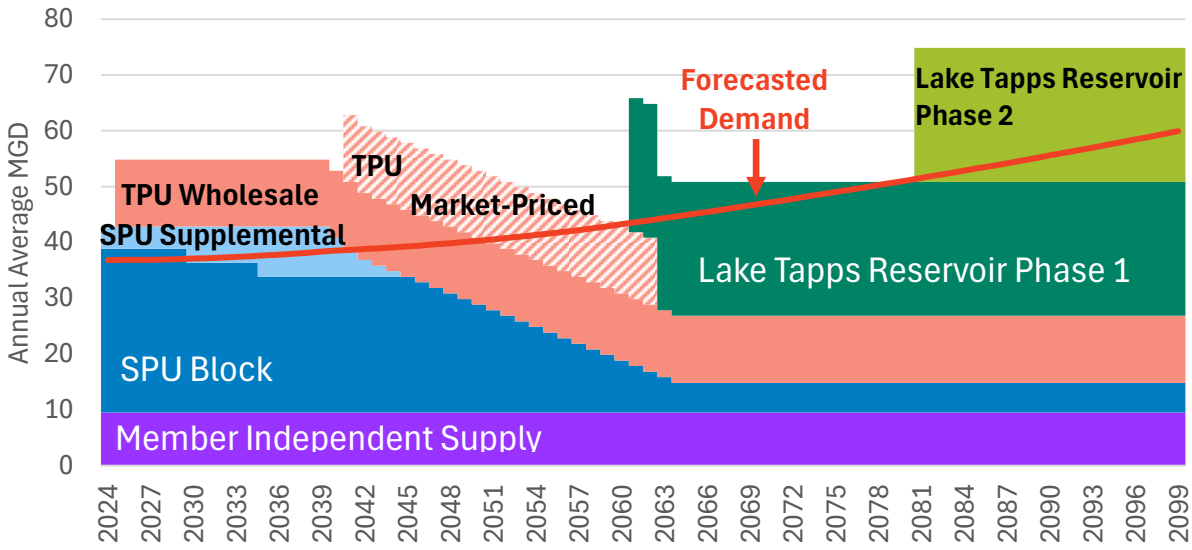


3.4.2. Supply After 2045

As described in Chapter 2, as part of the WRLTR Project, Cascade acquired the Lake Tapps Reservoir in 2009 for future use as a municipal water supply. Water rights originally issued in December 2010 authorize Cascade to produce 48.5 MGD as an annual average for municipal supply deliveries. This water right augments Cascade's supplies to meet its Members' long-range supply needs and also provides the opportunity to improve reliability of water supplies for the Central Puget Sound region, particularly in the context of climate change concerns.

Water from the Lake Tapps Reservoir is not currently used for drinking water supply. Pending the two new supply agreements with TPU, Cascade anticipates needing the Lake Tapps Reservoir to be in service by the early 2060s. Figure 3.10 illustrates long-term demand and supply projections.

Figure 3.10. Cascade Water Demand and Supply Forecast (Through 2099)



Note: The long-term demand forecast is an extrapolation from the 2045 forecast.

When the time comes to develop the reservoir for drinking water supply, Cascade plans to develop the necessary water treatment and delivery infrastructure in phases over time. The first phase will include construction of a water transmission line and partial development of water treatment capacity. Additional water treatment capacity will then be developed at a later phase. However, the ultimate phasing of the Lake Tapps Reservoir project will be determined by Cascade's needs, driven by actual growth in demand as well as any increases in other supplies over time.

Cascade will seek opportunities to defer construction of both phases of the Lake Tapps Reservoir to spread the costs of infrastructure development over a longer time. For example, there may be opportunities to contract for additional supplies from SPU and TPU in the future. Additionally, Cascade will continue to explore measures to reduce peak season demand, which may extend the timeframe for the Lake Tapps Reservoir development. These supply

opportunities, a lower growth in demand, or a combination of these factors, could delay the need for the Lake Tapps Reservoir project well beyond the 2060s.

3.5. Reclaimed Water

King County's Brightwater Treatment Plant near Woodinville and South Treatment Plant in Renton produce reclaimed water that could be delivered to customers in Cascade's Member service areas if regional and local transmission and other associated infrastructure are available or could be developed. Potential end users within the area include parks, golf courses, and commercial sites with large, irrigated landscapes[4]. Currently, King County delivers reclaimed water in Tukwila from its South Treatment Plant for use at sport fields.

Opportunities from the Brightwater and South Treatment Plants face obstacles, primarily the cost of installing distribution mains to decentralized customers. These mains are often redundant in that they duplicate the function of water lines that deliver potable water to these same customers. Since reclaimed water can be used only for limited purposes, and since the primary use is irrigation that occurs only during the summer months, it is more costly on a per-unit basis to deliver reclaimed water than potable water. Any distribution of reclaimed water within the Member service area will need to be coordinated to ensure water quality, efficient system operation, and financial sustainability and affordability for all water customers.

To develop an approach to coordinate the distribution and use of reclaimed water in Cascade Members' service areas, Cascade and King County entered into an Agreement to Coordinate Reclaimed Water in January 2019. The agreement outlines that the parties will develop an "agreement template" the County would then use in entering into reclaimed water agreements with individual water systems (i.e., Cascade Members). The template should address terms and conditions for reclaimed water distribution, planning coordination, decision making, protection of drinking water sources, environmental uses, and dispute resolution. As of the date of this Water System Plan, the template has not been completed nor has the King County Council developed and adopted reclaimed water policies as directed by the 2011 King County Motion 13483.

The agreement expires at the end of 2025, and Cascade and King County have agreed to pursue an extension of the agreement until the King County Regional Wastewater Services Plan (RWSP) policy work on reclaimed water is completed, possibly in 2029 or 2030. The King County Regional Water Quality Committee is currently working on how to approach policy changes in the RWSP, with many Cascade Members actively engaged in that forum. Cascade and King County staff expect an amended and extended agreement to be finalized by mid-2025.

[4] Many large irrigation users in the region have their own independent water sources (e.g., wells or rights to withdraw water from the Sammamish River), so delivering reclaimed water to those users would not reduce demand for potable water from the Cascade system.

Chapter 4. Water Efficiency Program

Water efficiency is a critical part of Cascade's water management strategy. As noted earlier, Cascade makes the best use of existing water supplies before developing expensive, new sources of supply. Water efficiency helps ensure a safe, reliable supply of drinking water to support Cascade Members' quality of life and economies. This chapter provides information on Cascade's water efficiency program goals, savings, and highlights of the program.

4.1. Program Goal and Savings

Cascade's water efficiency goal is 500,000 GPD saved from 2019 to 2026. Cascade's Water Efficiency Program has yielded the following results from 2019 to 2024.

Table 4.1. Water Efficiency Annual Savings

Year	Savings (GPD)
2019	142,469
2020	48,316
2021	37,092
2022	11,553
2023	21,446
2024	83,401
Total	**344,277**
Percentage of Savings Goal	**69%**

4.2. Program Highlights

Cascade's Water Efficiency Program benefits thousands of Member residents, students, businesses, schools, agencies, parks, and more by providing training, education, support, and hardware. The following are highlights of the program.

- **Cascade Gardener:** Cascade offers free classes and other resources to help homeowners manage their landscapes for greater water efficiency and sustainability. Cascade offers several online classes each year on a wide range of landscaping, irrigation, and gardening topics, all with a theme of water conservation integrated into the presentation. Cascade also provides walking tours at demonstration gardens and in-person classes at local nurseries. Cascade's website offers many documents and videos on sustainable landscaping, irrigation efficiency, and other gardening topics to help residents have beautiful landscapes while saving water.

- **Problem-Based Learning for Water Systems:** Cascade partners with the Sustainability Ambassadors to provide in-depth learning opportunities into the study of water for teachers and students. This program offers teacher training labs, curriculum design

support, student-impact projects, video resources, and more. The program has been acknowledged by all four school districts within Cascade's service area for its effectiveness. The program reaches 5,000-6,000 students and teachers per year.

- **Classroom Water Education:** Cascade provides classroom water education for grades K-12 through its partner, Nature Vision, on a variety of topics including the global water crisis, salmon cycles, watershed ecology, water conservation, and soil science. Some teachers utilize the Blue Team option, where an educator works with the classroom over a period of weeks on more in-depth projects, such as stream monitoring or watershed restoration. The program reaches 11,000–12,000 students and teachers per year.

- **Northwest Flower and Garden Festival:** Cascade is the prime sponsor of "The Container Showdown" at the annual Northwest Flower and Garden Festival in Seattle. Cascade also has a station at the event along with its "Water Wall", an 8' x 8' four-sided chalkboard structure that allows people to write why they think water is important and how they conserve water. The festival is the largest of its kind in the nation, and Cascade promotes water efficiency and natural yard care to thousands of people.

- **Rebates:** Cascade partners with PSE on rebates and direct installation of selected fixtures and appliances like clothes washers, showerheads, shower valves, and tub spout diverters. These installations provide long-term, reliable savings for Cascade.

- **Turf Out:** In 2025, Cascade launched a turf removal rebate program called "Turf Out", which encourages residents to remove a portion of their irrigated turfgrass and replace it with native or drought-tolerant plants. Cascade provides numerous resources to help residents accomplish this task, including online classes, workshops, written materials, and videos.

- **We Need Water:** Cascade's social media campaign is called "We Need Water", and it resides on Cascade's website, YouTube channel, Instagram, and Facebook. Cascade offers podcasts, a gardening newsletter, landscape and gardening classes, water conservation tips, information on upcoming events, and more. Cascade has worked with many partners and Members to align its social media strategy for the benefit of all parties. In 2024, Cascade engaged with approximately 650,000 people through its social media platforms.

- **Soil and Water Stewardship:** Cascade co-created and partners with Tilth Alliance to deliver the Soil and Water Stewardship program, which provides free training for residents on urban food growing, sustainable landscaping practices, rainwater harvesting, drip irrigation, and other water-related topics. Residents who go through the program become stewards for water efficiency and sustainable landscaping in their communities. The program currently impacts hundreds of residents per year.

- **Home Water Audit:** The Cascade Home Water Audit is designed for students to explore water use in the home and learn how to conserve. The tool developed by Cascade allows water savings to be converted to energy savings and avoided greenhouse gas emissions to show how water is related to climate change.

- **Free Conservation Items:** Cascade offers free conservation items, like showerheads, toilet leak detection dye, and rain gauges on its website for customers of Member agencies.

- **Irrigation System Assessments:** Cascade provides free assessments and reports for irrigation systems at commercial, multifamily, and institutional properties. The assessment is a deep dive into each zone of the irrigation system and documents the location of irrigation hardware and any problems found. Cascade often works with the accounts for an extended time to help the customer implement the recommendations in the report.

- **Community Events:** Cascade participants in community events throughout its Member service areas. Events include Bellevue Family Fourth, Redmond Derby Days, Issaquah Salmon Days, Party on the Plateau, Kirkland Concert Series, Tukwila Bark in the Park, and the Skyway Health and Safety Fair. Cascade has a station at these events where it distributes water conservation information, answers questions about water and water supply, and provides its "Water Wall". Cascade engages with thousands of residents each year at community events.

4.3. 2024 Water Efficiency Goal Meeting

Cascade most recently held a public meeting on its water efficiency goal on December 13, 2024, 11:00 am – 12:00 pm at its office (11400 SE 8th Street, Bellevue WA 98004). Michael Brent, Cascade's Water Resources Manager, presided over the meeting. Apart from Mr. Brent, there were no other attendees from the public.

Chapter 5. Capital Planning

This chapter presents the capital planning and improvements necessary to meet the system needs identified in previous chapters. Cascade adopts a six-year Capital Improvement Program (CIP) as part of its biennial budget process and develops forecasted capital needs through this Water System Plan's planning period (current to 2045). These capital needs consist of: 1) maintaining the existing WRLTR Project; 2) maintaining the BIP; and 3) planning for and constructing the facilities to connect to TPU's system.

5.1. White River-Lake Tapps Reservoir

The purpose of the WRLTR Project's forecasted capital needs is to maintain infrastructure integrity and functionality for current operations and for future use as a drinking water source. The primary objectives are to:

- Protect existing assets from failure.
- Ensure the highest value to Cascade Members through safe and efficient management of existing infrastructure.
- Meet all regulatory requirements and operating agreements.

Cascade's systematic approach to the WRLTR Project's forecasted capital needs first requires a good understanding of the condition of the century-old infrastructure and subcomponents that were originally designed and operated for the purpose of hydroelectric power production (not drinking water production). It then calls for evaluating the trade-offs between repair, rehabilitation, and replacement options for each project. Next, it requires developing a plan of action, developing a list of projects grouped by implementation timelines, obtaining funding, receiving Board approval, and implementing the approved portfolio of projects.

A preliminary list of potential WRLTR planning activities and capital projects through 2045 includes the following (not prioritized):

- **SCADA and Security Upgrades**: Upgrade end-of-life equipment and software to meet future standards.

- **Communications and Fiber Improvements**: Replace and expand the existing fiber network that links several major facilities at the WRLTR Project.

- **Facilities Master Plan**: Develop a Facilities Master Plan that comprehensively addresses short-, medium-, and long-term facility needs including optimization of existing facilities.

- **Headworks-Intake Miscellaneous Improvements:** Provide improvements based on operational necessity.

- **Headworks Facilities Improvements**: Implement the Facilities Master Plan for the headworks area.

- **Valve House Improvements**: Rehabilitate or replace existing 66-inch cone valve in the Valve House.

- **Fish Screen Improvements:** Rehabilitate or replace the mechanical and control system at the Fish Screen Facility.

- **Twin 10'-Diameter Pipeline Improvements:** Improve the energy dissipation for the twin 10'-diameter buried pipelines.

- **Dike 9 and Dike 10 Seismic Upgrades:** Install new structural reinforcements to improve seismic stability and seepage at Dike 9 and Dike 10.

- **Other Dike Improvements:** Make miscellaneous improvements regarding dike seepage and structural integrity on all dikes impounding the reservoir and in the upper flowline.

- **Backflow Preventer Improvements:** Rehabilitate and repair the Backflow Preventer.

- **Lake Tapps Reservoir Instrumentation Improvements:** Replace piezometers, flow weirs, and slope stability monitoring equipment.

- **Tunnel Intake Improvements:** Replace the existing gate and control system with new gate and controls.

- **Powerhouse Seismic Upgrades:** Perform a seismic analysis to evaluate risks during a seismic event and implement the recommendations.

- **Standpipes Seismic Upgrades:** Perform a seismic analysis to evaluate risks during a seismic event and implement the recommendations.

- **Penstock Improvements:** Perform a feasibility study on methods to control flow or make internal improvements that are conducive to dry and wet cycles; rehab internal coating and external protection of penstocks.

- **Forebay Improvements:** Replace the existing roof, decking, and mechanical and electrical controls at the forebay and rehabilitate the valves.

- **Powerhouse Valve Improvements:** Replace the existing valve No. 1 with a new flow control and energy dissipation valve.

- **Plunge Pool Outlet Area Improvements:** Improve the surface parking area, remove old structures, improve the retaining wall, and repair the concrete floor.

- **Tailrace Retaining Wall:** Replace the old retaining wall that supports both sides of the embankment in the tailrace area.

- **Powerhouse/Operations Center Improvements:** Upgrade the existing operations center facilities with a new control room, modern technology, and security improvements.

5.2. Bellevue-Issaquah Pipeline (BIP)

Cascade's adopted 2025-2030 CIP includes two capital projects:

- **Meter Replacement:** Cascade is responsible for the cost of replacement of existing meters on the BIP.

- **Lewis Creek Crossing – BIP Relocation:** Washington State Department of Transportation's Lewis Creek culvert replacement project will require relocation of the BIP.

Beyond 2030, Cascade expects the BIP will need new valves and seismic upgrades to pipe segment joints. In 2020, Cascade completed a Risk and Resiliency Assessment (RRA) of the BIP as part of the America's Water Infrastructure Act (AWIA). The RRA determined the costs of mitigation measures to address potential threats to the BIP, such as seismic events, outweigh the benefits. Given this, Cascade plans to make improvements when repairs are needed.

5.3. Tacoma-Cascade Pipeline (TCP) Program

As described in Section 3.4.1, Cascade and TPU are currently in the process of developing new supply agreements. Cascade's 2012 Transmission Supply Plan considered the new facilities that would be required to deliver TPU-provided water to Cascade Members using a new pipeline known as the Tacoma-Cascade Pipeline (TCP). Cascade will be responsible for planning for the final alignment of the TCP as part of a future effort known as the TCP Program.

The TCP Program will involve constructing a transmission pipeline, regional distribution pipelines, and associated facilities. Specifically, the TCP program will likely include the following elements: the Central Pipeline segment, the North Pipeline segment, the Bellevue-Kirkland-Redmond (BKR) Pipeline, a pipeline that runs parallel to the BIP, booster pump station(s), storage facility(s), and connections. (See Figure 5.1.) The cost is estimated to be $1 billion in 2023 dollars.

Cascade has begun hiring key staff for the TCP program. Cascade will rely on the consulting community to plan, design, and manage the TCP program and to support environmental review, permitting, and property acquisition. Starting in 2025, Cascade plans to secure the following services either as stand-alone contracts or a combination of contracts:

- Program and engineering support services to provide strategic and tactical programs and engineering support services to Cascade through the duration of the project. This includes development of a Project Execution Plan, a Project Procurement Plan, and other documents as required.

- Development of an Operations and Flow Allocation Plan that identifies the amount of water and methods of transfer from the TCP to Cascade Members' distribution systems. This plan will form the basis for system requirements and the development of the Facilities Plan.

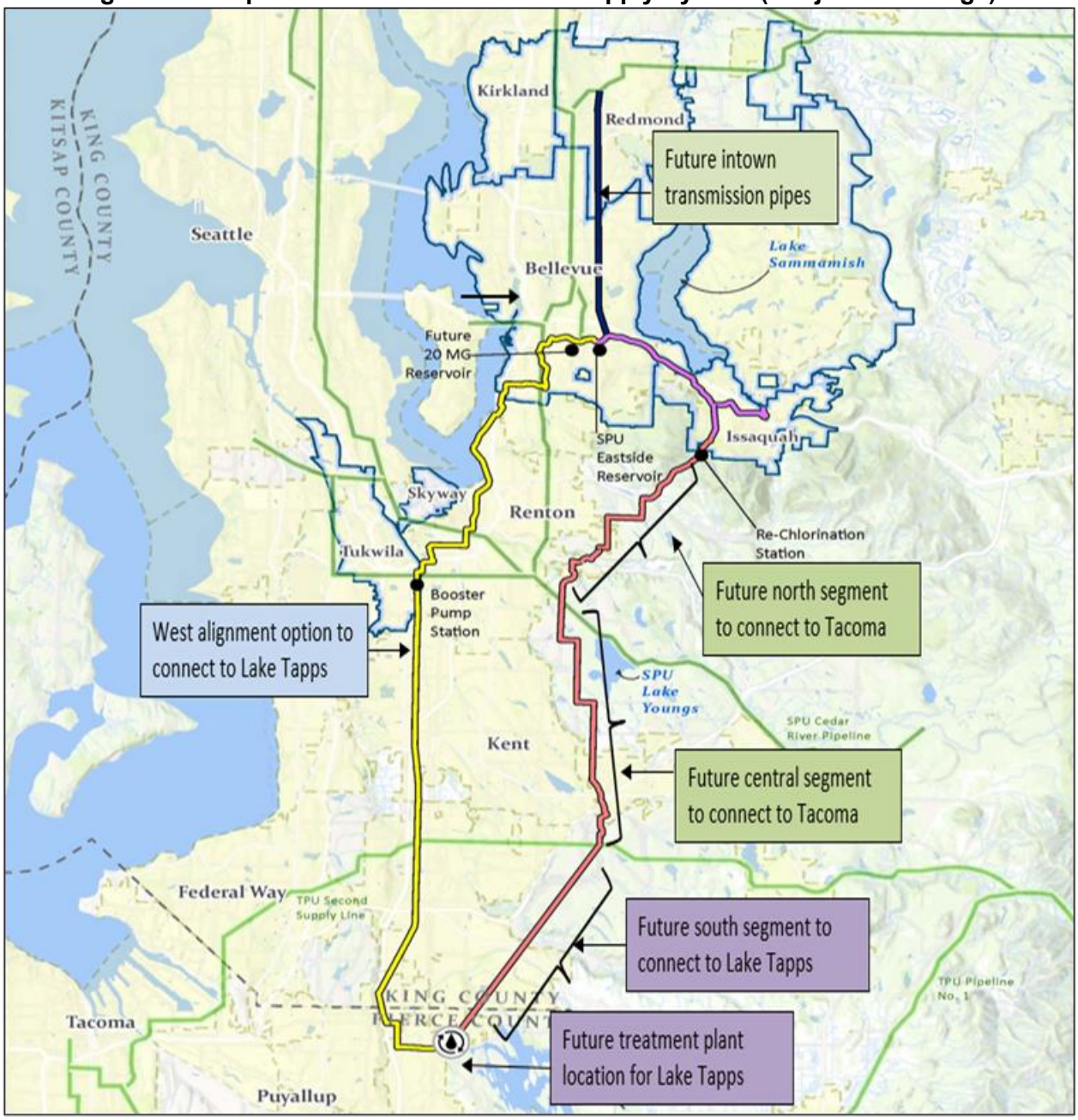
- Franchise and right-of-way support services to evaluate potential permanent and temporary real property needs and alternatives and (following design and environmental and permitting review) assist in acquiring all real property rights that are needed for the program.

- Development of a TCP Facilities Plan (or Project Scope Statement) that will form the basis and requirements for the TCP project design.

The TCP Facilities Plan is likely to be completed in two-to-three years. Cascade will then develop and submit its 10-year Water System Plan to DOH, planned for September 30, 2028. The alternatives for sizing and routing transmission facilities and other key recommendations from the TCP Facilities Plan will be incorporated into Cascade's next Water System Plan.

Design, environmental, and permitting services for the Central and North Pipeline segments and associated facilities and connections will commence upon completion of the TCP Facilities Plan. Construction is anticipated to start in 2030 for the Central Pipeline segment and the mid-2030s for the North Pipeline segment. Design and construction of the Intown Transmission Pipes and other infrastructure (BKR Pipeline, Parallel BIP, booster pump station(s), storage facility(s), and connections) is expected to commence in the 2040s. A high-level map of the TCP, with potential route corridors, is shown in Figure 5.1.

Figure 5.1. Map of Potential Future Water Supply System (Subject to Change)



Note: The west alignment is included in this map because it was an alignment option in Cascade's 2012 Transmission and Supply Plan

Chapter 6. Financial Programs

The purpose of the financial program is to demonstrate the financial viability of Cascade throughout the planning horizon, including the delivery of the forecasted capital needs identified in this Plan. The analysis of viability considers historical performance, the sufficiency of revenues to meet current and future cost and policy obligations, and the cost of delivering the forecasted capital needs. Additionally, this chapter provides a review of Cascade's current rate structure with respect to rate adequacy, equity, promotion of water conservation, and overall rate affordability.

General principles, listed below, guide this Chapter and provide the basis for this analysis.

- **Adherence to Fiscal Policies**: Cascade has a set of specific rules and procedures that guide its financial management. It periodically reviews and refines these policies to maintain a viable financial program responsive to Members' needs.

- **Conservative Analysis**: This analysis contains various assumptions regarding customer growth, capital costs, operating costs, cost escalation, and a number of other factors. The projections in this analysis aim to be financially conservative to facilitate sensible financial planning. While conservatism in planning is achieved by planning for substantial growth in demands, financial conservatism is achieved by planning for low growth and primary reliance on existing sources of revenue.

6.1 Recent Financial Performance and Condition

Cascade's overall financial position is strong, with sufficient liquidity to finance operations and sufficient debt capacity to finance future capital asset acquisitions. Cascade is financed by equity and long-term debt.

Cascade's Statement of Operating Revenue and Expenses and Changes in Net Assets is presented in Table 6.1, for the period from 2019 to 2023. Currently, Cascade has two primary groups of operating expenses:

- **Cost of Water Sold**: As discussed in Chapter 2, Cascade purchases water from SPU under a 2013 Agreement for water supply. This block contract has relatively limited variability due to the block nature of the agreement. Year-to-year variation in expenses is a function of SPU's actual costs but is attenuated by the utility-basis rate structure of the agreement.

- **Other Operating Costs**: Other expenses include Cascade's administration, conservation program, communications and intergovernmental affairs, and operating costs associated with the Lake Tapps Reservoir.

Cascade serves Member agencies on a wholesale basis. As such, its revenues are not directly made up of retail service rates. Cascade charges to Members reflect the fixed nature of much of

Cascade's costs, whether currently under block supply contracts or as anticipated with debt service related to financing the capital program. As a means of mitigating financial risk and providing predictability and stability to its Members, Cascade's rate structure is primarily fixed in nature. Member agencies pay for wholesale supply and transmission through a common structure of charges based primarily on their growth and historical demand.

- **Water Sales or Demand Shares**: Water sales are based on each Member's share of overall peak season demand, on a rolling three-year basis, referred to as demand shares. All operating revenue requirements that are not recovered by Administrative Dues or Conservation Charges are recovered through demand shares.

- **Administrative Dues**: Cascade's administrative costs are allocated to Members based on their overall potential demand, as measured by CERUs. The amount generated from this charge in any given year is limited by contract to 9% of total revenues.

- **Conservation Charges**: This charge recovers the costs associated with administering Cascade's conservation program. Like administrative dues, the conservation charge is based on an allocation of costs to Members on a CERU basis.

- **Regional Capital Facility Charges, or RCFCs**: RCFCs are a non-operating revenue, shown as capital contributions on Table 6.1. This charge is imposed as a one-time charge to Members for new connections in their systems. As a growth-based charge, this is the most volatile revenue source for Cascade.

Cascade's rates are discussed in more detail in Section 6.3.

Key findings from the historical financial performance of Cascade include:

- Operating revenue has increased smoothly over the past five years, consistent with Cascade's adopted policies regarding rate stability.

- Operating expenses have been similarly stable, with variability in the cost of water sold falling within anticipated ranges.

- Capital expenditures have been similarly stable over the five-year period.

- Overall, Cascade's financial performance has been consistently positive.

Table 6.1. Statement of Revenue and Expenses and Changes in Net Assets

	2023	*2022*	*2021*	*2020*	*2019*
Water sales	$ 40,045,925	$ 39,192,467	$ 38,603,204	$ 37,567,001	$ 36,412,424
Administrative dues	3,776,170	3,741,337	3,382,456	3,339,859	3,286,899
Conservation program	793,621	744,873	737,121	829,230	821,152
Total Operating Revenue	**44,615,716**	**43,678,677**	**42,722,781**	**41,736,090**	**40,520,475**
Cost of water sold	23,969,284	20,383,649	21,351,878	22,920,840	24,087,405
Other operating costs	13,875,410	12,396,041	12,761,649	12,756,852	12,605,692
Total Operating Expenses	**37,844,694**	**32,779,690**	**34,113,527**	**35,677,692**	**36,693,097**
Operating Income (Loss)	**6,771,022**	**10,898,987**	**8,609,254**	**6,058,398**	**3,827,378**
Nonoperating expenses	(328,913)	(3,911,194)	(3,714,865)	(2,292,108)	(3,467,561)
Capital (expenses) contributions	7,930,410	7,797,757	9,597,571	6,613,609	5,870,640
Change in Net Assets	**14,372,519**	**14,785,550**	**14,491,960**	**10,379,899**	**6,230,457**
Net assets, beginning of year	137,102,621	122,317,071	107,825,111	97,445,212	91,214,755
Net Assets, End of Year	**$ 151,475,140**	**$ 137,102,621**	**$ 122,317,071**	**$ 107,825,111**	**$ 97,445,212**

Cascade's balance sheet for the same five-year period of 2019 to 2023 is presented in Table 6.2. Current assets increased in 2023 compared to 2022 with the majority attributed to an increase in cash and cash equivalents. Net capital assets decreased with the increase in capital projects offset by the amortization of water contracts. Long-term liabilities decreased in 2023 due to payments to TPU and bond principal. Investments in capital assets net of related debt increased as capital projects increased and related debt decreased. Unrestricted net assets, which consist of accumulated assets that do not meet the definition of investments in capital assets, net of related debt or restricted increased in 2023 as overall net position increased.

Table 6.2. Balance Sheet

	2023	*2022*	*2021*	*2020*	*2019*
Current assets	$ 36,936,453	$ 31,416,719	$ 26,865,253	$ 24,384,221	$ 22,321,130
Net capital assets	238,812,750	241,757,370	245,114,710	249,412,616	254,170,546
Other assets	28,513,256	27,830,735	30,043,422	26,816,579	28,954,842
Total Assets	**$ 304,262,459**	**$ 301,004,824**	**$ 302,023,385**	**$ 300,613,416**	**$ 305,446,518**
Deferred Outflows of Resources	**1,248,830**	**1,472,889**	**1,699,259**	**2,032,711**	**1,441,330**
Current liabilities	$ 22,008,075	$ 15,033,685	$ 17,124,891	$ 16,559,207	$ 16,835,945
Long-term liabilities	131,999,738	150,300,477	164,227,158	178,261,809	192,606,691
Total Liabilities	**154,007,813**	**165,334,162**	**181,352,049**	**194,821,016**	**209,442,636**
Deferred Inflows of Resources	**28,336**	**40,930**	**53,524**	**-**	**-**
Invested in capital assets, net of related debt	91,065,434	84,940,155	74,892,575	66,614,167	62,145,537
Restricted for-					
Debt service	12,414,284	12,232,965	13,007,070	13,381,158	15,514,470
Unrestricted	47,995,422	39,929,501	34,417,426	27,829,786	19,785,205
Total Net Position	**151,475,140**	**137,102,621**	**122,317,071**	**107,825,111**	**97,445,212**

Table 6.3 summarizes year-end fund balances held by Cascade for each of the last five fiscal years, 2019 through 2023. Cascade currently meets or exceeds all internal policy standards (e.g., working capital) and external requirements (e.g., bond covenants) for fund balances.

Table 6.3. Fund Balances	**2023**	**2022**	**2021**	**2020**	**2019**
Operating	$ 14,083,315	$ 10,945,348	$ 6,526,910	$ 11,776,193	$ 11,393,586
Construction	18,045,531	17,213,500	17,282,365	12,688,824	11,933,742
Regional Capital Facilities Charges	0	0	291	1,986	8,224
Bond	12,830,923	12,764,742	12,698,069	12,684,681	15,474,281
Rate Stabilization	2,280,573	2,156,574	2,135,768	2,120,981	2,089,597
Water Supply Development Fund	10,882,594	8,088,013	5,000,000	0	0
	$58,122,937	**$51,168,176**	**$43,643,402**	**$39,272,664**	**$40,899,429**

*The Water Supply Development Fund was established in 2021, and the Regional Capital Facilities Charges fund was eliminated.

6.2 Financial Outlook and Capital Funding

Cascade's long-term financial forecast is developed based on its historical financial performance, guided by adopted fiscal policies, and considering known and anticipated future expenses, including the capital needs discussed in Chapter 5.

6.2.1 Fiscal Policies

Cascade's fiscal policies provide the foundation and assurance of Cascade's long-term financial viability. The key fiscal policies that guide development of Cascade's financial forecast are discussed below. Complete fiscal policies are adopted in the Cascade Code. Generally, the fiscal policies promote:

- Financial integrity and stability
- Rate equity
- Efficiency and conservation

Minimum Fund Balances

Utility reserves serve multiple functions; they can be used to address variability and timing of expenditures and receipts; occasional disruptions in activities, costs, or revenues; utility debt obligations; and many other functions. The collective use of individual reserves helps to limit Cascade's exposure to revenue shortfalls, meet long-term capital obligations, and reduce the potential for bond coverage defaults.

Cascade's policies set different target balances by fund, based on the potential risk each reserve is intended to address. These are summarized in Table 6.4 below.

Table 6.4. Summary of Fund Target Balance Policies

Fund	Target Balance
Operating Fund	Fifty (50) days of budgeted annual operating expense
Rate Stabilization Fund	Five (5) percent of operating revenues
Construction Fund	Adequate to meet ongoing construction projects and obligations
Bond Reserve Account	Maximum annual debt service
Bond Debt Service Account	Accrued principal and interest on outstanding bonds
Water Supply Development Fund	Based on planned accrual of funds to meet equity-funding requirement of Water Supply Program

Financial Planning

Cascade's fiscal policies have been developed with anticipation of the major investment needed to develop a new water supply source, as discussed in the preceding Chapters. The key provisions to ensure stable, reliable, and flexible capital funding are summarized in Table 6.5.

Table 6.5. Summary of Key Financial Planning Policies

Policy	Description
Limits on Use of Debt	Total debt shall not exceed 80 percent of net book value
Debt Service Coverage	Maintain coverage no less than 1.25 times total annual debt service
Rate Smoothing	Smooth rate adjustments over at least a five-year period
Recover growth costs from growth	Establish regional capital facilities charges
Operating Costs	Estimated new operating costs of planned improvements must be considered

6.2.2 Operating Forecast

Consistent with its fiscal policies, Cascade biennially updates its 10-year rate forecast as part of its budget process. Additionally, Cascade prepares a longer-term financial forecast at least once every 10 years. Cascade's financial and rate forecast is informed by:

- Existing operating revenue and expenses, as discussed in Section 6.1.
- The structure of Cascade's existing water supply contracts with SPU and TPU.
- The draft structure of Cascade's anticipated agreements with TPU as described in Section 3.4.
- Demand forecasts as discussed in Chapter 3.
- Capital needs as discussed in Chapter 5, including estimated operating costs of capital facilities.
- Cascade fiscal policies discussed in Section 6.2.1.

Key assumptions used to develop the financial forecast of expenses and revenues include:

- Long-term general inflation of 3.0% per year.
- Long-term water supply contract cost escalation of 3.0% per year, for both Seattle and Tacoma purchased water.
- Long-term construction cost escalation of 3.5% per year.
- Growth in net CERUs of 1,150 per year.
- Revenue bond financing at a long-term average of 4.5%.

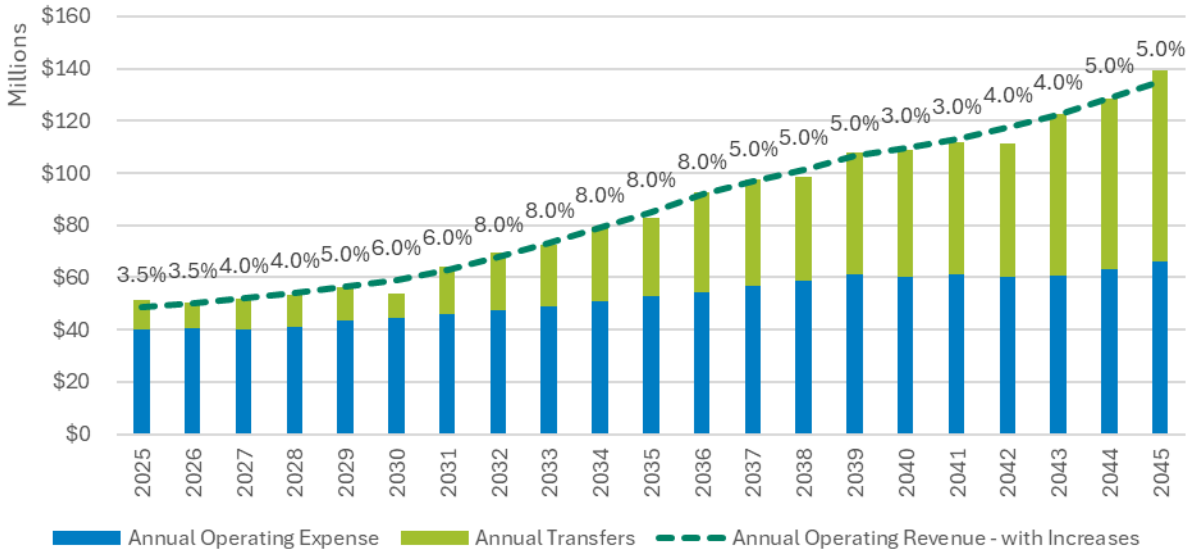
Cascade maintains a number of separate funds consistent with its fiscal policies to achieve consistent financial management outcomes. The Operating Fund is the primary fund for operational revenues and expenditures, as well as transfers to and from other funds in support of their purposes, including current and planned capital expenditure and debt service. The Operating Fund financial forecast for the planning period is summarized in Figure 6.1. In addition to the assumptions mentioned above, this chart reflects new operating expenditures associated with new facilities, transfers associated with both direct cash-funding and debt service payments, and the rate increases to Cascade Member charges necessary to meet annual revenue requirements and fiscal policies.

As shown in Figure 6.1, Cascade's operating expenditures are forecasted to remain stable over the planning period. Transfers from the Operating Fund for construction and debt service are

anticipated to increase significantly during the planning period, in support of the facilities discussed in Chapter 5.

The annual operating revenue increases shown in Figure 6.1 include the increases necessary to ensure revenue sufficiency for meeting operating expenses, maintaining operating fund minimums, as well as annual transfers in support of construction, debt service, and other fund targets.

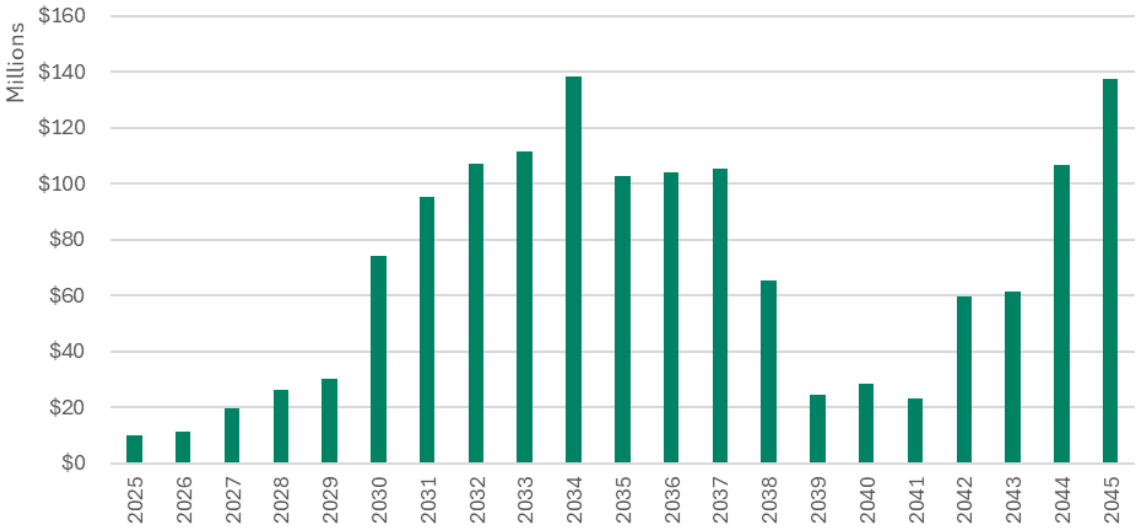
Figure 6.1. Operating Fund Forecast, with Inflation



6.2.3 Capital Forecast

As discussed in Section 5.3, Cascade forecasts significant new capital facilities during the planning period. These forecasted capital needs, including forecasted construction cost inflation, are summarized in Figure 6.2.

Figure 6.2. Forecasted Capital Needs, by Year, with Inflation



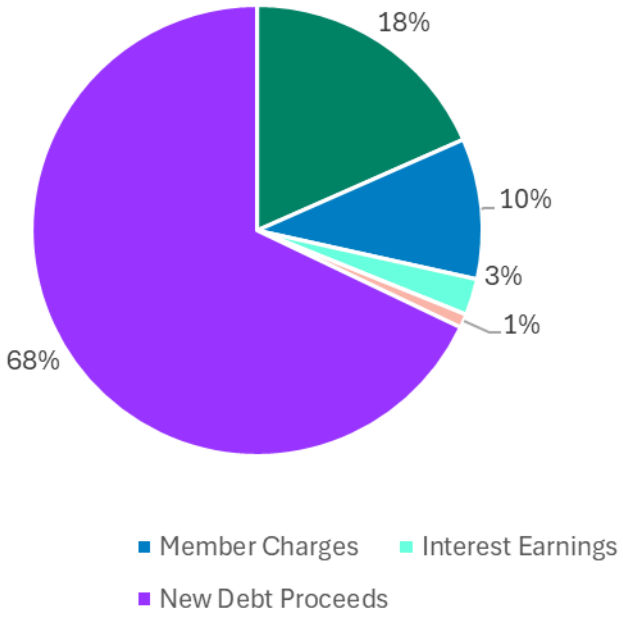
These capital needs will be met through a variety of sources of funds, including existing funding streams and potential future funding opportunities. For purposes of developing a balanced and conservative financial forecast, Cascade has developed a capital forecast that relies only on known available funding sources, rather than including potentially lower cost but unsecured sources such as federal or state grant and loan programs. Those unsecured funding sources are excluded only for purposes of conservatism in forecasting, and Cascade intends to pursue potential capital funding opportunities which could contribute to lowering the cost to its Members. Sources of capital funding included in this forecast include:

- RCFCs
- Member Charges
- Interest earnings
- Use of the Water System Development Fund
- Revenue bond proceeds

As part of its fiscal policies, Cascade will develop a Project Funding Plan specific to the TCP Program which will further refine the plan for the above funding sources, as well as for potential federal or state grant and loan programs.

The forecasted breakdown of sources of capital funds is shown in Figure 6.3. The forecasted sources of funds by year are presented in Exhibit E. Debt service on new debt proceeds will be paid for by Member Charges and use of RCFC revenues. Consistent with its fiscal policies, Cascade's financial forecast plans for avoiding an accumulation of debt that exceeds 80%.

Figure 6.3. Forecasted Sources of Capital Funds, 2025-2045



6.3 Cascade Rate and Charge Structure

Cascade serves Member agencies on a wholesale basis. As such, its rates and charges do not include retail rates. Cascade's charges to Members reflect the fixed nature of much of Cascade's costs, whether currently under block supply contracts or as anticipated with debt service related to financing of the capital program. As a means of mitigating financial risk, Cascade's rate structure is primarily fixed in nature. Member agencies pay for wholesale supply and transmission through a common structure of charges based primarily on their growth (CERUs) and historical demand (demand shares).

Cascade Equivalent Residential Units (CERUs). The CERU was established as a means of standardizing Cascade's Member base, given potential variations in the way each Member defines an equivalent residential unit (ERU). Each Member's CERU count is based on the number of retail connections it serves and the size of those connections. Industry-accepted meter flow factors provide the basis for the CERU conversion.

The CERU methodology currently uses the following basis for estimation:

Table 6.6. CERU Conversion Factors

Meter Size	Flow Rate	CERUs
5/8 x 3/4 and 3/4 inch	20 GPM	1.0
1 inch	50 GPM	2.5
1.5 inch	100 GPM	5.0
2 inch	160 GPM	8.0
3 inch	320 GPM	16.0
4 inch	500 GPM	25.0
6 inch	1,000 GPM	50.0
8 inch	1,600 GPM	80.0

For commercial or industrial meters sized four inches or larger, Cascade reserves the right to determine CERUs based on specific water demands and requirements.

Fire sprinkler and deduct meters are not counted as CERUs, and no RCFC is imposed since these meters do not increase system demand.

Demand Shares. While the CERU provides a means of estimating average capacity requirements, it does not address levels of actual usage of regional water by each Member or variations of usage patterns among Members. Cascade uses a three-year rolling history of regional demand to define demand shares as a basis for Member charges, with adjustments to this history for special cases as defined by the Cascade Board. A Member's Demand Share is established as the greater of:

- Average daily demand (in MGD) from Cascade during the peak season, defined as June through September; or
- Average daily demand (in MGD) from Cascade for the entire calendar year; or
- An amount determined by the Cascade Board to address special circumstances such as those involving new Members or Members relying on Cascade investments in system facilities to extend or expand service

Cascade collects revenue from Members through four separate charges. These include:

- **Administrative Dues** are based on budgeted administrative costs for 2025 and 2026 and actual CERU counts as of January 1st of the previous year. For 2025, actual CERU counts are based on data reported by Members for year-end 2023. For 2026, estimated CERU counts add assumed Member CERU growth for 2024. These are based on the Cascade estimate of CERU total growth of 1,150 CERUs

budgeted for 2024. This growth of 1,150 CERUs is then subjectively allocated to Members based on recent growth experience. The administrative dues are expressed in terms of a charge per CERU. Members pay administrative dues based on the number of CERUs they serve. The contractual limit on administrative dues is 9% of total revenue requirements. For 2025, the charge is constrained by this limit while for 2026 the charge falls below this limit at 8.97%.

- **Conservation Charges** are also based on CERU counts for the two budget years. The 2025 and 2026 Conservation Charge reflect the budgeted conservation program for each year.

- **Demand Share Charges** are based on a rolling three-year demand history. Demand Share Charges account for the majority (roughly 85% to 90%) of Cascade's rate revenue and are solely based on actual historical data. For 2025, this is based on actual histories for 2021-2023. For 2026, the average incorporates estimated 2024 Member demands. These estimates are based on the most recent three-year average demand, adjusted for estimated changes in CERU demands and for estimated growth in Member customer base. Based on previous Board action, minimum demand shares are assigned for two agencies, Sammamish Plateau Water and Issaquah, and are applied in lieu of actual history if they exceed the related calculated value. For both years, these Members exceed the adopted minimum.[5]

- **Regional Capital Facilities Charges (RCFCs)** are charged based on reported growth in customer base. RCFCs are relatively volatile and are not relied on for Cascade operations. For 2025 and 2026, 100% of RCFCs will continue to be transferred to construction. This summary does not project RCFCs or establish payment obligations in advance of actual growth. While Cascade develops its budgets and plans based on expected connections, Members are not obligated to pay RCFCs except as growth occurs.

As a wholesale purveyor, Cascade does not directly administer retail customer assistance programs. It provides technical assistance as requested by its Members in support of their retail customer assistance programs and rate affordability.

As a wholesale purveyor, Cascade does not directly set retail water rates. While Cascade's water supply costs are currently fixed in nature, the allocation of these costs to Members through the Demand Share Charge, which is based on a rolling average of peak season demand, results in a rate structure with approximately 85% to 90% of charges based on peak usage. This results in a rate structure that heavily incentivizes water efficiency.

[5] The Board adopted a resolution that reduces the minimum demand shares after the end of the 2024 fiscal year to 0.25 MGD for Issaquah and Sammamish Plateau Water. This amount is consistent with minimum flow requirements needed to maintain water quality in the BIP.

Appendix A

Shortage Management Plan

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Cascade Water Alliance
Shortage Management Plan

Adopted by Resolution 2025-XX

[XX, 2025]

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1.0 Introduction and Purpose

Municipal water suppliers must be prepared for water shortages in order to minimize effects on the communities they serve. This Shortage Management Plan ("SMP") outlines how Cascade Water Alliance ("Cascade") will respond to a water supply shortage affecting its regional water supply.

At the present time, Cascade purchases all of its water from Seattle Public Utilities ("SPU" or "Seattle"). Various events could cause a shortage in the SPU water supply system. These include reduced snowpack in the Tolt or Cedar River Watersheds due to a dry winter or early spring melt; an earthquake or other event that damages reservoirs, treatment facilities, or transmission lines; water quality problems; or intentional destructive acts. These different kinds of events may cause shortages with different characteristics in terms of advance warning, severity, and duration. The SMP offers flexibility for a range of appropriate responses.

As required under Washington State Department of Health ("DOH") regulations, SPU and each Member of Cascade has its own shortage management plan to guide water system operations and interaction with end-use customers in each community during a water shortage. Cascade's SMP complements the SPU and Member SMPs.

Cascade's primary role in the event of a water shortage is to coordinate responses among the Cascade Member water systems that receive water from the regional supply and SPU, as the source of the regional supply. Therefore, this SMP focuses on the communication and coordination activities to be carried out by Cascade staff during a water shortage.

2.0 Related Agreements and Water Rights

2.1 Cascade Joint Municipal Utilities Authority Agreement

The Cascade Water Alliance Joint Municipal Utilities Authority Agreement ("2012 Joint Agreement") established Cascade as a municipal corporation and provides the agreement of the Cascade Members on operations. Section 7.3 of the 2012 Joint Agreement provides (emphasis added):

> **7.3 Shortages and emergency.**
> A. Shortages. Members must respond to water shortages in a collective, shared fashion under a Cascade Shortage Management Plan adopted by the Board. Resources must be shared in a manner that reduces the risk of severe shortages to each Member. **Cascade's Shortage Management Plan may include without limitation, a definition and classification of shortages, a shortage contingency plan including mandatory programmatic actions among all Members in the event of shortages, allocation of authority for determining and responding to shortages, and a communications and outreach program for the public**. Members are not required to implement Cascade's Shortage Management Plan in areas not served by Cascade.

In the event of shortages, Cascade shall reduce or halt Interruptible Supply before invoking the Shortage Management Plan with respect to all Members with a Full Supply Commitment. However, the Board may, by 65% Dual Majority Vote, continue service in the amounts it deems appropriate to one or more Members receiving Interruptible Supply.

The Board may require that Members failing to comply with mandatory shortage management programs implemented under Cascade's Shortage Management Plan assume a disproportionate reduction in supply or pay penalty charges, or both.

In the event of a Cascade-wide water shortage, Members with Independent Supply may, without penalty, decline to participate in the shortage management program for that shortage by foregoing all supply from Cascade for the duration of the emergency or shortage.

To avoid shortages resulting from emergencies or the inability to develop sufficient supplies, **the Board may, by 65% Dual Majority Vote, establish moratoria on connections or additional commitments for future water services by the Members**. A moratorium may be discontinued by a Dual Majority Vote of the Board.

B. Emergency. The Board shall include in Cascade's Shortage Management Plan policies and procedures for addressing short-term disruptions of water supply.

Section 7.5 of the 2012 Joint Agreement also provides Cascade with the authority to impose minimum demand charges on Members (which Cascade has implemented in certain instances) as follows:

A Member shall be assigned a Demand Share based on the Board's best estimate of capacity to be used by that Member. The Demand Share shall be established based on an audit of that Member's past three (3) years of water use. After three (3) years as a Member, the baseline demand and capacity obligation for that Member shall be fixed based on actual experience as a Member. **A specific Demand Share may be set by the Board to account for circumstances, such as (by way of example and not by limitation) costs of extending the Supply System to a Member, or when Independent Supplies affect regional demand patterns.**

2.2 Seattle Block Contract

The 2013 2nd Amended and Restated Declining Block Water Supply Agreement Between the City of Seattle and Cascade Water Alliance ("Block Contract") provides for shortage management. Section 7.2 provides:

Cascade and Seattle shall coordinate the development, adoption and implementation of their respective Water Shortage Management Plans. Before invoking its Water Shortage Management Plan, the Parties shall communicate with each other concerning current and projected water supply conditions.

Section 12.1 of the Block Contract recognizes unilateral actions by Seattle may be needed at times due to unforeseen and unavoidable events, including water shortages. It provides (emphasis added):

> The Parties recognize that unforeseen and unavoidable events may occur which would require Seattle to act unilaterally for what it deems to be in the best interest of the general public served by the Seattle Water System; including water shortages resulting from drought circumstances and temporary reduction in water supply associated with turbidity events. **Upon the occurrence of an unforeseen or unavoidable event, Seattle shall, to the extent practicable, treat its wholesale and retail customers equally and any curtailment of supply shall be imposed proportionately among these customers.** This authority to act unilaterally carries with it a unilateral responsibility of Seattle to restore, expeditiously, the Seattle Water System to its pre-emergency capability to supply the region.

As a separate matter, Section 7.3 of the Block Contract provides that if water use restrictions are imposed on SPU by the terms of its agreements with Federal and State agencies and Tribes, such restrictions will be borne proportionally by SPU and its other wholesale customers, and by Cascade with respect only to the size of the Cascade Block at the time curtailment is required. In this event, Cascade and its Members will need to review the restrictions and determine appropriate short-term or long-term actions.

2.3 Tacoma Public Utilities Water Supply Agreement

Cascade entered into an Agreement for the Sale of Wholesale Water in 2005 with Tacoma Public Utilities (TPU). In 2012, Cascade and TPU amended the Agreement to require Cascade to make specified supply capacity reservation payments to TPU, in lieu of the minimum purchase payments provided for in the 2005 agreement. Through 2042, Cascade may request TPU provide up to 8 MGD wholesale water supply, and TPU has sole discretion to determine the availability, disruption, interruption, suspension, and curtailment of such supply. At this time, Cascade is not using this supply source and is developing a new supply agreement with TPU to replace the 2005 Agreement. Shortage management will be addressed in the new agreement.

2.4 White River – Lake Tapps Reservoir Water Rights

The Water Right Permit No. S2-29920(A), initially issued in 2010, and updated in 2022, to Cascade for the withdrawal or diversion of water from the White River into the Lake Tapps Reservoir for municipal purposes, is subject to conditions including the maintenance of minimum flows in the White River and the maintenance of specified lake levels during a specified recreational period. These conditions are not considered in the SMP at this time for the following reasons: Cascade is not currently using the Lake Tapps Reservoir for municipal supply, and Cascade's current planning anticipates the Lake Tapps Reservoir will not be in use until the early 2060s. Cascade will update the SMP to include reservoir-level triggers at such time as the Lake Tapps Reservoir is brought online for municipal supply purposes.

2.5 Member Water Audit Agreements

Each Member has executed a water audit agreement with Cascade. For those Members with independent supply, the agreement defines and quantifies independent supplies, documents member utilization of those supplies, and establishes production requirements imposed on Members as related to those supplies.

3.0 Plan Activation and Applicability to Cascade Members

3.1 Activation of SMP

Cascade may activate its SMP under the following circumstances:

1) When SPU activates its Water Shortage Contingency Plan (WSCP), the Cascade CEO may activate the SMP and determine the appropriate stage of curtailment and, at its next meeting, the Cascade Board will take action to end or continue activation at the appropriate stage of curtailment;

2) In the event a supply shortage or threat of a supply shortage requires immediate action to prevent risks to public health and safety, the Cascade CEO may declare an emergency and activate the SMP and determine the appropriate stage of curtailment and, at its next meeting, the Cascade Board will take action to end or continue activation at the appropriate stage of curtailment; or

3) For any other reason through action of the Cascade Board.

Unless otherwise directed by the Cascade Board, the Cascade CEO, in consultation with the Water Shortage Management Committee (Section 3.2 below), may elevate or diminish the stage of curtailment from one stage to another as appropriate.

3.2 Water Shortage Management Committee

The Cascade CEO shall designate a Water Shortage Management Committee consisting of Cascade staff and Member staff to advise the Cascade CEO on implementation of the SMP. The Water Shortage Management Committee may be designated at any time, but no later than immediately following SMP activation, and shall exist the duration of the water shortage. The existing Member staff committee may be designated as the Water Shortage Management Committee. The Cascade CEO may consult with the Water Shortage Management Committee by any means including in-person, by phone, video conferencing, or by email.

3.3 Coordination with SPU and Members

As provided in the Block Contract with SPU, Cascade will coordinate and communicate closely with SPU regarding activation of the SMP and a change in the stage of shortage as indicated in Section 4.

Cascade and its Members have a key role in the communications strategy during a regional water shortage. It is anticipated SPU will communicate with its own retail customers, wholesale customers, large retail customers, regional stakeholders, state/federal resource agencies, and regional media. Cascade encourages its Members to communicate with retail customers, wholesale customers, and local stakeholders. Cascade will help to coordinate and facilitate communications among the Members and between the regional level and the local level.

Cascade will strive to make its public messaging at each stage of curtailment consistent with SPU's messaging during the shortage event.

Cascade will maintain a current copy of SPU's WSCP on file and encourages Members that receive water from Cascade's regional water supply system maintain a copy of both the Cascade SMP and SPU WSCP readily available with their own Member SMP.

In addition, the Block Contract with SPU contains provisions related to SPU's supply commitment and Cascade's participation in shortages. These include financial provisions that, in the event of a voluntary or mandatory curtailment, require revision to the cost borne by Cascade. Whenever SPU moves a shortage to the voluntary, mandatory, or emergency stage, Cascade will initiate discussion with SPU regarding adjustments to the supply commitment and payments due from Cascade. Cascade will inform the Members of any proposed financial treatment regarding SPU charges occurring as a result of the shortage and these discussions.

3.4 Applicability to Cascade Members

Consistent with the Section 7.3 of the 2012 Joint Agreement, activation of the SMP applies to Cascade Members as follows:

- **Members receiving all of their water supply from Cascade:** Required to comply with Cascade's SMP.

- **Members receiving partial supply from Cascade:** Required to comply, in portions of their service areas that receive regional supply; *or* to discontinue use of Cascade supply during the water shortage.

- **Members with interruptible supply**. *None at this time*.

3.5 Member Shortage Response Plans

DOH regulations in WAC 246-290-100(4)(f) require utilities to have their own water shortage response plans. These are typically submitted to the DOH every ten years with their comprehensive water system plans. Cascade recommends Members review and revise their shortage response plans to ensure the Members use similar stages of curtailment as listed in the Cascade SMP and provisions in the Member plans support effective coordination with SPU and Cascade during a water shortage.

3.6 Communications During Water Shortages

In addition to the communication actions listed for each curtailment stage in Section 4, in the event of a water shortage that requires this SMP to be activated, Cascade will coordinate closely with its Members and SPU regarding public communications. SPU will take the lead on communications involving regional media such as major radio, television, social media, and newspaper outlets. Members will have the primary responsibility for communicating directly with their own customers and local communities. Cascade will coordinate communications among Members and SPU, and it will assist Members to issue consistent and effective communications to the communities they serve.

3.7 Relief of Conflicting Obligations During Water Shortages

When the SMP is activated, and with each stage of curtailment, Cascade will review and adjust production requirements and minimum demand shares to avoid potentially contradictory obligations of members. Since minimum production requirements may be inconsistent with desired or mandated demand reductions, and since minimum demand shares provide financial disincentives to demand reduction, Cascade will determine necessary and appropriate adjustments to provide for consistent incentives and impacts among members. Specifically:

- The Cascade CEO, in consultation with the Water Shortage Management Committee and each affected Member, will recommend to the Board to amend or suspend production requirements so demand reduction and supply production objectives are not in conflict, while recognizing that increased reliance on independent supplies is a desirable outcome when addressing a shortage from Cascade's regional sources.

- The Cascade CEO, in consultation with the Water Shortage Management Committee and each affected Member, will recommend to the Board to amend or suspend minimum demand shares in order to encourage reduced demand on impacted regional sources.

- In the event a shortage is caused by a shortage in independent supply resulting in a shortage that Cascade chooses to share in, the Cascade CEO, in consultation with the Water Shortage Management Committee and each affected Member, will recommend to the Board to make adjustments that are specific to each Member to reflect the unique circumstance of the shortage.

The recommended adjustments will be taken to the Board for approval or adjustment.

4.0 Stages of Water Use Curtailment

Cascade's SMP has four stages of curtailment that coincide with the stages of curtailment in SPU's WSCP:

1. Advisory Stage
2. Voluntary Stage
3. Mandatory Stage
4. Emergency Stage

These four stages are designed for progressive implementation during a drought or other long-range disruption of water supply. However, any of the four stages can be activated from the outset of the event as appropriate, and the stage of curtailment may be elevated or diminished from one stage to another as appropriate.

Sections 4.1 - 4.4 provide details in each of the four stages of curtailment. Table 1 provides a summary of the triggers of each stage, and Table 2 provides a summary of actions to be taken in each stage.

4.1 Advisory Stage

This stage is advisory only, internally focused, and does not require outreach to customers or curtailment actions by water users.

4.1.1 Objectives of Advisory Stage

- Prepare Cascade and Members for a potential water shortage, thereby allowing for adequate planning and coordination in the event there is a need to move to the Voluntary Stage.

- Support distribution system management actions by Cascade Members that can help to forestall or minimize the need for more stringent demand or supply management actions.

4.1.2 Triggers of Advisory Stage

SPU will enter the Advisory Stage of their WSCP if supply conditions and supply forecasts raise significant concerns about SPU’s ability to meet demand later in the year. Upon notice from SPU that it has activated the Advisory Stage, the Cascade CEO may activate the SMP and the Advisory Stage.

4.1.3 Communication Actions During Advisory Stage

Once the Advisory Stage has been activated by Cascade, Cascade will:

- Advise Cascade Members to activate their Advisory Stage (or equivalent actions per each Member's individual SMP) in a manner that is consistent with Cascade’s SMP. This will not apply

to Cascade Members exempted per Section 3.4 of this SMP.

- Establish a regular communication mechanism to keep Cascade Members and the Cascade Board informed regarding stages of curtailment; water supply conditions; and actions taken by Cascade Members and others in the region.

- Request Cascade Members carry out supply-side management actions they will take during the Advisory Stage to reduce use of water for local water distribution system operations and compile information on the actions taken. For Members that have independent supply, this may include relying more heavily on these supplies where feasible, to reduce pressure on the Cascade regional supply.

- If requested by SPU, participate on SPU's Water Shortage Advisory Group to help identify potential customer demand reduction strategies and an outreach strategy and materials.

4.1.5 Operating Actions of Advisory Stage

- Cascade will initiate planning and preparation for actions under an elevated stage of curtailment, including an assessment of potential staffing impacts, training needs, and communications strategies.

- Cascade will assist Members plan specific actions under an elevated stage of curtailment, including distribution system actions by the Member and voluntary water use curtailment actions Members can suggest to their end-use customers if the elevated stage of curtailment is activated.

4.2 Voluntary Stage

If supply conditions have not improved or have worsened, and/or demand levels need to be reduced, the SMP moves to the Voluntary Stage, which relies on voluntary cooperation and support of customers to meet demand reduction goals. During this stage, specific voluntary actions are suggested for residential and commercial customers.

4.2.1 Objectives of Voluntary Stage

- Encourage Members to take distribution system management actions to further stretch available supply.

- Encourage customer voluntary actions to maintain or reduce demand to meet demand reduction goals.

- Forestall or minimize need for later more stringent demand or supply management actions.

- Maintain drinking water quality at acceptable levels throughout the shortage.

- Promote equity among Cascade Members in responding to the supply shortage.

4.2.2 Triggers of Voluntary Stage

1) Upon notice from SPU that it has activated the Voluntary Stage of their WSCP, the Cascade CEO may activate the Voluntary Stage and, at its next meeting, the Cascade Board will take action to end or continue activation; or

2) In the event a supply shortage or threat of a supply shortage requires immediate action to prevent risks to public health and safety, the Cascade CEO may declare an emergency and activate the Voluntary Stage and, at its next meeting, the Cascade Board will take action to end or continue activation; or

3) The Cascade Board may authorize activation of Cascade's Voluntary Stage.

4.2.3 Communication Actions of Voluntary Stage

Once the Voluntary Stage has been activated by Cascade, Cascade will:

- Inform Cascade Members they are required to activate their Voluntary Stage (or equivalent actions per each Member's individual SMP) in a manner that is consistent with Cascade's SMP. This will not apply to Cascade Members exempted per Section 3.4 of this SMP.

- Request Cascade Members report to Cascade regarding supply-side management actions they will take during the Voluntary Stage. For Members that have independent supply, this may include relying more heavily on these supplies where feasible, to reduce pressure on the Cascade regional supply.

- Communicate regularly with Cascade Members regarding information that should be communicated to the public, local parks departments, large customers, landscape industry professionals, and others. At the Voluntary Stage, this will include specific recommendations on how customers can reduce water consumption, including links to the *cascadewater.org* website or equivalent information resources.

- If requested by SPU, participate on SPU's Water Shortage Advisory Group to provide input on implementation of customer demand reduction aspects of the Voluntary Stage, as well as input on planning for the customer demand reduction aspects of the Mandatory Stage.

- Assist Cascade Members to acquire and distribute public information materials. Review information from SPU, including materials in the Water Shortage Contingency Plan, regarding actions customers can take to reduce their water consumption. As appropriate, post information for Cascade Members and their customers on Cascade's website regarding the Voluntary Stage.

Appendix A provides examples of water saving actions customers can take during the Voluntary Stage.

4.2.4 Operating Actions in Voluntary Stage

- Cascade will assess revenue implications and potential remedies and report to the Cascade Board.

- Cascade will initiate planning and preparation for actions under an elevated stage of curtailment, including an assessment of potential staffing impacts, training needs, and communications strategies. Cascade will assist Cascade Members to identify mandatory restrictions that may apply during the Mandatory Stage, if this is needed.

4.3 Mandatory Stage

If supply conditions have not improved or have worsened, and/or demand levels need to be further reduced, the Mandatory Stage would be implemented. This stage prohibits or limits certain water actions. Cascade will rely on its Members to enforce mandatory actions, using techniques as appropriate to each service area or jurisdiction.

4.3.1 Objectives of Mandatory Stage

- Achieve demand reduction goals by restricting certain water uses. Goals will be determined in consultation with SPU, based on the characteristics and severity of the water shortage.

- Ensure adequate water supply will be available for the duration of the supply shortage.

- Minimize the disruption to customers' lives and businesses while meeting demand reduction goals.

- Maintain drinking water quality at acceptable levels throughout the shortage.

- Promote equity among Cascade Members in responding to the supply shortage.

4.3.2 Triggers of Mandatory Stage

1) Upon notice from SPU that it has activated the Mandatory Stage of their WSCP, the Cascade Board will consider activation of the Mandatory Stage; or

2) In the event a supply shortage or threat of a supply shortage requires immediate action to prevent risks to public health and safety, the Cascade CEO may declare an emergency and activate the Mandatory Stage, and, at its next meeting, the Cascade Board will take action to end or continue activation; or

3) The Cascade Board may authorize activation of Cascade's Mandatory Stage.

4.3.3 Communication Actions of Mandatory Stage

Once the Mandatory Stage has been activated by Cascade, Cascade will:

- Inform Cascade Members they are required to activate their Mandatory Stage (or equivalent actions per each Member's individual SMP), in a manner that is consistent with Cascade's SMP. This will not apply to Cascade Members exempted per Section 3.4 of this SMP. Enforcement actions may be needed in the Mandatory Stage. Cascade expects each Member to enforce restrictions in a manner suitable to the local service area or to work with other local governments having enforcement powers to do so.

- Gather information from SPU regarding any water quality or water pressure problems, if any, that are identified or may possibly occur at the mandatory stage, and communicate these to Cascade Members' management, operations staff, and communications staff.

- Continue communication actions from the Voluntary Stage, with modifications as appropriate for the Mandatory Stage (as determined in consultation with SPU and Cascade Members).

4.3.4 Operating Actions of Mandatory Stage

- Cascade will continue operating actions from the previous stages.

- Cascade will initiate planning and preparation for Emergency Stage actions, including an assessment of potential staffing impacts, training needs, and communications strategies. Cascade will assist Members to plan specific actions that may be needed if the Emergency Stage is activated.

- If necessary, the Board will consider enforcement actions against any Members who do not comply with Mandatory Stage actions, as allowed under the 2012 Joint Agreement.

4.4 Emergency Stage

At this stage, Cascade and Members recognize a critical water situation exists and, without additional significant curtailment actions, a shortage of water for public health, safety, and fire protection is imminent. This would be used as the last stage of a progressive drought or similar situation, or to address an immediate crisis such as a disruption to water sources, treatment, or transmission facilities. This type of situation has never occurred in Cascade's history but could occur during a very severe drought or under emergency conditions such as a major earthquake that ruptures transmission pipelines.

4.4.1 Objectives of Emergency Stage

- Strive to meet the demand reduction goals established for this stage, recognizing that customers' lives and businesses may be significantly impacted in order to achieve necessary water savings. Goals will be determined in consultation with SPU based on the characteristics and severity of the water shortage.

- Promote equity among Cascade Members in responding to the supply shortage.

4.4.2 Triggers of Emergency Stage

1) Upon notice from SPU that it has activated the Emergency Stage of their WSCP, the Cascade Board will consider activation of the Emergency Stage; or

2) In the event a supply shortage or threat of a supply shortage requires immediate action to prevent risks to public health and safety, the Cascade CEO may declare an emergency and activate the Emergency Stage, and, at its next meeting, the Cascade Board will take action to end or continue activation; or

3) The Cascade Board may authorize activation of Cascade's Emergency Stage.

If SPU activates its Emergency Stage, Cascade anticipates Section 12.1 (Emergency Events) of the Block Contract would also be triggered. This section permits SPU to curtail supplies to Cascade, on a proportional basis with its retail customers and other wholesale customers.

4.4.3 Communication Actions of Emergency Stage

Once the Emergency Stage has been activated by Cascade, Cascade will:

- Inform Cascade Members they are required to activate their Emergency Stage (or equivalent actions per each Member's individual SMP), in a manner that is consistent with Cascade's SMP. This will not apply to Cascade Members exempted per Section 3.4 of this SMP. Enforcement actions may be needed in the Emergency Stage. Cascade anticipates each Member will enforce restrictions in a manner suitable to the local service area or will work with other local governments having enforcement powers to do so.

- Continue and intensify communication actions from the previous stages, with modifications as appropriate for the Emergency Stage (as determined in consultation with SPU and Cascade Members). This includes, but is not limited to, Cascade's role in supporting effective communications among individual Cascade Members and SPU.

- For Members that have independent supply, request they rely as much as possible on these supplies, to reduce pressure on the Cascade regional supply.

- Alert Members of particular operational problems that may occur with system-wide reduced water consumption and communicate these to Cascade Members' management, operations staff, and communications staff and on the Cascade website. These could include, for example, taste and odor problems and reduced pressures in Member distribution systems.

- Assist Cascade Members to define and communicate exemptions for medical facilities and other facilities having key responsibilities for public health and safety.

4.4.5 Operating Actions of Emergency Stage

- Cascade will continue to monitor staffing impacts, training needs, and communications strategies and make adjustments where feasible to enhance effectiveness of the regional water shortage response.

- If feasible and applicable, Cascade will make staff resources available to Cascade Members to assist them in the water shortage response. This may include temporary reassignment of Cascade staff and/or outsourcing of specialized functions or additional staffing resources that could provide assistance to Cascade Members.

- If volunteer services are available and deemed valuable to the water shortage response, and if desired by the Members, Cascade will coordinate volunteers on behalf of its Members.

- If necessary, the Board will consider enforcement actions against any Members who do not comply with Emergency Stage actions, as allowed under the 2012 Joint Agreement.

TABLE 1. Triggers for Plan Activation and of Curtailment Stages

TRIGGERS	CASCADE SMP/Stage	MEMBERS
SPU activates to Advisory Stage	Advisory Stage	Cascade will inform and advise Members
SPU activates to Voluntary Stage plus CEO activation (Board confirmation at next meeting); or CEO declaration of emergency (Board confirmation at next meeting); or Board Action	Voluntary Stage	Member compliance required
SPU activates to Mandatory Stage plus Board Action; or CEO declaration of emergency (Board confirmation at next meeting); or Board Action	Mandatory Stage	Member compliance required
SPU activates to Emergency Stage plus Board Action; or CEO declaration of emergency (Board confirmation at next meeting); or Board Action	Emergency Stage	Member compliance required

Table 2. Four Stages of Curtailment

	Advisory	Voluntary	Mandatory	Emergency
Theme of Public Messages from SPU		A shortage has occurred. We are requesting voluntary curtailment to reduce demand.	A severe shortage has occurred. Mandatory curtailment is necessary and specific uses of water are restricted.	An emergency shortage has occurred. Mandatory curtailment is necessary and public health and safety uses are the priority.
Cascade Communication Actions	• Advise Cascade Members to activate their Advisory Stage. • Establish a regular communication mechanism with Members. • Request Cascade Members carry out supply-side management actions. • Participate on SPU's Water Shortage Advisory Group.	• Inform Cascade Members they are required to activate their Voluntary Stage. • Request Cascade Members report to Cascade regarding supply-side management actions. For Members that have independent supply, this may include relying more heavily on these supplies. .• Communicate regularly with Cascade Members. •. Participate on SPU's Water Shortage Advisory Group. • Assist Cascade Members to acquire and distribute public information materials.	• Inform Cascade Members they are required to activate their Mandatory Stage, including enforcement as appropriate. • Gather information from SPU on water quality or pressure problems and communicate these to Members. • Continue communication actions from the Voluntary Stage, with modifications as appropriate for the Mandatory Stage.	• Inform Cascade Members they are required to activate their Emergency Stage, including enforcement as appropriate. • Continue and intensify communication actions from the Mandatory Stage. • For Members that have independent supply, request they rely as much as possible on these supplies. • Alert Members of particular operational problems that may occur with system-wide reduced water consumption. • Assist Cascade Members to define and communicate exemptions for public health and safety.
Cascade Operating Actions	• Initiate preparation for Voluntary Stage.	• Assess revenue implications remedies. • Initiate preparation for Mandatory Stage.	• Continue operating actions from the Voluntary Stage • Initiate preparation for Emergency Stage. • If necessary, consider enforcement actions against any non-complying Member.	• Continue operating actions from Mandatory Stage. • Make staff resources available to Cascade Members. • Coordinate volunteers on behalf of Members.

APPENDIX A

POSSIBLE VOLUNTARY STAGE CUSTOMER WATER SAVING ACTIONS (Adapted from SPU's 2006 WSCP)

SET A GOAL: Such as use 10% less water

Most customers can save 10% by choosing items from the menu of water saving actions below. **If** you routinely do outdoor watering, select those actions first. Set a goal to reduce your water use by 10% from the amount you used during the same billing period last year. Most utility bills contain your water consumption for each billing period. Much of the 10% can probably be achieved through conservation actions that are wise to do all the time. If that is not sufficient, then the special curtailment actions listed here can be implemented during the duration of the supply problem.

REDUCE OUTDOOR WATER USE

Conservation Actions:

- **Avoid watering** between 10 AM and 7 PM to reduce evaporation.
- **Stop obvious water waste** such as gutter flooding, sidewalk and street watering, and fix leaks.
- **Never leave a hose running,** always use a shut-off nozzle.
- **Use a broom** rather than a hose or pressure washer to clean sidewalks and driveways.

Curtailment Actions:

- **Reduce lawn watering** (twice a week or less if possible).
- **Let your lawn go dormant.** Customers who choose to not water their lawns should water deeply once each rainless month to keep grass roots alive. To avoid runoff when you water, if the water puddles, cycle your sprinkler on and off until water is absorbed.
- **Refrain from filling** empty pools and hot tubs.
- **Turn off water features** and fountains.
- **Wash vehicles only at car washes that recycle their water.**

REDUCE INDOOR WATER USE

Conservation Actions:

- **Install a WaterSense-labeled toilet.** These toilets have proven to perform well and give long-term water and money savings. Replacing a frequently used old toilet with a new WaterSense toilet can save most households in utility bills. Check cascadewater.org for WaterSense toilet models.
- **Install an EnergyStar-labeled clothes washer**. New washers typically use one-third to one-half as much water as old washers.
- **Wash only full loads in the clothes washer and dishwasher** or choose an appropriate load-size setting for the number of items in the washer.
- **Turn off the tap** while brushing your teeth, hand-washing dishes, or shaving.
- **Fix leaky faucets and toilets**. Order free leak detection dye from Cascade's website or put several drops of food coloring in your toilet tank. After 20 minutes, if you have color in the bowl, you have a slow leak that over time can amount to a lot of water.
- **Install a WaterSense-labeled showerhead or faucet aerator**. New showerheads and aerators work well and use much less water than old high-flow models.

Curtailment Actions:

- **Spend one minute less in the shower.** Try to limit showers to five minutes or less.

REDUCE WATER USE AT WORK

There are a wide variety of opportunities for businesses and agencies to reduce their water use and operating expenses.

Conservation Actions:

- **Check cooling towers**. Cooling towers - and the ways that they regulate water use – represent real opportunities for improving water efficiency.
- **Check for and fix leaks**. Toilet and urinal leaks are very common. Investigate obvious or suspected leaks.
- **Use a broom** instead of a hose or pressure washer to routinely clean driveways and sidewalks.
- **Turn off water-using equipment when not in use**, including open hoses, dishwashers, garbage disposals, and food troughs.
- **Check air conditioners, refrigerators, and ice machines**. If your company's air conditioners or refrigerators use water-cooled condensers, investigate air-cooled equipment for possible efficiencies.
- **Install WaterSense-labeled toilets, urinals and faucets** in public and employee restrooms. Replacing old toilets, urinals, and faucet aerators with efficient ones can produce substantial savings.
- **Reuse process water**. Water used in industrial and manufacturing processes should be reused as often as possible.
- Hospitality businesses can offer guests the option of clean linens each day.
- **Increase employee awareness of water conservation** through management memos or newsletter messages. Install signs that encourage water conservation in restrooms or work areas where water is used.

Curtailment Actions:

- **Reduce outdoor watering** (twice a week or less if possible).
- **Minimize vehicle washing**, defer or use a water recycling car wash.
- **Turn off** decorative water fountains.
- **Serve water only on request** at restaurants. Avoid thawing with running water.

For more water conservation tips, visit cascadewater.org.

APPENDIX B

CUSTOMER OUTREACH CHECKLIST

This checklist is intended to be used by all Cascade Members during implementation of the Shortage Management Plan. The checklist differentiates among actions that Seattle Public Utilities (SPU) will perform, actions that Cascade will perform on behalf of its Members, and actions that each Member is responsible for performing.

Customer Outreach Actions	
SPU Is Responsible For:	
	Coordinating with Ecology, Health, and Governor's Office.
	Coordinating with Tacoma and Everett as needed.
	Issuing regional press releases to major media outlets (& conduct subsequent media interviews).
	Purchasing regional traditional media ads such as tv, radio, print, as appropriate.
Cascade Is Responsible For:	
	Coordinating outreach communications with SPU.
	Coordinating outreach communications with Members.
	Creating a flyer that helps customers understand there is a shortage situation and understand how to reduce their water use.
	Providing outreach to key landscaping and irrigation contacts including local nurseries (e.g., Bellevue Nursery, Grey Barn, Squak Mountain), industry organizations (WALP, WSNLA), and large landscape and irrigation firms.
	Providing drought information on Cascade's website and social media platforms.
	Providing drought information at Cascade Gardener classes.
	Providing drought information at community events at which Cascade participates.
Members Are Responsible For:	
	Posting drought information on the Member's utility website homepage.
	Making the flyer that Cascade created readily available (e.g., on utility website, in utility lobby and/or City Hall, distribute in public areas such as community centers, libraries, etc.).
	Including drought messages in existing utility publications such as bills, bill inserts, newsletters, etc.
	Including drought messages in any social media platforms used by the Member.
	Posting signage in appropriate locations (e.g., at utility buildings, on utility vehicles, in key locations in service area).
	Briefing utility staff regarding the drought.
	Highlighting the drought message at any community events at which the Member is participating.

Exhibit B

Water Right Permits

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

December 10, 2010

Cascade Water Alliance
11400 SE 8th Street Suite 440
Bellevue WA 98004

Re: Water Right No. S2-29920(A)

Dear: Sir or Madam:

Enclosed is a Permit to be retained for your records. Please read the enclosed information sheet, as well as your entire Permit.

It is important to remember that this permit is not a *final* water right; it is permission to develop a water right.

We are enclosing a *Construction Notice* form. If you have not begun your project by **December 31, 2040**, please advise us. If you have begun construction, complete and submit the form to this office.

If you have any questions, please contact Ecology at 360-407-6300.

Sincerely,

Thomas Loranger
Water Resources Program

Enclosures: *Permit*
Construction Notice
Important Information About Your Water Right

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DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
WATER RIGHT PERMIT

PRIORITY DATE
6/20/2000

WATER RIGHT NUMBER
S2-29920(A)

MAILING ADDRESS
CASCADE WATER ALLIANCE
11400 SE 8TH ST STE 440
BELLEVUE WA 98004

SITE ADDRESS (IF DIFFERENT)

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
1000	CFS	54300

Purpose

	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		
PURPOSE	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	PERIOD OF USE (mm/dd)
Municipal	1000		CFS			02/15 - 07/01[a]
Municipal	400		CFS			07/02 - 09/15[b]
Municipal	150		CFS			09/16 - 02/14[c]

REMARKS

a. From February 15 until Refill Date or July 1, whichever is earlier.

b. From Refill Date until September 15 or Fall Drawdown Date, whichever is later.

c. From the Fall Drawdown Date to February 15.

Diversion rates are further subject to refill schedule described Provision No. 2.

Ecology has issued two separate Reports of Examination corresponding to application S2-29920: one corresponds to the Lake Tapps Reservoir Water Rights and Supply Project [permit S2-29920(A)] and the other corresponds to the Regional Reserved Water Program [permit S2-29920(B)]. Water quantities from the two permits are additive. The two permits have the same priority date, but the permit for S2-29920(A) is superior in priority. Both of the permits are evaluated in one Investigator's Report.

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Pierce	White River	Puyallup River	10-Puyallup-White

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
WHITE RIVER DIVERSION DAM	0619021006	NA	19N	06E	02	NE	47.170344 Datum: NAD83/WGS84	-122.004333

Place of Use (See Attached Map)

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

The place of use for this water right is the combined service areas described in the most recent Water System Plans approved by the Washington State Department of Health for the Cascade Water Alliance, the City of Seattle and the City of Tacoma.

Proposed Works

Lake Tapps Water Rights and Supply Project

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
December 31, 2040	Within 15 Years of Begin Construction Date	December 31, 2060

The development schedule is as follows:

- Begin construction within 30 years of the issuance of the permits
- Complete construction within 15 years of the beginning of construction
- Achieve full beneficial use of the allocated quantities within 50 years of issuance of the permits.

The Begin Construction Date is the date when Permit Holder has received all necessary major permits for the construction of the water treatment plant and transmission system and commenced work on facilities considered to be significant permanent elements of the project or excavation for project foundations or pipelines.

The Completion of Construction Form may be filed after the water treatment plant is completed, tested and capable of treating the full capacity and a transmission system is available in accordance with Permit Holder's Water System Plan, including appropriate agreements to use other entities' transmission systems, sufficient to transport the full amount of water to the appropriate delivery points.

Permit Holder is advised that a notice of Proof of Appropriation of water (under which the final certificate of water right is issued) should not be filed until the quantity of water allocated by this authorization, to the extent water is required, has been put to full beneficial use.

Provisions:

The Permit Holder must meet the provisions and conditions of this section. These provisions and conditions apply at permit issuance, except as noted in the individual condition.

1. Minimum Flow

The Permit Holder may divert water from the White River to Lake Tapps Reservoir, subject to the schedule of maximum diversion rates provided below in Condition 2, only if the diversion does not reduce the instream flow of the White River below the Minimum Flow established in Table 1.

Compliance with the Minimum Flows shown in Table 1. shall be measured at U.S. Geological Survey ("USGS") gage 12099200 – White River above Boise Creek at Buckley gage (referred to as the "Buckley Gage"), or other appropriate gage subject to review and approval by the Washington State Department of Ecology ("Ecology") in accordance with Condition 21.

The Permit Holder may divert up to 20 cfs of water from the headgate and through the fish screens when the flow is below the Minimum Flow, set out in Table 1. due to natural flow conditions.

Table 1. Minimum Flow

Time Period	Minimum Flow	Time Period	Minimum Flow
January 1-14	650 cfs	July 1-23	800 cfs
January 15-31	525 cfs	July 24-31	650 cfs
February 1-14	550 cfs	August 1-6	650 cfs
February 15-29	500 cfs	August 7-31	500 cfs
March 1-14	550 cfs	September 1-14	500 cfs
March 15-31	725 cfs	September 15-30	500 cfs
April 1-14	775 cfs	October 1-14	500 cfs
April 15-30	825 cfs	October 15-31	500 cfs
May 1-14	875 cfs	November 1-14	500 cfs
May 15-31	875 cfs	November 15-30	550 cfs
June 1-14	800 cfs	December 1-14	550 cfs
June 15-30	800 cfs	December 15-31	600 cfs

2. Schedule of Maximum Diversion Rates

If the instream flow of the White River at the Buckley Gage (or other appropriate gage subject to review and approval by Ecology in accordance with Condition 21) exceeds the Minimum Flow established in Condition 1, then the Permit Holder may divert water from the White River into Lake Tapps Reservoir in a manner consistent with the following schedule and amounts:

a) Beginning no earlier than February 15, and continuing until Lake Tapps Reservoir is refilled to Normal Full Pool (as defined in Condition 5), or until July 1, whichever is earlier ("Refill Date") water may be diverted from the White River in an amount not to exceed 1000 cfs;

b) Beginning on the Refill Date until September 15 or the subsequent date the Permit Holder commences drawing down the water level of Lake Tapps Reservoir, whichever is later ("Fall Drawdown Date"), water may be diverted from the White River in an amount not to exceed 400 cfs; and

c) Beginning on the Fall Drawdown Date until February 15 water may be diverted from the White River in an amount not to exceed 150 cfs.

3. Releases from Reservoir

The Permit Holder shall limit releases from Lake Tapps Reservoir into the tailrace canal to not more than 50 cfs, except when Lake Tapps Reservoir is being drawn down, in accordance with Condition 2.c above.

4. Ramping Rates

The diversion from the White River and the release from Lake Tapps Reservoir through the tailrace canal shall at all times be operated so that;

a) The ramping rate does not exceed one inch per hour (increase or decrease) as measured respectively at the Buckley Gage (or other appropriate gage subject to review and approval by Ecology in accordance with Condition 21) and USGS gage 12101100 – Lake Tapps Diversion at Dieringer; and

b) Between February 16 and June 15 of each year down ramping shall not be permitted between one hour before sunrise and one hour after sunset.

5. Recreational Lake Levels

The Permit Holder shall maintain lake levels in Lake Tapps Reservoir according to the schedule established below. "Normal Full Pool" is defined as a reservoir water level between 541.0 feet and 542.5 feet National Geodetic Vertical Datum 1929 ("NGVD 29") as measured at USGS gage 12101000 – Lake Tapps near Sumner.

a) The Permit Holder shall maintain Normal Full Pool from April 15 through September 30 of each year until 30 years of the issuance of the permit or Permit Holder's commencement of the use of Lake Tapps Reservoir for municipal water supply, whichever comes later.

b) Thereafter, the Permit Holder shall:
   i) Maintain Normal Full Pool from April 15 through September 15; and
   ii) Maintain Normal Full Pool from September 16 through September 30 of each year more than ninety percent (90%) of the time, measured by the number of days (i.e., no more than fifteen (15) days in a rolling ten (10) year period of time) below the lower parameter of the Normal Full Pool, starting with the first calendar year in which lake levels fall below the lower parameter of the Normal Full Pool.

c) The Permit Holder shall make reasonable efforts to maintain Normal Full Pool through October 31 in all years.

d) Within the above-described time periods, operational variances may be required due to forecasts or available precipitation, any necessary milfoil control, or the terms and conditions of this authorization or of applicable law.

The schedule of lake levels and the definition of Normal Full Pool may be modified. Permit Holder shall submit any proposal for modification to Ecology for review and approval in accordance with Condition 21. The proposal shall include documentation that Permit Holder has completed an appropriate consultation or negotiation process with stakeholders and other interested parties.

6. Protect Puyallup River Minimum Instream Flows in Spring

During projected minimum instream flow shortfalls at USGS gage 12101500 – Puyallup River at the Puyallup from February 15 through March 31 of each year, the Permit Holder shall reduce the quantity of flow diverted from the White River up to the amount of water actually being withdrawn from Lake Tapps Reservoir for municipal water supply purposes (i.e., up to a maximum annual quantity of 5,900 acre feet). The Permit Holder shall develop an operating protocol for diversions from the White River to Lake Tapps Reservoir, for review and approval by Ecology in accordance with Condition 21. The protocol shall incorporate appropriate stream flow gaging and modeled travel time to estimate when diversions should be reduced to provide additional flow at the Puyallup gage. This condition shall apply when water is first withdrawn from Lake Tapps Reservoir for municipal water supply purposes.

7. Minimization of Powerhouse Leakage

To the extent practical, the Permit Holder shall minimize leakage from the former White River Hydroelectric Project powerhouse beginning not later than when water is first withdrawn from Lake Tapps Reservoir for municipal water supply purposes. Within 5 years of permit issuance, the Permit Holder shall submit a plan for minimizing powerhouse leakage to Ecology for review and approval in accordance with Condition 21.

8. Streamflow Monitoring

Within two (2) years of the issuance of the permit, the Permit Holder shall submit to Ecology a plan to install, operate, maintain, and report from streamflow gages necessary to monitor the minimum flows and staff gages to monitor the ramping rates required by this permit. The plan shall include at a minimum gages at the following locations:

- Canal Diversion
- White River above Boise Creek at Buckley gage (or other appropriate gage subject to review and approval by Ecology in accordance with Condition 21)
- Tailrace Release
- Lake Tapps water surface elevation (on a daily basis)

The plan shall describe the method of collecting and recording the flow and ramping rate data, and include a provision for periodically providing that data to Ecology, Washington Department of Fish and Wildlife ("WDFW"), National Oceanic and Atmospheric Association National Marine Fisheries Service ("NOAA Fisheries"), U.S. Fish and Wildlife Service ("USFWS"), USGS, the Puyallup Tribe of Indians, and Muckleshoot Indian Tribe. The Permit Holder shall prepare the plan after providing a draft and opportunity to comment to Ecology, WDFW, NOAA Fisheries, USFWS, USGS, the Puyallup Tribe of Indians and Muckleshoot Indian Tribe. The final plan shall be submitted to Ecology for review and

approval in accordance with Condition 21. The plan shall be implemented, including installation and operation of all gages, within one year after approval by Ecology.

The Permit Holder shall use the most accurate gaging equipment and methodology as determined by the USGS. At least every five (5) years, Permit Holder shall evaluate the adequacy of the stream flow monitoring gages. The Permit Holder shall maintain the above streamflow gages for the duration of this project.

9. Maintenance of Diversion Canal Fish Screens

The Permit Holder shall maintain the fish screens in the diversion canal so that they continue to meet or exceed their design specifications for fish passage and all applicable federal or state requirements.

10. Annual Compliance Summary Report

On an annual basis, the Permit Holder shall submit to Ecology a report summarizing and documenting compliance with the conditions of this permit. At a minimum, the report shall include compliance with the Minimum Flows for the White River, ramping rates, maximum diversion rates, recreational lake levels, and reductions of diversion during spring for the Puyallup River Minimum Instream Flow, as well as emergency operations, and any non-compliance with conditions of this permit. Annual reports shall document compliance with mitigation requirements over a calendar year and shall be submitted to Ecology by February 15 of the subsequent year.

11. Tailrace Study

The Permit Holder shall conduct the following studies regarding the tailrace canal of Lake Tapps Reservoir.

a) A study of the tailrace releases from Lake Tapps to determine if releases are causing or contributing to non-attainment of designated uses and water quality criteria violations in the lower White and Puyallup Rivers. If the study determines discharge from Lake Tapps is adversely affecting water quality, the Permit Holder shall develop and implement a plan to improve tailrace water quality.

   i. Study Schedule: Within five (5) years of permit issuance, the Permit Holder shall submit a Quality Assurance Project Plan ("QAPP") for the water quality study to Ecology for review and approval in accordance with Condition 21. For guidance on preparing QAPPs, see Ecology Publication No. 04-03-030. The study period shall not exceed five (5) years. The final report for the study shall be submitted to Ecology within one hundred eighty (180) days after the end of the study period, or as specified by Ecology in its QAPP approval. The water quality study should include, but not necessarily be limited to, continuous monitoring of temperature and dissolved oxygen in tailrace releases and instream locations to be identified in the QAPP.

   ii. Tailrace Water Quality Plan: If the water quality study concludes, or if Ecology determines, that tailrace releases from Lake Tapps are causing or contributing to non-attainment of designated uses or water quality criteria violations in the Lower White and Puyallup Rivers, the Permit Holder shall develop and implement a plan to improve water quality in tailrace releases. The plan shall provide for an adequate period of monitoring to determine the success of the plan in improving water quality of tailrace releases.

A draft plan shall be submitted to the following for review and comment: the agencies and parties to the 1998 Agreement on the Allocation of the Puyallup River TMDL Reserve Capacity of Biochemical Oxygen Demand ("BOD") and Ammonia or any successors in interest, Puyallup Tribe of Indians, Muckleshoot Indian Tribe, and NOAA Fisheries. The final plan shall be submitted to Ecology for review and approval in accordance with Condition 21 within one year from submittal of the final study report.

Upon receipt of the final plan, Ecology may issue an order approving or modifying the plan, and the Permit Holder shall implement the plan.

b. A study to assess the relationship between salmonids and the tailrace canal. Within one hundred eighty (180) days of the completion of Condition 7 above (Minimization of Powerhouse Leakage), Cascade shall begin a study to assess the occurrence of entry, delay, stranding, and/or delayed migration of salmonids in the tailrace canal. If the study determines that adverse conditions are occurring and remediation is necessary, the Permit Holder shall develop and implement a plan to improve conditions. The plan shall include consideration of a tailrace barrier. Prior to implementation, the Permit Holder shall submit the plan to Ecology for review and approval in accordance with Condition 21.

12. Department of Health Water System Planning

The water appropriated under this application will be used for public water supply. The State Board of Health rules require public water supply owners to obtain written approval from the Department of Health's Office of Drinking Water Supply, prior to any new construction or alterations of a public water supply system.

13. Shortage Management Plan

No later than two (2) years after this authorization to make use of public water becomes effective, Permit Holder shall adopt and submit to Ecology a shortage management plan intended to reduce and minimize the need for water for municipal water supply purposes when the region is experiencing dry or drought conditions.

14. Fish Screens on Outlets from Lake Tapps Reservoir

Within five (5) years of permit issuance, the Permit Holder shall install fish screens on any outlets from Lake Tapps Reservoir, if required and warranted based on scientific studies. Prior to construction, the Permit Holder shall submit a plan for installation, operation, and maintenance of the fish screens to WDFW for approval or modification. Fish screens shall be installed, operated, and maintained according to the plan approved by WDFW.

15. Measuring and Reporting Water Use

An approved measuring device shall be installed and maintained for the Lake Tapps water supply withdrawal pipeline to the water treatment plant in accordance with the rule "Requirements for Measuring and Reporting Water Use", chapter 173-173 WAC.

Water use data shall be recorded daily. The maximum monthly rate of diversion/withdrawal and the monthly total volume shall be submitted to Ecology in digital format by January 31 of each calendar year.

The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, Water Resource Inventory Area ("WRIA"), Permit/Certificate/Claim No., source name, annual quantity used including units, maximum rate of diversion including units:

- Monthly meter readings including units;
- Peak monthly flow including units;
- Department of Health WFI water system number and source number(s);
- Purpose of use; and
- Open channel flow or pressurized diversion.

Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

Chapter 173-173 WAC describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition Ecology for modifications of some of the requirements. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements."

16. Existing Rights

This authorization to make use of public water granted by the State of Washington is subject to existing water rights, including any existing rights held by the Tribes or the United States for the benefit of Tribes under treaty or settlement.

17. Use of Claim

This permit is expressly conditioned on the use of water under Claim No. 160822 to satisfy recreational, lake level, aquatic habitat, water quality, and other regulatory beneficial uses and the conditions of this permit.

18. Combined Diversion Not to Exceed Limits

The combined instantaneous diversion of water from the White River for municipal water supply under this authorization and under the rights the Permit Holder claims under Claim No. 160822 shall not exceed the limits established for additional purposes under the change decision in Claim No. 160822.

19. Trust Water Donation

No later than two (2) years after this authorization to make use of public water becomes effective, the Permit Holder shall submit to Ecology an application to make a permanent donation of a portion of Claim No. 160822 to the State's Trust Water Program.

20. Emergency Operations

Permit conditions regarding or affecting operation of Lake Tapps Reservoir and related facilities do not apply and shall be waived to the extent that emergency conditions require or as ordered by a court or by a

state or federal agency with jurisdiction. The Permit Holder shall notify Ecology of any emergency operations in accordance with Condition 21. Emergency conditions mean a temporary circumstance or condition caused by a natural disaster, accident or physical damage, or other extraordinary event that is not avoidable by the exercise of reasonable diligence. Emergency conditions do not include droughts or long term changes in hydrologic conditions.

21. Ecology Review and Approval Process

This provision defines two processes for communicating with Ecology for compliance with the provisions of this water right, including conditions 1, 2, 4, 5, 6, 7, 8, 11, and 20.

1. **Notify Ecology**
   Permit Holder shall provide notice in writing to Ecology's Southwest Regional Office Water Resources Program Supervisor, or other staff identified by Ecology, and shall ensure that Ecology receives the notice. This provision does not limit Ecology's legal authority to act. This provision applies to the requirement to notify Ecology in Condition 20.

2. **Ecology Review and Approval**
   Permit holder shall submit the required information for Ecology's review, comment, and approval. The information shall be submitted in writing to Ecology's Southwest Regional Office Water Resources Program Supervisor, or other staff identified by Ecology, and Permit Holder shall ensure that Ecology receives the information. Ecology shall review the submitted information and respond to the Permit Holder in a timely manner. This provision applies to the requirements for review and approval by Ecology in Conditions 1, 2, 4, 5, 6, 7, 8, and 11.

22. Adaptive Management

Based on the analyses conducted to evaluate this water right, Ecology is confident the project can achieve its instream flow, recreational lake level, and municipal water supply objectives on a reliable basis. The conditions of this water right provide the Permit Holder flexibility to adapt to a wide range of hydrologic conditions and still meet those objectives.

In the event that instream flow, recreational lake level, or municipal water supply objectives are not reliably met, Ecology shall consult with the Permit Holder to consider the reasons the objectives are not being met and identify possible operational changes in conformity with the conditions of this water right.

If necessary, Ecology may also convene, or direct the Permit Holder to convene, a process through which input is sought from stakeholders and other interested parties to identify possible operational changes which will result in the achievement of instream flows, recreational lake levels, and municipal water supply on a more reliable basis.

Consideration of operational changes will include, but not be limited to, the adaptive management measures identified in Section 12.3 of the Final Environmental Impact Statement. Additionally, the Permit Holder will work with other interested parties to secure funding for capital improvement projects if capital improvements are needed to meet the objectives of the project.

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or to give notice to the Department of Ecology on forms provided by the Department documenting such compliance.

Given under my hand and the seal of this office at Lacey, Washington this 10th day of Dec. 2010.

Department of Ecology

OK

By Thomas Loranger
Thomas Loranger, Section Manager

DEPARTMENT OF ECOLOGY
State of Washington

Water Resources Program
CONSTRUCTION NOTICE

☐ BEGINNING OF CONSTRUCTION ☐ COMPLETION OF CONSTRUCTION

☐ PROJECT ABANDONED ☐ REQUEST FOR EXTENSION (fee applies)

- **Beginning of Construction: development of the water system has begun.**
- **Completion of Construction: facilities are installed to deliver water to the project.**
- **Project Abandoned: water not needed for this project; authorization may now be canceled.**
- **Request for Extension: when the development schedule has not been met (see back of form).**

If requesting an extension, submit this form and $50 fee to: DEPARTMENT OF ECOLOGY CASHIERING UNIT PO BOX 47611 OLYMPIA, WA 98504-7611		**Water Right No.:**	
Date Construction Began: / /	**Date Construction Expected:** / /	**Date Construction Completed:** / /	**Date Project Abandoned:** / /
Describe what equipment, material(s) and/or structure(s) are in place to date (Well, pump, pipes, number of homes, sprinklers, etc.)			
Have you installed a measuring device (flow meter) for the project? ☐ YES ☐ NO **If yes, submit a Pressurized Flow & Open Channel Flow form for each measuring device. Contact the Water Resources Program or obtain a form at http://www.ecy.wa.gov/biblio/ecy070171.html. Contact the Water Resources Program within your region for additional information.** **If no, explain:**			
IF CONSTRUCTION IS NOT COMPLETE, SHOW % COMPLETED AS OF THIS DATE			
% Equipment in place:	**% Material in place:**	**% Excavated:**	**% Structure:**

I certify I am the holder or authorized representative of the above water right issued by the Department of Ecology for the State of Washington.

Name: _____ **Date:** __/__/____
(Please print)

Address: _____ **City:** _____ **State:** _____ **Zip:** _____ **Telephone:** (___) ___-____

E-mail Address: _____

Signature(s): _____ _____

ECY 040-1-30 (Rev 8/26/10) *If you need this document in an alternate format, please call the Water Resources Program at 360-407 6600 Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.*

EXTENSION REQUEST

If you can't meet the deadline of the required construction schedule you may request an extension.
Extension requests shall be in writing and accompanied by a $50 fee.
The following information must be included with the request:

Water Resources Program policy POL-1050 applies to all requests for extensions of time, and the granting or denial of the request received pursuant to RCW 90.03 320 or 90 44.060 see the following link for that policy: http://www.ecy.wa.gov/programs/wr/rules/images/pdf/pol1050r.pdf

The permit holder may request an extension of time to any of the three developmental stages, specifically the Beginning of Construction date (BC), the Completion of Construction date (CC), and the Proof of Appropriation date (PA).

Every extension of time for a development phase of a permit must be requested in writing and accompanied by the required $50 fee.

The permit holder must show good cause for needing the extension, and demonstrate the due diligence and good-faith efforts made to comply with the original or updated construction schedule. The permit holder is responsible for ensuring that the permit is in good standing, and if necessary, for initiating requests for extensions.

Requests for extensions must include:

- **The reason(s) for needing the extension.**
- **A description of efforts made since the permit issued or the last extension was granted.**
- **A proposed schedule for completing the development.**

Additional information may be required. Please use a separate sheet of paper for your extension request.

Check the region in which your proposed project is located ☐ Southwest ☐ Northwest ☐ Central ☐ Eastern.
Below is a map of the State of Washington, with outlines of the areas covered by the four Ecology regional offices.

If you have additional questions, contact the Water Resources Program at the regional office in which your project is located:

Northwest Regional Office:
(425) 649-7000
3190-160th Avenue SE
Bellevue, WA 98008-5452

Central Regional Office:
(509) 575-2490
15 W Yakima Ave, Ste. 200
Yakima, WA 98902-3452

Southwest Regional Office:
(360) 407-6300
P.O. Box 47775
Olympia, WA 98504-7775

Eastern Regional Office:
(509) 329-3400
4601 N. Monroe St.
Spokane, WA 99205-1295

ECY 040-1-30 (Rev 8/26/10) *If you need this document in an alternate format please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.*

Permit cancellations

The cancellation of a permit can be initiated either by the applicant or by Ecology. If you wish to cancel the permit, you must request the cancellation in writing. Ecology may cancel your permit for non-compliance with the provisions of the permit, failure to meet the development schedule, or non-payment of fees. You will receive a warning letter with 60 days to respond, prior to cancellation.

If you sell the property covered by this permit

A water right permit is considered personal property in Washington. If you sell the property associated with the permit, the permit should be formally assigned to the new property owner. An assignment form requires the notarized signature of the permit holder. This form is then submitted to Ecology with the required $50.00 processing fee. An assignment form can be obtained from Ecology offices or our website. An assignment is also applicable to the application for permit stage of the process.

For more information

Contact your regional Ecology office for questions about your permit, or visit our website at www.ecy.wa.gov/programs/wr/wrhome.html

Northwest Regional Office
3190 - 160th Avenue SE
Bellevue, WA 98008-5452
(425) 649-7000

Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775
(360) 407- 6300

Central Regional Office
15 W. Yakima Ave., Suite 200
Yakima, WA 98902-3452
(509) 575-2490

Eastern Regional Office
N. 4601 Monroe
Spokane, WA 99205-1295
(509) 329-3400

You can download permit-related forms from www.ecy.wa.gov/biblio/forms-wrforms.html

This publication, and others about water rights, is available to view, download and/or order at www.ecy.wa.gov/biblio/wr.html

If you require this document in an alternate format, please call the Water Resources Program at (360) 407-6600 or TTY (for the speech or hearing impaired) at 711 or 800-833-6388.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Important Information About Your Water Right Permit

May 2004
(rev 7/07)
04-11-010

Under state law, the waters of Washington collectively belong to the public and cannot be owned by any individual or group. Instead, Ecology may grant individuals or groups the right to use them. You have taken the first major step towards securing a Certificate of Water Right by obtaining a water right permit. Be sure to read through your permit carefully, so that you fully understand all the terms and responsibilities associated with it.

Permits are permission to develop a water right

A permit is permission by the state to *develop* a water right. It is not a *final* water right. A permit allows you to proceed with construction of a water system and to put the water to use, in accordance with the conditions specified in your permit.

Key dates: mark your calendars!

The permit includes a Development Schedule that specifies the dates (on or before) by which you must:

1. *Begin construction* of the water system. "Beginning construction" means that the well is drilled or the surface water diversion is constructed.
2. *Complete construction* of the water system. Your project is considered complete when the equipment (pumps, pipes, etc.) for delivering water to the place of use is installed.
3. *Put the water to full beneficial use*, up to the amount specified in your permit. "Beneficial use" is a key concept in Washington water law. It refers to both what the water is used for (e.g. domestic use, irrigation, and recreation) as well as the amount of water necessary for the specified purpose (so water is not wasted.)

Reports must be submitted at each phase of development

As you complete each of these three stages in developing your water right, you will need to fill out and submit a form to Ecology to report your progress. These forms will be provided to you by Ecology, or you can download them from our internet site: www.ecy.wa.gov/biblio/forms-wrforms.html. These forms are:

1. "Construction Notice: Beginning of Construction."
2. "Construction Notice: Completion of Construction."
3. "Proof of Appropriation of Water:" when the water is put to full beneficial use. This form must be signed and notarized before you return it to Ecology.

It is important to complete each form for each stage in a timely manner. Failure to do so may result in the cancellation of your permit.

Extensions

Although you are expected to adhere to your Development Schedule, there are often extenuating circumstances that make this impossible. You may request an extension. Since state law requires that the project be pursued with diligence and that good cause be shown before an extension can be granted, your request must be made in writing and contain the following:

- Describe the project status and development to date.
- Explain the reasons for delay in developing the project.
- Discuss the steps that have been taken to overcome delays.
- Propose a new development schedule that you believe can be met and why.
- Include a check or money order for the $50.00 extension fee.

The Ecology regional section supervisor, with advice from staff, will evaluate the request and approve or deny it. Your extension request will be evaluated on the basis of your good faith efforts, proposed schedule and the public interests affected.

Unless you are notified otherwise, the check or money order should be included with the request and made out to the Department of Ecology. Submit fees to:

Department of Ecology
Cashiering Section
PO Box 5128
Lacey WA 98509-5128

Once your water is being put to full beneficial use

After receiving the completed and notarized Proof of Appropriation form, Ecology staff review the information and may do a field inspection (proof examination).
Once the department confirms that all the conditions of the permit are met, you will be asked to submit statutory filing fees and county auditor fees to Ecology. The county auditor will record and forward your *Certificate of Water Right* to you. It is the legal record of your water right.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

December 10, 2010

Cascade Water Alliance
11400 SE 8th Street Suite 440
Bellevue WA 98004

Re: Water Right No. R2-29935

Dear Sir or Madam:

Enclosed is your Permit to be retained for your records. Please read the enclosed information sheet, as well as your entire Permit.

You must meet the provisions on your Permit before we will issue a final Certificate of Water Right.

We are enclosing a *Proof of Appropriation of Water form* which is to be filed when the water has actually been put to full beneficial use or by December 31, 2060. This form will need to include your County Assessor's Parcel Number and must be notarized.

If you have any questions, please contact us at 360-407-6300.

Sincerely,

Thomas Loranger
Water Resources Section Manager

Enclosures: Permit
Proof of Appropriation of Water
Important Information About Your Water Right

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File NR R2-29935
WR Doc ID 22232

DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
RESERVOIR PERMIT

PRIORITY DATE
9/15/2000

WATER RIGHT NUMBER
R2-29935

MAILING ADDRESS
CASCADE WATER ALLIANCE
11400 SE 8TH ST STE 440
BELLEVUE WA 98004

SITE ADDRESS (IF DIFFERENT)

Purpose and Quantity

PURPOSE	STORAGE QUANTITY ADDITIVE	STORAGE QUANTITY NON-ADDITIVE	UNITS	ANNUAL QUANTITY (AF/YR) ADDITIVE	ANNUAL QUANTITY (AF/YR) NON-ADDITIVE	PERIOD OF USE (mm/dd)
Municipal	46700		AF	46700		01/01 - 12/31

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Pierce	Lake Tapps	White River	10-Puyallup-White

Place of Use

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE
The place of use for this water right is the combined service areas described in the most recent Water System Plans approved by the Washington State Department of Health for Cascade Water Alliance, City of Seattle and the City of Tacoma.

Location of Impounding Structure

Dike Number	Location	Washington ID Number
1	NW1/4NW1/4 S9, TWP20N R5E	WA418
2A	NE1/4SE1/4 S5, TWP20N R5E	WA419
2B	NW1/4SW1/4 S4, TWP20N R5E	WA420
3	NE1/4SW1/4 S4, TWP20N R5E	WA421
4	W1/2SE1/4 S4 & NW1/4NE1/4 S9, TWP20N R5E	WA296
4A*	N1/2NE1/4 S9, TWP20N R5E	WA296
5*	NE1/4NE1/4 S9, TWP20N R5E	WA422
6*	SW1/4NW1/4 S10, TWP20N R5E	WA423
7	SW1/4NW1/4 S10, TWP20N R5E	WA435
8	E1/2NW1/4 S10, TWP20N R5E	WA424

WATER RIGHT PERMIT

9	NE1/4NW1/4 S10, TWP20N R5E	WA425
10	NE1/4NW1/4 & NW1/4NE1/4 S10, TWP20N R5E	WA426
11*	W1/2NE1/4 & SE1/4NE1/4 S10, TWP20N R5E	WA427
12	SE1/4SE1/4 S10, TWP20N R5E	WA428
13	NW1/4SW1/4 S27, TWP20N R5E	WA429
14	NW1/4NE1/4 S26, TWP20N R5E	WA430
15	SE1/4NW1/4 & SW1/4NE1/4 S26, TWP20N R5E	WA431

Legal Subdivisions Of Lands In Which The Submerged Area Is To Be Located

Lake Tapps Reservoir, located in Sections 4, 5, 8, 9, 10, 14, 15, 16, 17, 21, 22, 23, 27 and 28, T. 19 N., R. 5 E.W.M.

Construction of Impounding Structure

HEIGHT OF DAM
Varies from 5 to 45 Feet

LENGTH ON TOP (ft)
Varies from 240 to 2870 feet

WIDTH ON TOP (ft)
Varies from 19 to 70 feet

SLOPE OF FRONT OR WATER SIDE (ft horizontal)
Varies from 2.1:1 to 5.5:1

SLOPE OF BACKSIDE (ft horizontal : one ft vertical)
Varies from 1.4:1 to 2:1

HEIGHT OF DAM ABOVE WATER LINE AT NOPL (ft)
Varies from 1.6 to 9.2 feet

TYPE OF DAM AND CONSTRUCTION MATERIALS

Earthen embankments originally constructed in 1910-1911. No new dam construction required.

LOCATION AND APPROXIMATE DIMENSIONS OF SPILLWAY INCLUDING CREST LENGTH
Not applicable

LOCATION, SIZE AND TYPE AND OUTLET VALVE AND OUTLET CONDUIT STRUCTURE

The outlet from Lake Tapps is located in the SW¼ NE¼ of Section 8, T. 20 N., R. 5 E.W.M. It consists of a 2,842-foot long, 12-foot-diameter concrete tunnel that leads to a concrete penstock forebay located in the SW¼ NE¼ of Section 7, T. 20 N., R. 5 E.W.M. The water then enters three steel penstocks, 8 feet in diameter, and 2,135 feet in length that delivers water to the powerhouse. Two of the three steel penstocks are tapped to provide water to a fourth 8-foot-diameter steel penstock that is 1,791 feet long. The powerhouse discharges to the tailrace. The tailrace is trapezoidal in cross-section with a base width of 34 feet and a containment height of 9 to 10 feet. The tailrace is concrete-lined for the first 45 feet and then timber-lined for the next 65 feet and the last 2,400 feet leading to the White River are unlined.

NUMBER OF ACRES SUBMERGED WHEN RESERVOIR IS FILLED TO NOPL
2700

MAXIMUM DEPTH (FEET) AT NOPL
90

APPROXIMATE AVERAGE DEPTH (FEET)
25

Development Schedule

BEGIN PROJECT
Started

COMPLETE PROJECT
Completed

PUT WATER TO FULL USE
December 31, 2060

This Permit Subject to Cancellation

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or to give notice to the Department of Ecology on forms provided by the Department documenting such compliance.

Given under my hand and the seal of this office at Lacey, Washington this 10th day of Dec, 2010

OK

Department of Ecology

By
Thomas Loranger, Section Manager

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DEPARTMENT OF ECOLOGY
State of Washington

Water Resources Program
PROOF OF APPROPRIATION OF WATER

PERMIT NUMBER	CHANGE APPROVAL NUMBER
NAME OF PERMITTEE	CONTACT NAME (IF DIFFERENT)

MAILING ADDRESS (STREET)	CITY	STATE	ZIP CODE
PHONE NUMBER ( ) -	FAX NUMBER ( ) -		

SOURCE(S) OF WATER	LOCATION OF SOURCE(S)					
	NO.	¼	¼	SECTION	TOWNSHIP N.	RANGE, (E/W)M
LIST ALL PURPOSES WATER IS USED FOR:						
DATE WATER WAS COMPLETELY APPLIED TO BENEFICIAL USE	TIME OF YEAR WATER IS USED ☐ Continuous/Year round ☐ Seasonal			IF SEASONALLY, LIST THE START AND END DATE Start: End:		
DESCRIBE HOW CONSTRUCTION AND DEVELOPMENT RELATED PROVISIONS (AS REQUIRED BY PERMIT) HAVE BEEN OR ARE TO BE MET (USE ADDITIONAL PAPER IF NECESSARY)						

DESCRIPTION OF SPECIFIC AREA ON WHICH WATER IS BENEFICIALLY USED(USE ADDITIONAL PAPER IF NECESSARY)					
NO.	¼	¼	SECTION	TOWNSHIP N.	RANGE, (E/W)M

PHYSICAL WITHDRAWAL OR DIVERSION INFORMATION

Point of Diversion/Withdrawal Tax Parcel #:_____

For Pump Designed Water System Information:

TYPE OF PUMP: ☐ Submersible ☐ Turbine ☐ Centrifugal ☐ Other _____			
MAKE	MODEL #	SERIAL #	HORSEPOWER
MOTOR	BHP	SPEED	RPM
☐ Water lubricated ☐ Oil Lubricated			
BOOSTER PUMP ☐ Yes ☐ No	BREAK HORSEPOWER	PRESSURE	OPEN DISCHARGE ☐ Yes ☐ No
PUMP DISCHARGE HEAD PRESSURE psi	DISCHARGE PIPE DIAMETER		

For Ground Water Withdrawal (if more than one, please include attachment)

Ecology Unique Well Identification Number(s)_____ [include a copy of the well log(s)]

PUMP SETTING (DEPTH)	STATIC WATER LEVEL feet below land surface	DYNAMIC (PUMPING) LEVEL feet below land surface
ACCESS PORT INSTALLED? ☐ Yes	AIRLINE INSTALLED? ☐ Yes	AIRLINE LENGTH Ft.

For Non-Pump Designed Water Systems

METHOD OF WATER DIVERSION	DESCRIPTION OF WORKS	
	SCREEN MESH SIZE	METHOD OF CONTROL

ECY 040-1-26 (Rev. 04/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877 833 6341

USE OF WATER FOR:

1. Irrigation (Please include map of all irrigated lands).

TYPE OF SYSTEM	NUMBER OF SPRINKERS OR EMMITERS	SPRINKLER/EMMITER MAKE	MODEL & RATED DISCHARGE

SIZE NOZZLE/EMMITER OPENINGS	AVERAGE PRESSURE AT SPRINKLER/EMMITER HEADS	NUMBER OF ACRES DEVELOPED	TYPE OF CROP(S)

2. Municipal or Domestic Supply

NUMBER OF DOMESTIC UNITS CURRENTLY SERVED:	NUMBER OF DOMESTIC UNITS TO BE SERVED	POPULATION CURRENTLY SERVED

ALSO, provide the following information, if applicable:

- ☐ Department of Health public water system identification number.
- ☐ Map of the delivery system (provide copy if water system is done)
- ☐ Map of present service area and lots presently using water (Non-Municipal Users).
- ☐ If platted property, provide copy of the file plat map or file reference number Non-Municipal Users).
- ☐ Other incidental beneficial uses associated with the domestic supply (Non-Municipal Users).

3. Industrial or Commercial

TYPE OF INDUSTRY OR COMMERCIAL PROCESS

If a waste discharge permit is required for the facility, include a reference to the permit number: _____

4. Other Use of Water (describe): _____

WATER USE AND *MEASUREMENT

IS A FLOW METER OR MEASURING DEVICE INSTALLED? ☐ Yes ☐ No	LOCATION OF METER(S) OR MEASURING DEVICE(S)		
MAKE	SERIAL NUMBER	INSTALLATION DATE	INSTALLED BY:
METER READING	DATE		

*Include copy of meter specifications

Report actual amount withdrawn or diverted from permanent system on an instantaneous and annual basis. Please include meter data or describe method used to estimate annual volume.

CUBIC FEET PER SECOND	ACRE FEET PER YEAR	GALLONS PER MINUTE	TOTAL GALLONS PER YEAR

If the existing water use as indicated by meter data, etc., is less than you anticipate to be the full extent of the water right which you are reporting through submission of this form, please explain on a separate sheet of paper.

I, _____ (Please Print), and _____ (Please Print) do certify that I/we have completed appropriation of water under Water Right Permit or approved water right change number, _____. This notice and attached documents are true and accurate statements and describe and support my/our assertion that I/we have satisfied the terms of the permit/change in compliance with the law.

_____ Permittee(s) Signature

_____ Permittee(s) Signature

_____ Date

State of: _____

County of: _____ } §

Signed and sworn to (or affirmed) before me on this _____ day of _____.

_____ (Signature)

_____ (Printed Name)

_____ (Title)

My appointment expires: _____

ECY 040-1-26 (Rev 04/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341

Permit cancellations

The cancellation of a permit can be initiated either by the applicant or by Ecology. If you wish to cancel the permit, you must request the cancellation in writing. Ecology may cancel your permit for non-compliance with the provisions of the permit, failure to meet the development schedule, or non-payment of fees. You will receive a warning letter with 60 days to respond, prior to cancellation.

If you sell the property covered by this permit

A water right permit is considered personal property in Washington. If you sell the property associated with the permit, the permit should be formally assigned to the new property owner. An assignment form requires the notarized signature of the permit holder. This form is then submitted to Ecology with the required $50.00 processing fee. An assignment form can be obtained from Ecology offices or our website. An assignment is also applicable to the application for permit stage of the process.

For more information

Contact your regional Ecology office for questions about your permit, or visit our website at www.ecy.wa.gov/programs/wr/wrhome.html

Northwest Regional Office
3190 - 160th Avenue SE
Bellevue, WA 98008-5452
(425) 649-7000

Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775
(360) 407-6300

Central Regional Office
15 W. Yakima Ave., Suite 200
Yakima, WA 98902-3452
(509) 575-2490

Eastern Regional Office
N. 4601 Monroe
Spokane, WA 99205-1295
(509) 329-3400

You can download permit-related forms from www.ecy.wa.gov/biblio/forms-wrforms.html

This publication, and others about water rights, is available to view, download and/or order at www.ecy.wa.gov/biblio/wr.html

If you require this document in an alternate format, please call the Water Resources Program at (360) 407-6600 or TTY (for the speech or hearing impaired) at 711 or 800-833-6388.

Important Information About Your Water Right Permit

May 2004
(rev 9/07)
04-11-010

Under state law, the waters of Washington collectively belong to the public and cannot be owned by any individual or group. Instead, Ecology may grant individuals or groups the right to use them. You have taken the first major step towards securing a Certificate of Water Right by obtaining a water right permit. Be sure to read through your permit carefully, so that you fully understand all the terms and responsibilities associated with it.

Permits are permission to develop a water right

A permit is permission by the state to *develop* a water right. It is not a *final* water right. A permit allows you to proceed with construction of a water system and to put the water to use, in accordance with the conditions specified in your permit.

Key dates: mark your calendars!

The permit includes a Development Schedule that specifies the dates (on or before) by which you must:

1. *Begin construction* of the water system. "Beginning construction" means that the well is drilled or the surface water diversion is constructed.
2. *Complete construction* of the water system. Your project is considered complete when the equipment (pumps, pipes, etc.) for delivering water to the place of use is installed.
3. *Put the water to full beneficial use*, up to the amount specified in your permit. "Beneficial use" is a key concept in Washington water law. It refers to both what the water is used for (e.g. domestic use, irrigation, and recreation) as well as the amount of water necessary for the specified purpose (so water is not wasted.)

Reports must be submitted at each phase of development

As you complete each of these three stages in developing your water right, you will need to fill out and submit a form to Ecology to report your progress. These forms will be provided to you by Ecology, or you can download them from our internet site: www.ecy.wa.gov/biblio/formswforms.html. These forms are:

1. "Construction Notice: Beginning of Construction."
2. "Construction Notice: Completion of Construction."
3. "Proof of Appropriation of Water:" when the water is put to full beneficial use. This form must be signed and notarized before you return it to Ecology.

It is important to complete each form for each stage in a timely manner. Failure to do so may result in the cancellation of your permit.

Extensions

Although you are expected to adhere to your Development Schedule, there are often extenuating circumstances that make this impossible. You may request an extension. Since state law requires that the project be pursued with diligence and that good cause be shown before an extension can be granted, your request must be made in writing and contain the following:

- Describe the project status and development to date.
- Explain the reasons for delay in developing the project.
- Discuss the steps that have been taken to overcome delays.
- Propose a new development schedule that you believe can be met and why.
- Include a check or money order for the $50.00 extension fee.

The Ecology regional section supervisor, with advice from staff, will evaluate the request and approve or deny it. Your extension request will be evaluated on the basis of your good faith efforts, proposed schedule and the public interests affected.

Unless you are notified otherwise, the check or money order should be included with the request and made out to the Department of Ecology. Submit fees to:

Department of Ecology
Cashiering Section
PO Box 5128
Lacey WA 98509-5128

Once your water is being put to full beneficial use

After receiving the completed and notarized Proof of Appropriation form, Ecology staff review the information and may do a field inspection (proof examination).

Once the department confirms that all the conditions of the permit are met, you will be asked to submit statutory filing fees and county auditor fees to Ecology. The county auditor will record and forward your *Certificate of Water Right* to you. It is the legal record of your water right.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

December 10, 2010

Cascade Water Alliance
11400 SE 8th Street Suite 440
Bellevue WA 98004

Re: Water Right No. S2-29934

Dear: Sir or Madam:

Enclosed is a Permit to be retained for your records. Please read the enclosed information sheet, as well as your entire Permit.

It is important to remember that this permit is not a *final* water right; it is permission to develop a water right.

We are enclosing a *Construction Notice* form. If you have not begun your project by **December 31, 2040**, please advise us. If you have begun construction, complete and submit the form to this office.

If you have any questions, please contact Ecology at 360-407-6300.

Sincerely,

Thomas Loranger
Water Resources Program

Enclosures: *Permit*
Construction Notice
Important Information About Your Water Right

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File NR S2-29934
WR Doc ID 22232

DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
WATER RIGHT PERMIT

PRIORITY DATE
9/15/2000

WATER RIGHT NUMBER
S2-29934P

MAILING ADDRESS
CASCADE WATER ALLIANCE
11400 SE 8TH ST STE 440
BELLEVUE WA 98004

SITE ADDRESS (IF DIFFERENT)

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
135	CFS	54300

Purpose

	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		
PURPOSE	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	PERIOD OF USE (mm/dd)
Municipal	135		CFS	54300		01/01 - 12/31

REMARKS
The diversion location will be Lake Tapps, likely in the forebay area of the White River Hydroelectric Project, but the specific location is not yet determined.

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Pierce	Lake Tapps	White River	10-Puyallup-White

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
UNBUILT FACILITY ON LAKE TAPPS	0520082019		20N	05E	08	SWNE	47.237999 Datum: NAD83/WGS84	-122.203379

Locations and parcel number are approximate.

Place of Use (See Attached Map)

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE
The place of use for this water right is the combined service areas described in the most recent Water System Plans approved by the Washington State Department of Health for the Cascade Water Alliance, the City of Seattle and the City of Tacoma.

Proposed Works

Lake Tapps Reservoir Water Rights and Supply Project

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
December 31, 2040	Within 15 Years of Begin Project	December 31, 2060

Provisions

The Development Schedule, and Provisions and Conditions of the 2010 Report of Examination for S2-29920(A) in their entirety are incorporated by reference.

This Permit Subject to Cancellation

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or to give notice to the Department of Ecology on forms provided by the Department documenting such compliance.

Given under my hand and the seal of this office at Lacey, Washington this 10th day of Dec, 2010.

OK

Department of Ecology

By Thomas Loranger

Thomas Loranger, Section Manager

Permit cancellations

The cancellation of a permit can be initiated either by the applicant or by Ecology. If you wish to cancel the permit; you must request the cancellation in writing. Ecology may cancel your permit for non-compliance with the provisions of the permit, failure to meet the development schedule, or non-payment of fees. You will receive a warning letter with 60 days to respond, prior to cancellation.

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Northwest Regional Office
3190 - 160th Avenue SE
Bellevue, WA 98008-5452
(425) 649-7000

Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775
(360) 407- 6300

Central Regional Office
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Yakima, WA 98902-3452
(509) 575-2490

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N. 4601 Monroe
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If you require this document in an alternate format, please call the Water Resources Program at (360) 407-6600 or TTY (for the speech or hearing impaired) at 711 or 800-833-6388.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Important Information About Your Water Right Permit

May 2004
(rev 7/07)
04-11-010

Under state law, the waters of Washington collectively belong to the public and cannot be owned by any individual or group. Instead, Ecology may grant individuals or groups the right to use them. You have taken the first major step towards securing a Certificate of Water Right by obtaining a water right permit. Be sure to read through your permit carefully, so that you fully understand all the terms and responsibilities associated with it.

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Key dates: mark your calendars!

The permit includes a Development Schedule that specifies the dates (on or before) by which you must:

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2. *Complete construction* of the water system. Your project is considered complete when the equipment (pumps, pipes, etc.) for delivering water to the place of use is installed.
3. *Put the water to full beneficial use*, up to the amount specified in your permit. "Beneficial use" is a key concept in Washington water law. It refers to both what the water is used for (e.g. domestic use, irrigation, and recreation) as well as the amount of water necessary for the specified purpose (so water is not wasted.)

Reports must be submitted at each phase of development

As you complete each of these three stages in developing your water right, you will need to fill out and submit a form to Ecology to report your progress. These forms will be provided to you by Ecology, or you can download them from our internet site: www.ecy.wa.gov/biblio/formswforms.html. These forms are:

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- Discuss the steps that have been taken to overcome delays.
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- Include a check or money order for the $50.00 extension fee.

The Ecology regional section supervisor, with advice from staff, will evaluate the request and approve or deny it. Your extension request will be evaluated on the basis of your good faith efforts, proposed schedule and the public interests affected.

Unless you are notified otherwise, the check or money order should be included with the request and made out to the Department of Ecology. Submit fees to:

Department of Ecology
Cashiering Section
PO Box 5128
Lacey WA 98509-5128

Once your water is being put to full beneficial use

After receiving the completed and notarized Proof of Appropriation form, Ecology staff review the information and may do a field inspection (proof examination).
Once the department confirms that all the conditions of the permit are met, you will be asked to submit statutory filing fees and county auditor fees to Ecology. The county auditor will record and forward your *Certificate of Water Right* to you. It is the legal record of your water right.

DEPARTMENT OF ECOLOGY
State of Washington

Water Resources Program
CONSTRUCTION NOTICE

☐ BEGINNING OF CONSTRUCTION ☐ COMPLETION OF CONSTRUCTION

☐ PROJECT ABANDONED ☐ REQUEST FOR EXTENSION (fee applies)

- **Beginning of Construction: development of the water system has begun.**
- **Completion of Construction: facilities are installed to deliver water to the project.**
- **Project Abandoned: water not needed for this project; authorization may now be canceled.**
- **Request for Extension: when the development schedule has not been met (see back of form).**

If requesting an extension, submit this form and $50 fee to: DEPARTMENT OF ECOLOGY CASHIERING UNIT PO BOX 47611 OLYMPIA, WA 98504-7611		Water Right No.:	
Date Construction Began: / /	Date Construction Expected: / /	Date Construction Completed: / /	Date Project Abandoned: / /
Describe what equipment, material(s) and/or structure(s) are in place to date (Well, pump, pipes, number of homes, sprinklers, etc.)			
Have you installed a measuring device (flow meter) for the project? ☐ YES ☐ NO If yes, submit a Pressurized Flow & Open Channel Flow form for each measuring device. Contact the Water Resources Program or obtain a form at http://www.ecy.wa.gov/biblio/ecy070171.html. Contact the Water Resources Program within your region for additional information. If no, explain:			
IF CONSTRUCTION IS NOT COMPLETE, SHOW % COMPLETED AS OF THIS DATE			
% Equipment in place:	% Material in place:	% Excavated:	% Structure:

I certify I am the holder or authorized representative of the above water right issued by the Department of Ecology for the State of Washington.

Name: _____ **Date:** __/__/____
(Please print)

Address: _____ **City:** _____ **State:** _____ **Zip:** _____ **Telephone:** (___) ___-____

E-mail Address: _____

Signature(s): _____ _____

ECY 040-1-30 (Rev 8/26/10) *If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service Persons with a speech disability can call 877-833-6341.*

EXTENSION REQUEST

If you can't meet the deadline of the required construction schedule you may request an extension. Extension requests shall be in writing and accompanied by a $50 fee. The following information must be included with the request:

Water Resources Program policy POL-1050 applies to all requests for extensions of time, and the granting or denial of the request received pursuant to RCW 90.03 320 or 90 44.060 see the following link for that policy: http://www.ecy.wa.gov/programs/wr/rules/images/pdf/pol1050r.pdf

The permit holder may request an extension of time to any of the three developmental stages, specifically the Beginning of Construction date (BC), the Completion of Construction date (CC), and the Proof of Appropriation date (PA).

Every extension of time for a development phase of a permit must be requested in writing and accompanied by the required $50 fee.

The permit holder must show good cause for needing the extension, and demonstrate the due diligence and good-faith efforts made to comply with the original or updated construction schedule. The permit holder is responsible for ensuring that the permit is in good standing, and if necessary, for initiating requests for extensions.

Requests for extensions must include:

- **The reason(s) for needing the extension.**
- **A description of efforts made since the permit issued or the last extension was granted.**
- **A proposed schedule for completing the development.**

Additional information may be required. Please use a separate sheet of paper for your extension request.

Check the region in which your proposed project is located ☐ Southwest ☐ Northwest ☐ Central ☐ Eastern. Below is a map of the State of Washington, with outlines of the areas covered by the four Ecology regional offices.

If you have additional questions, contact the Water Resources Program at the regional office in which your project is located:

Northwest Regional Office:
(425) 649-7000
3190-160th Avenue SE
Bellevue, WA 98008-5452

Central Regional Office:
(509) 575-2490
15 W Yakima Ave, Ste. 200
Yakima, WA 98902-3452

Southwest Regional Office:
(360) 407-6300
P.O. Box 47775
Olympia, WA 98504-7775

Eastern Regional Office:
(509) 329-3400
4601 N. Monroe St.
Spokane, WA 99205-1295

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

December 10, 2010

Cascade Water Alliance
11400 SE 8th Street Suite 440
Bellevue WA 98004

Re: Water Right No. S2-29920(B)

Dear: Sir or Madam:

Enclosed is a Permit to be retained for your records. Please read the enclosed information sheet, as well as your entire Permit.

It is important to remember that this permit is not a *final* water right; it is permission to develop a water right.

We are enclosing a *Construction Notice* form. If you have not begun your project by **December 31, 2030**, please advise us. If you have begun construction, complete and submit the form to this office.

If you have any questions, please contact Ecology at 360-407-6300.

Sincerely,

Thomas Loranger
Water Resources Program

Enclosures: *Permit*
Construction Notice
Important Information About Your Water Right

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File NR S2-29920(B)
WR Doc ID 46978

DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
WATER RIGHT PERMIT

PRIORITY DATE
6/20/2000

WATER RIGHT NUMBER
S2-29920(B

MAILING ADDRESS
CASCADE WATER ALLIANCE
11400 SE 8TH ST STE 440
BELLEVUE WA 98004

SITE ADDRESS (IF DIFFERENT)

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
10	CFS	5060

Purpose

	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		
PURPOSE	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	PERIOD OF USE (mm/dd)
Municipal	10		CFS	5060		01/01 - 12/31

REMARKS

Ecology has issued two separate Reports of Examination corresponding to application S2-29920: one corresponds to the Lake Tapps Reservoir Water Rights and Supply Project [permit S2-29920(A)] and the other corresponds to the Regional Reserved Water Program [permit S2-29920(B)]. Water quantities from the two permits are additive. The two permits have the same priority date, but the permit for S2-29920(A) is superior in priority. Both of the permits are evaluated in one Investigator's Report.

This permit establishes a Regional Reserved Water Program to be used by the Cities of Auburn, Bonney Lake, Buckley, and Sumner (collectively referred to as the "Four Cities"). The Regional Reserved Water Program provides a mechanism that can be used by the Four Cities to mitigate impacts to the mainstem White and Puyallup Rivers in connection with water right applications to be submitted in the future. "Regional Reserved Water" refers to the water allocated by this permit.

IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
ADDITIVE	NON-ADDITIVE	WATER SYSTEM ID	CONNECTIONS

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Pierce	White River	Puyallup River	10-Puyallup-White

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
WHITE RIVER (NON DIVERSIONARY)			19N	06E	02			

Datum: NAD83/WGS84

Place of Use (See Attached Map)

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

White River from the diversion dam (RM 24.3) to the confluence with the Puyallup River (RM 0.0) and the Puyallup River from the confluence with the White River (RM 10.4) to Commencement Bay (RM 0.0).

Proposed Works

Not Applicable

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
December 31, 2030		

Any water right applicant seeking to use the Regional Reserved Water as a component of their application shall obtain an approved water right from the Washington State Department of Ecology ("Ecology") prior to the Begin Project Date of December 31, 2030. The Begin Project Date shall not be extended.

The remaining development schedule shall be established in the Report of Examination for any water right application making use of Regional Reserved Water

Provisions:

The Permit Holder must meet the provisions and conditions of this section.

1. Minimum Flow

Regional Reserved Water has no mitigation value when flows are below the Minimum Flow established in table and its use shall not reduce the instream flow of the White River below the Minimum Flow established in Table 1. Compliance with the Minimum Flows shown in table shall be measured at USGS gage 12099200 – White River above Boise Creek at Buckley, or other appropriate gage established by the Permit Holder of S2-29920(A) in accordance with the conditions of that water right.

Table 1. Minimum Flow

Time Period	Minimum Flow	Time Period	Minimum Flow
January 1-14	650 cfs	July 1-23	800 cfs
January 15-31	525 cfs	July 24-31	650 cfs
February 1-14	550 cfs	August 1-6	650 cfs
February 15-29	500 cfs	August 7-31	500 cfs
March 1-14	550 cfs	September 1-14	500 cfs
March 15-31	725 cfs	September 15-30	500 cfs
April 1-14	775 cfs	October 1-14	500 cfs
April 15-30	825 cfs	October 15-31	500 cfs
May 1-14	875 cfs	November 1-14	500 cfs
May 15-31	875 cfs	November 15-30	550 cfs
June 1-14	800 cfs	December 1-14	550 cfs
June 15-30	800 cfs	December 15-31	600 cfs

2. Subject to Puyallup River at Puyallup Minimum Instream Flow

The Regional Reserved Water Program is junior to the Minimum Instream Flow ("MIF") for the Puyallup River at Puyallup established in WAC 173-510-030. Regional Reserved Water shall not be used as mitigation in any way that would decrease flows in the Puyallup River at Puyallup when that gage is below the MIF.

3. Mitigation Value Limited to Mainstem White and Puyallup Rivers

The mitigation value of Regional Reserved Water is limited to the mainstem of the White River downstream of the diversion dam and the mainstem of the Puyallup River downstream of the confluence with the White River. Regional Reserved Water is not available to mitigate impacts to tributaries of the White River or the Puyallup River.

4. Additional Water Right(s) Required

Regional Reserved Water cannot be used as mitigation except as authorized by a new water right or change to existing right.

5. Supply and Demand Analysis Required

Any application proposing to use Regional Reserved Water shall provide a detailed water supply and demand analysis documenting that the water quantities in the application will be put to beneficial use.

6. Use Limited to Four Cities

Use of the Regional Reserved Water Program established by this water right is limited to the Cities of Auburn, Bonney Lake, Buckley and Sumner.

7. Subject to Cancellation on January 1, 2031

Ecology approval for any water rights using the Regional Reserved Water Program must be secured by December 31, 2030. Any portion of the permit for the Regional Reserved Water Program that has not been allocated in conjunction with a water right approved by Ecology shall be cancelled on January 1, 2031.

This Permit Subject to Cancellation

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or to give notice to the Department of Ecology on forms provided by the Department documenting such compliance.

Given under my hand and the seal of this office at Lacey, Washington this 10th day of Dec., 2010

OK

Department of Ecology

By Thomas Loranger

Thomas Loranger, Section Manager

DEPARTMENT OF ECOLOGY
State of Washington

Water Resources Program
CONSTRUCTION NOTICE

☐ BEGINNING OF CONSTRUCTION ☐ COMPLETION OF CONSTRUCTION

☐ PROJECT ABANDONED ☐ REQUEST FOR EXTENSION (fee applies)

- **Beginning of Construction: development of the water system has begun.**
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- **Project Abandoned: water not needed for this project; authorization may now be canceled.**
- **Request for Extension: when the development schedule has not been met (see back of form).**

If requesting an extension, submit this form and $50 fee to: DEPARTMENT OF ECOLOGY CASHIERING UNIT PO BOX 47611 OLYMPIA, WA 98504-7611		Water Right No.:	
Date Construction Began: / /	Date Construction Expected: / /	Date Construction Completed: / /	Date Project Abandoned: / /
Describe what equipment, material(s) and/or structure(s) are in place to date (Well, pump, pipes, number of homes, sprinklers, etc.)			
Have you installed a measuring device (flow meter) for the project? ☐ YES ☐ NO If yes, submit a Pressurized Flow & Open Channel Flow form for each measuring device. Contact the Water Resources Program or obtain a form at http://www.ecy.wa.gov/biblio/ecy070171.html. Contact the Water Resources Program within your region for additional information. If no, explain:			
IF CONSTRUCTION IS NOT COMPLETE, SHOW % COMPLETED AS OF THIS DATE			
% Equipment in place:	% Material in place:	% Excavated:	% Structure:

I certify I am the holder or authorized representative of the above water right issued by the Department of Ecology for the State of Washington.

Name: _____ **Date:** ___/___/___
(Please print)

Address: _____ **City:** _____ **State:** _____ **Zip:** _____ **Telephone:** (___) ___-____

E-mail Address: _____

Signature(s): _____ _____

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If you can't meet the deadline of the required construction schedule you may request an extension. Extension requests shall be in writing and accompanied by a $50 fee. The following information must be included with the request:

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- **The reason(s) for needing the extension.**
- **A description of efforts made since the permit issued or the last extension was granted.**
- **A proposed schedule for completing the development.**

Additional information may be required. Please use a separate sheet of paper for your extension request.

Check the region in which your proposed project is located ☐ Southwest ☐ Northwest ☐ Central ☐ Eastern. Below is a map of the State of Washington, with outlines of the areas covered by the four Ecology regional offices.

If you have additional questions, contact the Water Resources Program at the regional office in which your project is located:

Northwest Regional Office:
(425) 649-7000
3190-160th Avenue SE
Bellevue, WA 98008-5452

Central Regional Office:
(509) 575-2490
15 W Yakima Ave, Ste. 200
Yakima, WA 98902-3452

Southwest Regional Office:
(360) 407-6300
P.O. Box 47775
Olympia, WA 98504-7775

Eastern Regional Office:
(509) 329-3400
4601 N. Monroe St.
Spokane, WA 99205-1295

Permit cancellations

The cancellation of a permit can be initiated either by the applicant or by Ecology. If you wish to cancel the permit, you must request the cancellation in writing. Ecology may cancel your permit for non-compliance with the provisions of the permit, failure to meet the development schedule, or non-payment of fees. You will receive a warning letter with 60 days to respond, prior to cancellation.

If you sell the property covered by this permit

A water right permit is considered personal property in Washington. If you sell the property associated with the permit, the permit should be formally assigned to the new property owner. An assignment form requires the notarized signature of the permit holder. This form is then submitted to Ecology with the required $50.00 processing fee. An assignment form can be obtained from Ecology offices or our website. An assignment is also applicable to the application for permit stage of the process.

For more information

Contact your regional Ecology office for questions about your permit, or visit our website at www.ecy.wa.gov/programs/wr/wrhome.html

Northwest Regional Office
3190 - 160th Avenue SE
Bellevue, WA 98008-5452
(425) 649-7000

Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775
(360) 407- 6300

Central Regional Office
15 W. Yakima Ave., Suite 200
Yakima, WA 98902-3452
(509) 575-2490

Eastern Regional Office
N. 4601 Monroe
Spokane, WA 99205-1295
(509) 329-3400

You can download permit-related forms from www.ecy.wa.gov/biblio/forms-wrforms.html

This publication, and others about water rights, is available to view, download and/or order at www.ecy.wa.gov/biblio/wr.html

If you require this document in an alternate format, please call the Water Resources Program at (360) 407-6600 or TTY (for the speech or hearing impaired) at 711 or 800-833-6388.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Important Information About Your Water Right Permit

May 2004
(rev 7/07)
04-11-010

Under state law, the waters of Washington collectively belong to the public and cannot be owned by any individual or group. Instead, Ecology may grant individuals or groups the right to use them. You have taken the first major step towards securing a Certificate of Water Right by obtaining a water right permit. Be sure to read through your permit carefully, so that you fully understand all the terms and responsibilities associated with it.

Permits are permission to develop a water right

A permit is permission by the state to *develop* a water right. It is not a *final* water right. A permit allows you to proceed with construction of a water system and to put the water to use, in accordance with the conditions specified in your permit.

Key dates: mark your calendars!

The permit includes a Development Schedule that specifies the dates (on or before) by which you must:

1. *Begin construction* of the water system. "Beginning construction" means that the well is drilled or the surface water diversion is constructed.
2. *Complete construction* of the water system. Your project is considered complete when the equipment (pumps, pipes, etc.) for delivering water to the place of use is installed.
3. *Put the water to full beneficial use*, up to the amount specified in your permit. "Beneficial use" is a key concept in Washington water law. It refers to both what the water is used for (e.g. domestic use, irrigation, and recreation) as well as the amount of water necessary for the specified purpose (so water is not wasted.)

Reports must be submitted at each phase of development

As you complete each of these three stages in developing your water right, you will need to fill out and submit a form to Ecology to report your progress. These forms will be provided to you by Ecology, or you can download them from our internet site: www.ecy.wa.gov/biblio/forms-wrforms.html. These forms are:

1. "Construction Notice: Beginning of Construction."
2. "Construction Notice: Completion of Construction."
3. "Proof of Appropriation of Water:" when the water is put to full beneficial use. This form must be signed and notarized before you return it to Ecology.

It is important to complete each form for each stage in a timely manner. Failure to do so may result in the cancellation of your permit.

Extensions

Although you are expected to adhere to your Development Schedule, there are often extenuating circumstances that make this impossible. You may request an extension. Since state law requires that the project be pursued with diligence and that good cause be shown before an extension can be granted, your request must be made in writing and contain the following:

- Describe the project status and development to date.
- Explain the reasons for delay in developing the project.
- Discuss the steps that have been taken to overcome delays.
- Propose a new development schedule that you believe can be met and why.
- Include a check or money order for the $50.00 extension fee.

The Ecology regional section supervisor, with advice from staff, will evaluate the request and approve or deny it. Your extension request will be evaluated on the basis of your good faith efforts, proposed schedule and the public interests affected.

Unless you are notified otherwise, the check or money order should be included with the request and made out to the Department of Ecology. Submit fees to:

Department of Ecology
Cashiering Section
PO Box 5128
Lacey WA 98509-5128

Once your water is being put to full beneficial use

After receiving the completed and notarized Proof of Appropriation form, Ecology staff review the information and may do a field inspection (proof examination).

Once the department confirms that all the conditions of the permit are met, you will be asked to submit statutory filing fees and county auditor fees to Ecology. The county auditor will record and forward your *Certificate of Water Right* to you. It is the legal record of your water right.

DEPARTMENT OF ECOLOGY
SOUTHWEST REGIONAL OFFICE
PO BOX 47775
OLYMPIA, WA 98504-7775

DOCUMENT TITLE: CERTIFICATE OF CHANGE OF WATER RIGHT

REFERENCE NUMBER:

GRANTOR
STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
ECOLOGY SOUTHWEST REGIONAL OFFICE (ECY SWRO)
PO BOX 47775
OLYMPIA, WASHINGTON 98504-7775

GRANTEE
CASCADE WATER ALLIANCE
520 112TH AVENUE NE
SUITE 400
BELLEVUE WA 98004

LEGAL DESCRIPTION

Source Name	Parcel	Township	Range	Sec	QQ Q
WHITE RIVER		19 N	06 E	02	NE

AUTHORIZED PLACE OF USE
EXISTING IMPOUNDING STRUCTURE OF LAKE TAPPS RESERVOIR IN SECTIONS 4, 5, 8, 9, 10, 14, 15, 16, 17, 21, 22, 23, 27, AND 28, TOWNSHIP 19 N, RANGE 5 EWM

PARCELS:

ADDITIONAL LEGAL IS ON PAGE ____ OF ATTACHED DOCUMENT

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State of Washington
Department of Ecology

CERTIFICATE OF CHANGE OF WATER RIGHT

DEPARTMENT OF ECOLOGY
State of Washington

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used. This superseding certificate is the result of the administrative division of Water Right Claim #160822 and shall not be construed as validation as to the extent of the claim as originally documented. The amounts provided on the superseding portions of this water right reflect agreement among the owners of the described place of use, but are not confirmed by Ecology in the recording of the division of said right. The actual amounts authorized by the superseding certificates are subject to the historic beneficial use of water under water right document.

This certificate of change supersedes Water Right Claim #160822 and is subject to the following provisions.

PRIORITY DATE	CLAIM NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
4/17/1895	160822		S2-CV1-2P168(B)

MAILING ADDRESS	SITE ADDRESS (IF DIFFERENT)
CASCADE WATER ALLIANCE 520 112TH AVENUE NE SUITE 400 BELLEVUE WA 98004	

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
1,000	cfs	246,710

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE ADDITIVE	WITHDRAWAL OR DIVERSION RATE NON-ADDITIVE	WITHDRAWAL OR DIVERSION RATE UNITS	ANNUAL QUANTITY (AF/YR) ADDITIVE	ANNUAL QUANTITY (AF/YR) NON-ADDITIVE	PERIOD OF USE (mm/dd)
Hydroelectric plant; Recreational reservoir levels; winter reservoir levels to maintain reservoir; protect and enhance fish and wildlife; maintenance of water quality for recreational purposes in the reservoir and to meet other regulatory requirements	1,000		cfs	246,710		1/01-12/31

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Pierce	White River	Puyallup River	10

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWP	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
Approximate Location of Diversion: 200 feet East and 200 feet South from the North quarter corner of Section 2			19 N	06 E	02	NE 1/4		

Place of Use

PARCELS (NOT LISTED FOR SERVICE AREAS)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

Existing impounding structure of Lake Tapps Reservoir in Sections 4, 5, 8, 9, 10, 14, 15, 16, 17, 21, 22, 23, 27 and 28, Township 19 N, Range 5 E.W.M.

Measurement of Water Use

How often must water use be measured?

How often must water use data be reported to Ecology? See Provision 8

What volume should be reported?

What rate should be reported?

Provisions

The Water Right Holder must meet the provisions of this section. The references to "this authorization" in the provision refer to change CS2-160822CL@3, authorized on 12/10/2010. Numbering of the following provisions was done consistently with applicable provisions in permit S2-29920(A).

The Water Right Holder may elect to donate a portion of this water right to the Trust Water Rights Program on a temporary basis.

1. Minimum Flow

The Water Right Holder may divert water from the White River to Lake Tapps Reservoir, subject to the schedule of maximum diversion rates provided below in Condition 2, only if the diversion does not reduce the instream flow of the White River below the Minimum Flow established in Table 1.

Compliance with the Minimum Flows shown in Table 1 shall be measured at U.S. Geological Survey ("USGS") gage 12099200 – White River above Boise Creek at Buckley gage (referred to as the "Buckley Gage"), or other appropriate gage subject to review and approval by the Washington State Department of Ecology ("Ecology") in accordance with Condition 21.

The Water Right Holder may divert up to 20 cfs of water from the headgate and through the fish screens when the flow is below the Minimum Flow, set out in Table 1, due to natural flow conditions.

Table 1. Minimum Flow

Time Period	Minimum Flow	Time Period	Minimum Flow
January 1-14	650 cfs	July 1-23	800 cfs
January 15-31	525 cfs	July 24-31	650 cfs
February 1-14	550 cfs	August 1-6	650 cfs
February 15-29	500 cfs	August 7-31	500 cfs
March 1-14	550 cfs	September 1-14	500 cfs
March 15-31	725 cfs	September 15-30	500 cfs
April 1-14	775 cfs	October 1-14	500 cfs
April 15-30	825 cfs	October 15-31	500 cfs
May 1-14	875 cfs	November 1-14	500 cfs
May 15-31	875 cfs	November 15-30	550 cfs
June 1-14	800 cfs	December 1-14	550 cfs
June 15-30	800 cfs	December 15-31	600 cfs

2. Schedule of Maximum Diversion Rates

If the instream flow of the White River at the Buckley Gage (or other appropriate gage subject to review and approval by Ecology in accordance with Condition 21) exceeds the Minimum Flow established in Condition 1, then the Water Right Holder may divert water from the White River into Lake Tapps Reservoir in a manner consistent with the following schedule and amounts:

a. Beginning no earlier than February 15, and continuing until Lake Tapps Reservoir is refilled to Normal Full Pool (as defined in Condition 5), or until July 1, whichever is earlier ("Refill Date") water may be diverted from the White River in an amount not to exceed 1000 cfs;

b. Beginning on the Refill Date until September 15 or the subsequent date the Water Right Holder commences drawing down the water level of Lake Tapps Reservoir, whichever is later ("Fall Drawdown Date"), water may be diverted from the White River in an amount not to exceed 400 cfs; and

c. Beginning on the Fall Drawdown Date until February 15 water may be diverted from the White River in an amount not to exceed 150 cfs.

3. Releases from Reservoir

The Water Right Holder shall limit releases from Lake Tapps Reservoir into the tailrace canal to not more than 50 cfs, except when Lake Tapps Reservoir is being drawn down, in accordance with Condition 2.c above.

4. Ramping Rates

The diversion from the White River and the release from Lake Tapps Reservoir through the tailrace canal shall at all times be operated so that;

a. The ramping rate does not exceed one inch per hour (increase or decrease) as measured respectively at the Buckley Gage (or other appropriate gage subject to review and approval by Ecology in accordance with Condition 21) and USGS gage 12101100 - Lake Tapps Diversion at Dieringer; and

b. Between February 16 and June 15 of each year downramping shall not be permitted between one hour before sunrise and one hour after sunset.

5. Recreational Lake Levels

The Water Right Holder shall maintain lake levels in Lake Tapps Reservoir according to the schedule established below. "Normal Full Pool" is defined as a reservoir water level between 541.0 feet and 542.5 feet National Geodetic Vertical Datum 1929 ("NGVD 29") as measured at USGS gage 12101000 – Lake Tapps near Sumner.

a) The Water Right Holder shall maintain Normal Full Pool from April 15 through September 30 of each year until 30 years of the issuance of the permit or Water Right Holder's commencement of the use of Lake Tapps Reservoir for municipal water supply, whichever comes later.

b) Thereafter, the Water Right Holder shall:

i) Maintain Normal Full Pool from April 15 through September 15; and

ii) Maintain Normal Full Pool from September 16 through September 30 of each year more than ninety percent (90%) of the time, measured by the number of days (i.e., no more

than fifteen (15) days in a rolling ten (10) year period of time) below the lower parameter of the Normal Full Pool, starting with the first calendar year in which lake levels fall below the lower parameter of the Normal Full Pool.

c) The Water Right Holder shall make reasonable efforts to maintain Normal Full Pool through October 31 in all years.

d) Within the above-described time periods, operational variances may be required due to forecasts or available precipitation, any necessary milfoil control, or the terms and conditions of this authorization or of applicable law.

The schedule of lake levels and the definition of Normal Full Pool may be modified. Water Right Holder shall submit any proposal for modification to Ecology for review and approval in accordance with Condition 21. The proposal shall include documentation that Water Right Holder has completed an appropriate consultation or negotiation process with stakeholders and other interested parties.

8. Streamflow Monitoring

Within two (2) years of the approval of the change, the Water Right Holder shall submit to Ecology a plan to install, operate, maintain, and report from streamflow gages necessary to monitor the minimum flows and staff gages to monitor the ramping rates required by this approval. The plan shall include at a minimum gages at the following locations:

- Canal Diversion
- White River above Boise Creek at Buckley gage (or other appropriate gage subject to review and approval by Ecology in accordance with Condition 21)
- Tailrace Release
- Lake Tapps water surface elevation (on a daily basis)

The plan shall describe the method of collecting and recording the flow and ramping rate data, and include a provision for periodically providing that data to Ecology, Washington Department of Fish and Wildlife ("WDFW"), National Oceanic and Atmospheric Association National Marine Fisheries Service ("NOAA Fisheries"), U.S. Fish and Wildlife Service ("USFWS"), USGS, the Puyallup Tribe of Indians, and Muckleshoot Indian Tribe. The Water Right Holder shall prepare the plan after providing a draft and opportunity to comment to Ecology, WDFW, NOAA Fisheries, USFWS, USGS, the Puyallup Tribe of Indians and Muckleshoot Indian Tribe. The final plan shall be submitted to Ecology for review and approval in accordance with Condition 21. The plan shall be implemented, including installation and operation of all gages, within one year after approval by Ecology.

The Water Right Holder shall use the most accurate gaging equipment and methodology as determined by the USGS. At least every five (5) years, Water Right Holder shall evaluate the adequacy of the stream flow monitoring gages. The Water Right Holder shall maintain the above streamflow gages for the duration of this project.

9. Maintenance of Diversion Canal Fish Screens

Water Right Holder shall maintain the fish screens in the diversion canal so that they continue to meet or exceed their design specifications for fish passage and all applicable federal or state requirements.

18. Combined Diversion Not to Exceed Limits
The combined instantaneous diversion of water under this Claim No. 160822 and from the White River for municipal water supply under the associated permit S2-29920(A) shall not exceed the limits established for additional purposes under this change decision in the Claim No. 160822.

20. Emergency Operations
Permit conditions regarding or affecting operation of Lake Tapps Reservoir and related facilities do not apply and shall be waived to the extent that emergency conditions require or as ordered by a court or by a state or federal agency with jurisdiction. The Water Right Holder shall notify Ecology of any emergency operations in accordance with Condition 21. Emergency conditions means a temporary circumstance or condition caused by a natural disaster, accident or physical damage, or other extraordinary event that is not avoidable by the exercise of reasonable diligence. Emergency conditions do not include droughts or long term changes in hydrologic conditions.

21. Ecology Review and Approval Process
This provision defines two processes for communicating with Ecology for compliance with the provisions of this water right, including conditions 1, 2, 4, 5, 8, and 20.

1. Notify Ecology
Water Right Holder shall provide notice in writing to Ecology's Southwest Regional Office Water Resources Program Supervisor, or other staff identified by Ecology, and shall ensure that Ecology receives the notice. This provision does not limit Ecology's legal authority to act. This provision applies to the requirement to notify Ecology in Condition 20.

2. Ecology Review and Approval
Water Right Holder shall submit the required information for Ecology's review, comment, and approval. The information shall be submitted in writing to Ecology's Southwest Regional Office Water Resources Program Supervisor, or other staff identified by Ecology, and Water Right Holder shall ensure that Ecology receives the information. Ecology shall review the submitted information and respond to the Water Right Holder in a timely manner. This provision applies to the requirements for review and approval by Ecology in Conditions 1, 2, 4, 5, and 8.

22. Adaptive Management
Based on the analyses conducted to evaluate this water right, Ecology is confident the project can achieve its instream flow, recreational lake level, and municipal water supply objectives on a reliable basis. The conditions of this water right provide the Water Right Holder flexibility to adapt to a wide range of hydrologic conditions and still meet those objectives.

In the event that instream flow, recreational lake level, or municipal water supply objectives are not reliably met, Ecology shall consult with the Water Right Holder to consider the reasons the objectives are not being met and identify possible operational changes in conformity with the conditions of this water right.

If necessary, Ecology may also convene, or direct the Water Right Holder to convene, a process through which input is sought from stakeholders and other interested parties to identify possible operational changes which will result in the achievement of instream flows, recreational lake levels, and municipal water supply on a more reliable basis.

Consideration of operational changes will include, but not be limited to, the adaptive management measures identified in Section 12.3 of the Final Environmental Impact Statement. Additionally, the Water Right Holder will work with other interested parties to secure funding for capital improvement projects if capital improvements are needed to meet the objectives of the project.

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.100.

This certificate of change for water right is specifically subject to relinquishment for non-use of water as provided in Chapter 90.14 RCW.

Given under my hand and the seal of this office at Olympia, Washington, this 2nd *day of* June *2015.*

DEPARTMENT OF ECOLOGY
STATE OF WASHINGTON

Maia Bellon, Director
Department of Ecology

DATA REVIEW
OK

Michael J. Gallagher, Section Manager
Southwest Region
Water Resources Program

If you need this publication in an alternate format, please call Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

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201502090445 LPATTER 4 PGS
02/09/2015 10:08:18 AM $75.00
AUDITOR, Pierce County, WASHINGTON

Name & Return Address:
Adam Gravley
Van Ness Feldman, LLP
719 Second Avenue, Suite 1150
Seattle, WA 98104

Please print legibly or type information.

Document Title(s) Water Rights Deed
Grantor(s) **Cascade Water Alliance** ____ Additional Names on Page ___ of Document
Grantee(s) **Washington State Department of Ecology** ____ Additional Names on Page ___ of Document
Legal description (abbreviated: i.e. lot, block, plat & subdivision name or number OR section/township/range and quarter/quarter section) Township 19 N, Range 06 E, NE¼ NE¼ Section 2 Township 20 N, Range 05 E, NW ¼ Section 7; Township 20 N, Range 05 E, N ½ Section 8 Complete Legal Description on Page 4 of Document (in Exhibit 1).
Auditor's Reference Number(s) N/A
Assessor's Property Tax Parcel/Account Number(s) 06-19-02-1-006; 05-20-07-2-001 and 95-20-00-0-071; 05-20-08-2-019
The Auditor/Recorder will rely on the information provided on this cover sheet. The Staff will not read the document to verify the accuracy or completeness of the indexing information provided herein.

4359701 2 PGS
02/09/2015 10:08:18 AM LPATTER
EXCISE COLLECTED: $0.00 PROC FEE: $5.00
AUDITOR
Pierce County, WASHINGTON TECH FEE: $5.00

WATER RIGHTS DEED

Grantor: Cascade Water Alliance
Grantee: Washington State Department of Ecology
Legal Description (abbreviated): T 19 N, R 06 E, NE¼ NE¼ Sec. 2;
T 20 N, R5E, NW ¼ Sec 7;
T 20 N, R5E, N ½ Sec 8

Assessor's Tax Parcel ID#: **06-19-02-1-006;**
05-20-07-2-001 and 95-20-00-0-071;
05-20-08-2-019

THE GRANTOR, CASCADE WATER ALLIANCE, for and in consideration received and acknowledged, quitclaims to WASHINGTON STATE DEPARTMENT OF ECOLOGY a portion, in the quantity of 988 cubic feet per second and 684,571 acre-feet per year, of that certain Water Right Claim No. 160822, with priority date April 17, 1895, and as amended and tentatively determined in State of Washington Report of Examination CS2-160822CL, dated September 15, 2010. Said Water Right Claim No. 160822 was historically exercised from the White River at a point of diversion located in the NE¼ NE¼ of Section 2, Township 19 N, Range 06 E, and situated in the Pierce County, State of Washington, as more specifically identified in Exhibit 1 attached hereto and incorporated herein.

The GRANTOR herein conveys only a portion of said Water Right Claim No. 160822 in the quantity of 988 cubic feet per second and 684,571 acre-feet per year for so long as GRANTEE shall use said water exclusively for instream flow purposes. The GRANTOR herein reserves for itself and its successors-in-interest the remaining quantities and interest in said Water Right Claim No. 160822, specifically in the quantity of 1000 cubic feet per second and 246,710 acre-feet per year.

[Signatures on Following Page 3]

DATED this 29th day of January, 2015.

By: Chuck Clarke
CHUCK CLARKE,
Chief Executive Officer of Cascade Water Alliance

STATE OF WASHINGTON)
) ss.
COUNTY OF King)

On this 29th day of January, 2015, before me personally appeared CHUCK CLARKE, to me known to be the Chief Executive Officer of Cascade Water Alliance, the corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.

In Witness Whereof I have hereunto set my hand and affixed my official seal the day and year first above written.

LINDA D. MORENO
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
8-10-18

Linda D. Moreno
NOTARY PUBLIC in and for the
State of Washington, residing
at Kent, WA;
My commission expires: 8-10-18
[Type or Print Notary Name] Linda D. Moreno

50722-4

EXHIBIT 1
To Water Rights Deed

Legal Description

T 19N, R6E – E ½, NW ¼
Sec 4 NW ¼, Sec 3, N ½
Sec 2 T 20 N, R6E – SW ¼
Sec 30, Sec 31, S ½ Sec 32
E ½, SE ¼ Sec 33, S ½
Sec 34, S ½ Sec 35, T 20 N
R5E – S ½ Sec 4, SE ¼
Sec 5, N ½ Sec 7, Sec 8,
Sec 9, Sec 10, W ½ Sec 14, Sec 15, Sec 16
Sec 17, Sec 21, Sec 22,
W ½ Sec 23, S ½ Sec 25
Sec 26, Sec 27, E ½ Sec 28
NE ¼ Sec 36, T 20 N
R 4E NE ¼ Sec 12.

T 20 N, R 6E SE ¼ Sec 34

T 20 N, R 5E NW ¼ Sec 7

T 19 N, R5E, Sec 2, T 20 N,
R6E, Sec 33, 34, 35.

50722-4

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

February 23, 2022

Cascade Water Alliance
Attn: Ray Hoffman
520 112th Ave NE, Suite 400
Bellevue, WA 98004

Re: Extension Request Water Right Permit No's. **S2-29920(A), R2-29935, and S2-29934**

Dear Ray Hoffman:

Thank you for your letter dated February 7, 2022, providing additional information in support of your extension request dated December 14, 2021.

In response to your request, the development schedule for the above referenced water rights have been extended as follows:

Beginning Construction: December 31, 2065

Ecology will be sending you the appropriate form to complete and return to us when this date approaches.

As a condition of this approval, the following provision is being added to the enclosed Superseding Permits for S2-29920(A) and S2-29934:

Progress Report
The permittee is required to provide Ecology progress reports every five (5) years beginning December 31, 2027. Progress reports will consist of describing efforts made on project in the previous five (5) year period and if the project is progressing on schedule. Any changes in point of contact must also be updated.

Basis of extension approval:

- It is not regionally necessary to begin construction in 2040. Demand and supply forecasts have changed significantly since 2010. The most current forecasts in the water system plans submitted to Department of Health show a continuing abundance of supply in the region through at least 2060 which represent a decrease in demand from when the permits were initially issued. Because installing the infrastructure to put the allocated water to beneficial use would involve appropriation of funds 10 years prior, approving an extension now allows the

efficient use of existing water before adding and developing these new sources and an efficient use of capital funds.

- Although Cascade's development schedule requires construction to start by 2040 and full use by 2060, Cascade's block contract to receive water from Seattle begins to decline in 2039, and by 2042 a new source of supply will be needed. For the Lake Tapps Reservoir Project to be operational by 2042, construction would need to start at least a decade earlier. If forecasts show an abundance of supply until 2060, construction would not be necessary until at least 2050. Regardless of whether Cascade starts construction in 2040 per the development schedule, or earlier due to the Seattle block contract, doing so would add to the already excessive supply of regional water.

- A development extension is needed now to enable Cascade to negotiate with regional wholesale suppliers. In December 2021, Cascade began negotiations with Seattle for a contract extension and separately with Tacoma for a new supply contract. Cascade needs to negotiate with regional wholesale suppliers with a good faith commitment to move off regional systems and onto its own supply by a certain date. Regional water suppliers need assurances that when the time comes to terminate the contract, the communities served by Cascade will not be dependent on the contracted water. Extension of the permit schedule now provides those assurances by allowing Cascade to negotiate in good faith with a future date certain for Lake Tapps Reservoir development.

- Developing the Lake Tapps Reservoir is estimated to be $1.5 billion in inflated dollars and involves property acquisition, permitting, design and construction of transmission pumps and pipes, and design and construction of a treatment plant. Again, although the current development schedule requires construction to begin by 2040, because the block contract with Seattle begins to decline in 2039, a new source of supply would be needed by 2042. The magnitude of the project would call for construction to start no later than the early 2030's and planning to begin in earnest a decade earlier. If Cascade is unable to extend the development schedule at this time, it will need to start investing millions of dollars in the next few years to have the project on line by 2042.

YOUR RIGHT TO APPEAL

You have a right to appeal this decision to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this decision. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of this decision:

- File your appeal and a copy of this decision with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this decision on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel RD SW STE 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov . To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser.

If you have any questions, please contact Tammy Hall at 360-280-8463 or tammy.hall@ecy.wa.gov

Sincerely,

Michael J. Gallagher
Section Manager
SWRO Water Resources

Enclosures: *Your Right to Be Heard*

cc: Clifford Kato, AG's Office, Clifford.Kato@atg.wa.gov
Adam W. Gravley, awg@vnf.com

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Exhibit C

Water Right Self-Assessment Form

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Water Right Self-Assessment Form

Water Right Permit, Certificate, or Claim # *If water right is interruptible, identify limitation in yellow section below	**WFI Source #** If a source has multiple water rights, list each water right on separate line	**Existing Water Rights** Qi = Instantaneous Flow Rate Allowed (GPM or CFS) Qa = Annual Volume Allowed (Acre-Feet/Year) This includes wholesale water sold				**Current Source Production Most Recent Calendar Year** Qi = Instantaneous Flow Rate Allowed (GPM or CFS) Qa = Annual Volume Allowed (Acre-Feet/Year) This includes wholesale water sold				**10-Year Forecasted Source Production (determined from WSP)** This includes wholesale water sold				**20-Year Forecasted Source Production (determined from WSP)** This includes wholesale water sold			
		Primary Qi Maximum Rate Allowed	**Non-Additive Qi** Maximum Rate Allowed	**Primary Qa** Maximum Volume Allowed	**Non-Additive Qa** Maximum Volume Allowed	**Total Qi** Maximum Instantaneous Flow Rate Withdrawn	**Current Excess or (Deficiency) Qi**	**Total Qa** Maximum Annual Volume Withdrawn	**Current Excess or (Deficiency) Qa**	**Total Qi** Maximum Instantaneous Flow Rate in 10 Years	**10-Year Forecasted Excess or (Deficiency) Qi**	**Total Qa** Maximum Annual Volume in 10 Years	**10-Year Forecasted Excess or (Deficiency) Qa**	**Total Qi** Maximum Instantaneous Flow Rate in 10 Years	**20-Year Forecasted Excess or (Deficiency) Qi**	**Total Qa** Maximum Annual Volume in 10 Years	**20-Year Forecasted Excess or (Deficiency) Qa**
1. S2-29920 (A)		1,000 cfs *		54,300 AFY		N/A	N/A	N/A	N/A	0 cfs	1,000 cfs	0 AFY	54,300 AFY	0 cfs	1,000 cfs	0 AFY	54,300 AFY
2. S2-29920 (B) ≈		10 cfs		5.060 AFY		N/A	N/A	N/A	N/A	n/a. Subject to cancellation on 2031-01-01		n/a. Subject to cancellation on 2031-01-01		n/a. Subject to cancellation on 2031-01-01		n/a. Subject to cancellation on 2031-01-01	
3. R2-20035		N/A		46,700 AF		N/A	N/A	46,550 AF	150 AF	N/A	N/A	46,700 AF	No excess or deficiency	N/A	N/A	46,700 AF	No excess or deficiency
4. S2-29934		135 cfs		54,300 AFY		0 cfs	135 cfs	0 AFY	54,300 AFY	0 cfs	135 cfs	0 AFY	54,300 AFY	0 cfs	135 cfs	0 AFY	54,300 AFY
5. S2-CV1-2P168 (B)		1,000 cfs **		246,710 AFY		463 cfs	537 cfs	36,423 AFY	210,287 AFY	1,000 cfs	No excess or deficiency	246,710 AFY	No excess or deficiency	1,000 cfs	No excess or deficiency	246,710 AFY	No excess or deficiency
	TOTALS =	Diversion: 1,000 cfs Withdrawal: 135 cfs		54,300 AFY		0 cfs	Diversion: 1,000 cfs Withdrawal: 135 cfs	0 AFY	54,300 AFY	0 cfs	Diversion: 1,000 cfs Withdrawal: 135 cfs	0 AFY	54,300 AFY	0 cfs	Diversion: 1,000 cfs Withdrawal: 135 cfs	0 AFY	54,300 AFY

INTERTIES: Systems receiving wholesale water complete this section. Wholesaling systems must include water sold through intertie in the current and forecasted source production columns above.

Name of Wholesaling System Providing Water	**Quantities Allowed in Contract**		**Expiration Date of Contract**	**Currently Purchased** Current quantity purchased through intertie				**10-Year Forecasted Purchase Forecasted quantity purchased through intertie**				**20-Year Forecasted Purchase Forecasted quantity purchased through intertie**			
	Maximum Qi Instantaneous Flow Rate	**Maximum Qa** Annual Volume		**Maximum Qi** Instantaneous Flow Rate Withdrawn	**Current Excess or (Deficiency) Qi**	**Maximum Qa** Annual Volume	**Current Excess or (Deficiency) Qa**	**Maximum Qi** 10-Year Forecast	**Future Excess or (Deficiency) Qi**	**Total Qa** Maximum Annual Volume in 10 Years	**Current Excess or (Deficiency) Qa**	**Total Qi** Maximum Instantaneous Flow Rate in 10 Years	**Current Excess or (Deficiency) Qi**	**Total Qa** Maximum Annual Volume in 10 Years	**Current Excess or (Deficiency) Qa**
1. Seattle Public Utilities	†	†	December 31, 2063	83 cfs †	20 cfs	32,127 AFY	5,097 AFY	83 cfs ‡	20 cfs	32,039 AFY	5,185 AFY	75 cfs ‡	0 cfs	27,163 AFY	0 AFY
2. Tacoma Water - 2012 Agreement §	16 cfs	8,943 AFY	December 31, 2042	0 cfs	16 cfs	0 AFY	8,943 AFY	0 cfs	16 cfs	0 AFY	8,943 AFY	N/A		N/A	
3. Tacoma Water - Future Agreement #	#	#	#	N/A		N/A		N/A		N/A		12 cfs	39 cfs	6,360 AFY	20,468 AFY
TOTALS =	†	†		83 cfs	37 cfs	32,127 AFY	14,039 AFY	83 cfs	37 cfs	32,039 AFY	14,128 AFY	87 cfs ‡	39 cfs	33,524 AFY	20,468 AFY

ADDITIONAL COMMENTS:

* Diversion Rights from White River subject to minimum instream flows, and the following schedule:
1,000 cfs (from Feb. 15 until the Spring Refill date or July 1, whichever is earlier);
400 cfs (from the Spring Refill date until Sep. 15 or the subsequent date the Fall Drawdown commences, whichever is later);
150 cfs (from the date the Fall Drawdown commences to Feb 15)

≈ S2-29920(B) defines the Regional Reserved Water Program, and does not make water available for drinking water use to Cascade.
† Quantities allowed in contract vary by year. Refer to attachment __, 2nd Amended and Restated Declining Block Water Supply Agreement between the City of Seattle and the Cascade Water Alliance.
Actuals reflect 2023, as final 2024 usage data is not available at time of production. Reflects metered usage in billing period, which does not align exactly with calendar year.
Actual maximum Qi imputed rather than directly measured.
‡ Instantaneous flow rate is not recorded. Maximum daily demand forecasted by historical Seattle system maximum peak factor.
§ While the 2012 Tacoma Agreement provides the identified quantities of water, the intertie to deliver this water has not been constructed.
# Cascade and TPU are currently developing new contracts for TPU to start providing Cascade with supply in the early 2040s. The new contracts will replace Cascade's current water sale agreement with TPU. Since the new contracts are for future supply, they are discussed in Chapter 3.
** Of this Water Right, 154,751 AF are a temporary trust water right for instream flow purposes and available to Cascade under adverse conditions per the Lake Tapps Trust Water Right Agreement.
Actuals reported in 2024 reflect impact of Mud Mountain Dam Fish Passage Phase 3 Construction Project.

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Exhibit D

Water Demand Forecast Methodology

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Cascade Water Alliance
Water Demand Forecast Methodology

Inputs and Assumptions for the Water Demand Forecast Model

Cascade has adopted the same basic water demand forecasting methodology used by Seattle Public Utilities ("SPU") in its last three water system plans. This is the "Variable Flow Factor" approach. As with simpler fixed flow factor models, current water demand flow factors are calculated by sector (single and multifamily residential, non-residential) for each Cascade Member. However, like an econometric model, the Variable Flow Factor model reflects the impacts of variables such as price, income, and water efficiency standards on water flow factors for each sector over time. This approach takes advantage of past econometric analyses to provide estimates of how some of the variables (price and income) affect demand. An end-use model is used to estimate projected impacts on water demand from fixture and appliance codes and standards.

Model, Inputs and Assumptions

- **Weather adjusted base year consumption:**
  - By sector
    - Single family residential
    - Multifamily residential
    - Manufacturing non-residential
    - Non-manufacturing non-residential
  - By service area
    - Individual Cascade Members
  - Base Year
    - 2023
  - Weather
    - Sea-Tac Airport monthly average daily temperature and total precipitation

  Sources: Monthly data on water production, wholesale purchases, wheeling between Members, and retail sales collected by Members and Cascade. Weather data from National Weather Service.

- **Demographics – Current and projected single and multifamily households and employment:** The model uses the Puget Sound Regional Council ("PSRC") Land Use Vision census-tract-level forecasts of population, households, and employment to 2050 apportioned to Member service areas. The PSRC forecast was published in 2022.

  Table 1 below displays PSRC's forecast of population, households, and employment in King County. The tables that follow contain these forecasts as they have been apportioned into water service areas. Separate tables are provided for all of King County, SPU's retail service area, and the service area of SPU's Full and Partial Contracts (F&P) wholesale customers.

Table 1. Actual[1] & PSRC Forecasts of Population, Households, & Employment
Total Cascade Service Area

		Households			
	Population	Single Family	Multifamily	Total	Employment
2010	322,396	80,989	48,831	129,820	295,937
2020	392,725	81,860	72,188	154,048	366,151
2030	450,834	88,263	91,943	180,207	419,800
2040	508,357	91,609	114,407	206,016	476,958
2050	565,561	94,140	137,924	232,064	531,511
2020-2050					
Growth	172,836	12,280	65,736	78,016	165,359
% Change	44.0%	15.0%	91.1%	50.6%	45.2%
Annual Rate	1.2%	0.5%	2.2%	1.4%	1.3%

Since the number of households is projected to grow somewhat faster than population through 2050, household size is projected to decrease slightly. Per household flow factors are reduced each year by the percent change in household size times the elasticity of demand with respect to household size. This elasticity is estimated to be **0.38** based on data from an end-use study conducted by the Seattle Water Department in the mid-1990s.

- **Base year flow factors:** Base year flow factors are obtained by dividing the weather-adjusted base year consumption for each sector (e.g. single family residential) and service area (e.g. Bellevue) by the corresponding number of households or employees in the base year.

- **Elasticity of residential demand to changes in real (inflation adjusted) household income:** Household income is generally expected to have a positive effect on water demand. A literature review revealed a range of estimated income elasticities. An elasticity value of **0.27**, representing the middle of this range, was chosen (This means a 10% increase in household income would be expected to cause a 2.7% rise in residential demand.).

  Sources: Jegnie, Alemken, Fogarty, James, & Iftekhar, Sayed, 2021, Price and Income Elasticities for Urban Residential Water Demand: A publication bias corrected meta-analysis; Ludlum, Meg, 2006, Literature Review of Water Demand Forecasting Models.

- **Forecast of annual growth in real median household income:** *Median,* not *mean average,* household income is used in the forecast model because, with the largest share of income growth generally going to those at the very top of the income distribution, average income growth is skewed upwards. Growth in median income – the income of the households right in the middle – is more representative of the experience of most households, i.e., the bottom 90. Data from the Washington State Office of Financial Management shows that median household income in King and Snohomish counties was no higher in 2014 than it was in 1990 (adjusted for inflation). Meanwhile, disproportionate growth in the top income decile pushed *average* household income up 39% in the same period. Since 2014, however, income growth has been more evenly shared across the

[1] Census data used for 2010 population and households. 2010 employment is based on 2014 PSRC estimates.

income distribution (possibly due to in part to state and local actions to significantly increase minimum wages) so that by 2023, median and average household income had both grown about 15%. Taking the whole period 1990-2023, real median income has increased by 11.5% (averaging 0.3% annually) while real average income has grown 62% (1.5% annually). In the demand forecast model, it is assumed median household income will grow at **0.9%** per year – much more than the historical average for median income but considerably less than the historical growth rate for average income, and less than the unusually robust rate of growth for median income in the last decade.

- Sources: U.S. Bureau of Economic Analysis, U.S. Census Bureau, Washington State Office of Financial Management, Seattle Office of Economic and Revenue Forecasts, Emmanuel Saez of UC-Berkeley.

- **Elasticity of demand to changes in real water rates (prices):** A considerable body of literature concerning the effect of price upon water demand and the inverse relationship predicted by economic theory is now well established. However, a number of complications (complex and changing rate structures, impacts of conservation and codes, etc.) have made it difficult to estimate price elasticity with much confidence. As a result, there is a wide range of estimates in the literature. Values towards the middle of the range, though somewhat below the average, have been chosen. These are also similar to what the Seattle Water Department estimated in its 1992 econometric model of water demand. These are shown below (The value of -0.20 for single family households means that given a 10% increase in water prices, demand would be expected to decline by 2%.).

	Single Family	Multifamily	Non-Residential
Price Elasticity	-0.20	-0.10	-0.225

Sources: Ludlum, Meg, 2004, Literature Review of Water Demand Forecasting Models; Seattle Water Department, 1992, econometric water demand model; Bruno, Ellen M. & Jessoe, Katrina, 2021, Using Price Elasticities of Water Demand to Inform Policy.

- **Forecast of annual growth in real water rates (prices**): The seven Cascade Members have different water rates and different rate structures. Most retail customers face different marginal rates depending on whether they are residential or non-residential, what consumption block they fall in, and what season it is. There is no single price of water. However, the model abstracts from all these complexities by using the change in annual water bills (adjusted for inflation) for a typical single-family residential customer (using 6 ccf/month winter, 9 ccf/month summer) and typical non-residential customer (45 ccf/month winter, 60 ccf/month summer) over the period 1995-2020[2]. The average annual real increase in single family residential water bills across the seven Members varied from 0.9% to 3.6% with a weighted average of 2.7%. The averages for multifamily residential and non-residential customers were very similar. The forecast model assumes all Cascade Members will experience the same annual increases in their real water rates and they will be equal to the historical average growth rate across all Members: **2.7%** per year for residential customers, and **2.8%** per year for non-residential customers.

- **Reductions in water use due to efficiency codes and standards:** Even in the absence of utility-sponsored conservation programs, some conservation savings occur each year due to federal and state plumbing codes setting efficiency standards for showerheads,

[2] Water rate data prior to 2009 was not available for Issaquah or Sammamish Plateau Water.

toilets, aerators, and clothes washers. As old fixtures and appliances are replaced with new ones in existing buildings and new fixtures and appliances are installed in new construction, water use efficiency improves and conservation savings accrue. In addition, fixtures and appliances available from the market often become increasingly more efficient than is required by code, especially as more years have passed since the codes were updated. An end-use model was used to estimate these savings through 2060.

The model takes account of federal fixture and appliance codes adopted in 1992, 2002, 2007, 2012, 2015, and 2018[3], as well as the 1992 state plumbing code that was updated and tightened effective 2021. The model also estimates the proportion of fixtures and appliances sold in the market that meet the more stringent Energy Star, WaterSense, and Consortium for Energy Efficiency (CEE) standards, as well as how those proportions are expected to continue shifting in the direction of higher efficiency over time. The model assumes aerators, showerheads, clothes washers and toilets are, on average, replaced every 5, 10, 12, and 30 years, respectively.

Table 2. Projected Savings from Code and Standards (Annual MGD)

	Customer Types				Fixtures & Appliances				
	Single Family	Multifamily	Non-Residential	Total	Shower-heads	Toilets	Aerators	Clothes Washers	Total
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.4	0.3	0.2	0.8	0.2	0.2	0.1	0.2	0.8
2035	1.6	1.7	0.8	4.1	1.1	1.3	0.7	1.0	4.1
2045	2.2	2.8	1.3	6.3	1.6	2.2	0.9	1.6	6.3

Sources: Water Research Foundation, "Residential End Uses of Water," April 2016; U.S. EPA Office of Water; Alliance for Water Efficiency; Al Dietemann (personal communication)

- **Price/code and standards overlap:** It is believed the effects of increasing prices and water efficiency codes have some overlap. For example, a customer might have been motivated to purchase a new water-saving toilet in order to save money on their water bill. Alternatively, the customer might have wanted a new, more stylish toilet for their bathroom remodel, but because of the code, had no choice but to buy a more efficient model. Whatever the motivation, it gets counted as both a price effect and a code savings in the model. The overlap function is designed to adjust for what might otherwise be double-counting. The model assumes **50%** of whichever effect is smaller overlaps with the other, so that amount is subtracted from the estimate of total price and code water savings. The overall effect of the overlap function is to reduce total gross price/code savings by about 14% to 16% (1.6 MGD by 2045).

- **Metered irrigation:** Besides the single family, multifamily, and non-residential customer classes, most Cascade Members have created a non-residential metered irrigation class and have slowly been adding accounts to this class over the decades. From a few hundred accounts at Cascade's inception, there are now about 2,700 irrigation accounts in Cascade's service area with annual water consumption averaging 425,000 ccf, or almost 1.0 MGD, mostly in the peak season. The model assumes there will be no growth in this customer class and its consumption will remain constant at **425,000 ccf** through 2045. In

[3] The US Department of Energy adopted a two-phase residential clothes washer efficiency standard, with the first phase effective March 7, 2015, and the second, more stringent phase, effective for January 1, 2018.

reality, the number of irrigation meters and the consumption through them will probably increase over time. However, this is simply a matter of accounting. Growth in the irrigation class will be offset by a corresponding reduction in the non-residential class which will not affect total water consumption.

- **Non-revenue water:** Non-revenue water for each Member has been calculated by subtracting annual metered water sales from total annual net supply (total supply from a Member's wells and wholesale purchases minus any water sold wholesale) and expressed as a percent of net supply. Percent non-revenue for each Member is shown in the table below. Base year percent non-revenue for each Member is calculated by averaging all (or most) of the years from 2016 through 2023. It is assumed the percent non-revenue will increase at a rate of half a percent a year as distribution systems age and the frequency of system leaks increases. By 2045, the weighted average percent non-revenue water for all Cascade Members is projected to increase from **7.3%** to **8.2%.**

Table 3. Actual and Forecast Percent Non-Revenue Water

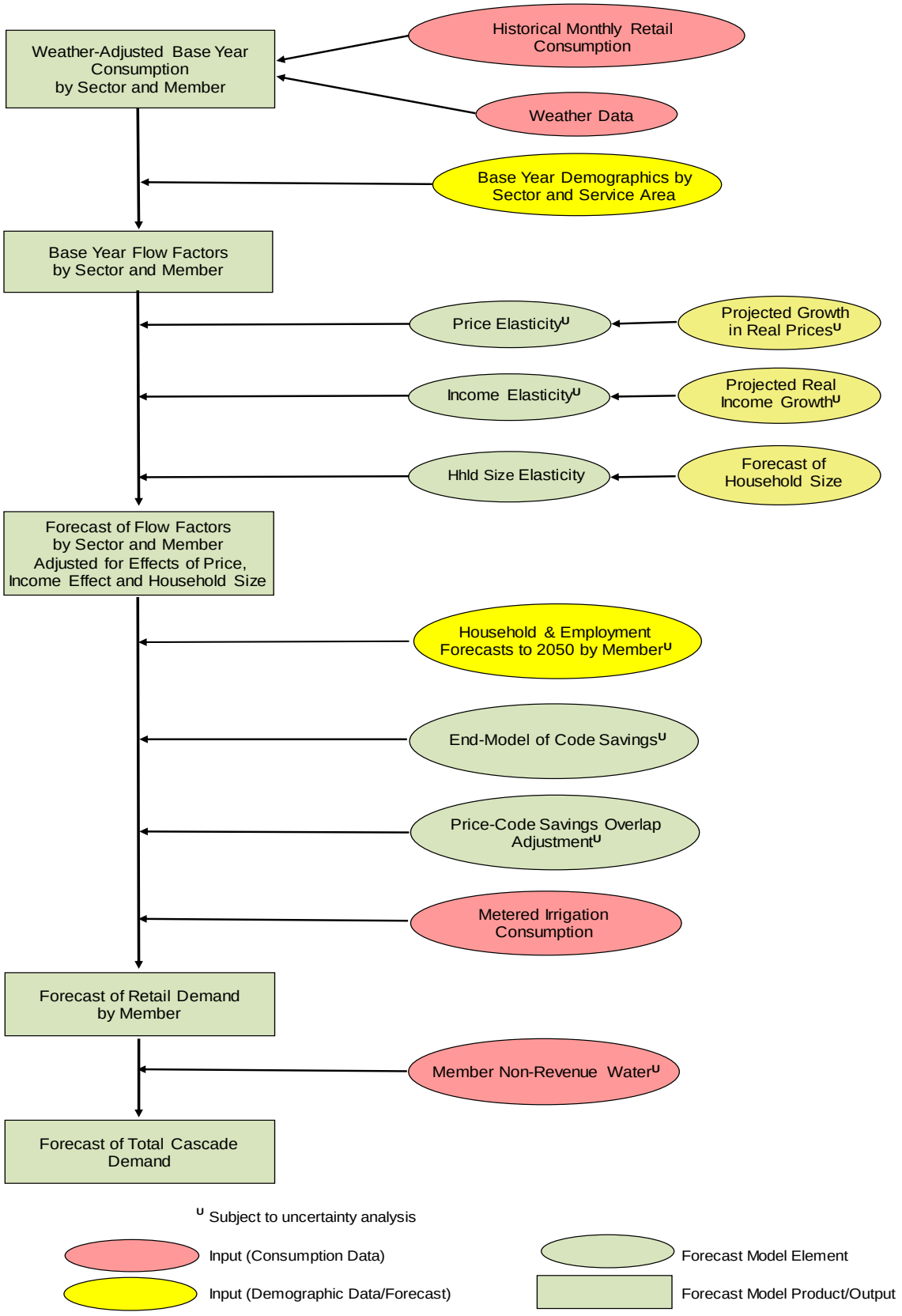
	Bellevue	Kirkland	Redmond	Skyway	Tukwila	Issaquah	Plateau	Cascade
Actual								
2016	5.0%	8.5%	2.8%	9.5%	9.0%	9.7%	4.9%	6.3%
2017	8.3%	6.6%	0.0%	10.1%	2.6%	7.4%	5.3%	7.4%
2018	6.3%	6.7%	1.0%	12.5%	5.9%	8.0%	4.6%	6.3%
2019	8.6%	8.0%	7.0%	23.7%	7.2%	8.8%	7.5%	8.0%
2020	4.9%	10.1%	9.1%	17.3%	8.8%	9.1%	3.3%	6.7%
2021	10.2%	5.3%	4.6%	18.9%	12.2%	7.0%	3.7%	7.1%
2022	6.0%	7.1%	9.1%	13.5%	7.7%	3.8%	4.9%	6.9%
2023	6.6%	11.7%	12.5%	8.1%	15.9%	2.4%	5.6%	8.5%
Forecast *								
Base Year	7.0%	8.0%	8.5%	10.7%	7.7%	8.3%	5.0%	7.3%
2035	7.4%	8.5%	9.0%	11.4%	8.2%	8.8%	5.3%	7.8%
2045	7.8%	8.9%	9.5%	12.0%	8.6%	9.3%	5.6%	8.2%

* Percent non-revenue water is assumed to increase at an annual rate of 0.5%.

** Base year percent non-revenue water is the average for 2016 through 2023 for most members. Some years for some members (indicated in red) are excluded when the values are atypical due to various factors thought to be temporary.

- **Model structure:** The structure of the forecast model is summarized in the flowchart below. Red ovals are consumption-related inputs, yellow ovals are demographic inputs, green ovals are model elements, and green rectangles are intermediate or final model outputs.

Figure 1. Forecast Model Structure



Results

Cascade's water demand is expected to increase slightly over the next 20 years from 36.4 MGD in 2023 to 39.3 MGD in 2045. This is a very slow rate of growth, only 0.3% per year, and much lower than the forecast of 1.2% annual population growth. The primary reason for this is the dampening effects on water demand of rising water prices, more stringent water efficiency codes and standards, and having most (84%) of household growth taking place in the multifamily sector. With the current 33.3 MGD block of water from SPU and Members' independent sources of supply, there would be enough water to meet Cascade's demand through 2045. However, the current contract with SPU has the block ramping down from 33.3 MGD in 2039 to 24.3 MGD in 2045 and continuing to decline 1.0 MGD per year, stopping only in 2064 when the block has been reduced to 5.3 MGD. Once the block begins to decline, Cascade will require additional water to meet its forecast demand after 2041.

Figure 2. Cascade Water Demand Forecast (2023-2045)

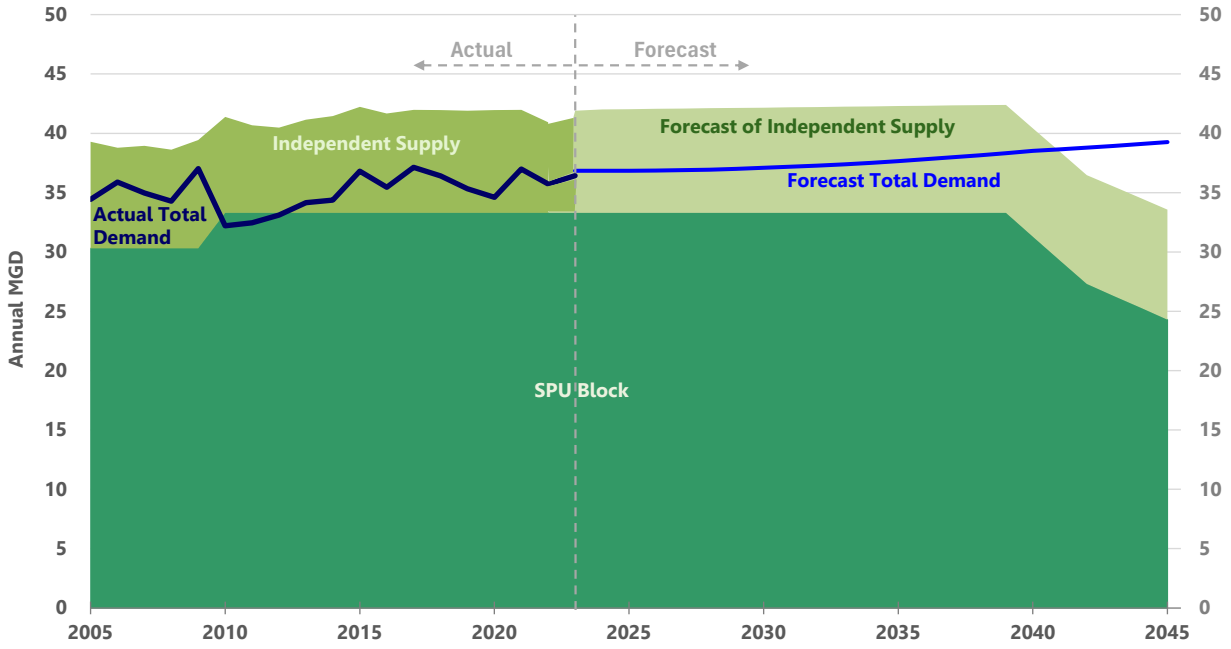


Table 4. Actual and Forecast Water Demand and Supply (Average Annual MGD)

	SPU Block	Independent Supply[1]		Total Supply		Total Cascade Demand	
	Contract	Actual	Forecast	Actual	Forecast	Actual[2]	Forecast
2005	30.3	9.0		39.3		34.4	
2006	30.3	8.5		38.8		35.9	
2007	30.3	8.7		39.0		35.0	
2008	30.3	8.3		38.6		34.3	
2009	30.3	9.1		39.4		37.0	
2010	30.3	8.1		38.4		32.2	
2011	33.3	7.4		40.7		32.5	
2012	33.3	7.2		40.5		33.1	
2013	33.3	7.8		41.1		34.2	
2014	33.3	8.1		41.4		34.4	
2015	33.3	8.9		42.2		36.8	
2016	33.3	8.4		41.7		35.4	
2017	33.3	8.7		42.0		37.1	
2018	33.3	8.7		42.0		36.4	
2019	33.3	8.6		41.9		35.3	
2020	33.3	8.7		42.0		34.6	
2021	33.3	8.7		42.0		37.0	
2022	33.3	7.6		40.9		35.7	
2023	33.3	7.9	8.6	41.2	41.9	36.4	36.8
2024	33.3		8.7		42.0		36.8
2025	33.3		8.7		42.0		36.8
2026	33.3		8.8		42.1		36.9
2027	33.3		8.8		42.1		36.9
2028	33.3		8.8		42.1		36.9
2029	33.3		8.8		42.1		37.0
2030	33.3		8.9		42.2		37.1
2031	33.3		8.9		42.2		37.2
2032	33.3		8.9		42.2		37.3
2033	33.3		8.9		42.2		37.4
2034	33.3		9.0		42.3		37.5
2035	33.3		9.0		42.3		37.7
2036	33.3		9.0		42.3		37.8
2037	33.3		9.0		42.3		38.0
2038	33.3		9.1		42.4		38.1
2039	33.3		9.1		42.4		38.3
2040	33.3		9.1		42.4		38.5
2041	31.3		9.2		40.5		38.7
2042	29.3		9.2		38.5		38.8
2043	27.3		9.2		36.5		38.9
2044	26.3		9.2		35.5		39.1
2045	25.3		9.3		34.6		39.3

[1] Cascade Members' Audited Independent Supply obligation totals 9.53 MGD
[2] Total consumption of current Cascade members (Covington is excluded)

Forecast Uncertainty

Forecasting water demand is highly speculative. Displaying the forecast as a line on a graph implies a degree of certainty that does not exist; Cascade's water demand in 2045 will most likely *not* be exactly 39.3 MGD. It is better to think of the forecast as a range of possible values that widens the further one goes out in time. The challenge is to define and quantify the uncertainty and put reasonable bounds around the forecast.

The forecast of water demand is itself based on forecasts of other factors that affect it – growth in income, water prices, households, employment, and the use of more water efficient fixtures and appliances – all of which are subject to uncertainty. Similarly, uncertainty surrounds the model's assumptions about price and income elasticities. The baseline demand forecast represents Cascade's best guesses about the future. However, it is prudent, especially in long-term planning, to consider the many uncertainties that could cause demand to be different from what's projected in the baseline forecast.

Modeling Uncertainty

Uncertainty has been modeled by positing probability distributions for each source of uncertainty. These distributions are inputs to an aggregate uncertainty model employing a Monte Carlo simulation[4] to characterize uncertainty associated with the baseline demand forecast.

A number of model inputs and elasticities were identified as being subject to uncertainty and are so indicated in the model structure flowchart (Figure 1). They include: forecasts of single and multifamily households and employment; average annual growth rates for water prices and household income; price and income elasticities; the impact of codes; and the extent to which price-induced conservation overlaps with code savings. Each uncertainty was modeled by specifying a probability distribution around the mean value of each variable. The sources and assumptions used to characterize the uncertainties are outlined below.

- **Forecasts of households and employment:** PSRC does not provide high and low growth scenarios in its baseline demographic forecasts. However, the Washington State Office of Financial Management (OFM) does produce high and low forecasts around its medium forecast of population by county. These were used to produce high and low ranges around the PSRC forecasts of households and employment as shown in Table 5.

[4] A Monte Carlo simulation calculates multiple scenarios of a model by repeatedly sampling values from the probability distributions for the uncertain variables. The data generated from the simulation can be represented as probability distributions or confidence intervals. Because the method is based on random chance, it was named after the city of Monte Carlo which is known for its gambling.

Table 5. Uncertainty Ranges Around PSRC Demographic Forecast Associated with High and Low Growth Scenarios

	2045	
	Low	High
Population	-9.6%	7.2%
Single Family Households	-5.4%	4.1%
Multifamily Households	-12.6%	9.2%
Employment	-9.6%	7.2%

The ranges around single and multifamily households were derived from the OFM high and low population values and the assumption that variability around the single family forecast is less than for the forecast of multifamily households. Employment is assumed to vary at the same rate as population. Also note the potential variation from forecast values is expected to be greater on the low side than on the high side. This is in part because the latest PSRC population forecast for King County is higher than the medium OFM forecast of population, so it is closer to the top of the range than the bottom[5].

- **Growth in the real price of water**: The baseline assumption is, on average, the price of water will continue to grow at historical rates – about 2.7% per year adjusted for inflation. A considerable range of uncertainty around this is assumed, **plus or minus 50%**, resulting in projected annual growth rates in real prices of between **1.4%** and **4.1%**.

- **Price elasticity:** The uncertainty ranges around price elasticity represent a synthesis of the various estimates of price elasticity reported in the literature review. These are **plus or minus 50%** for single and multifamily elasticities and **plus or minus 33%** around the non-residential elasticity.

Table 6. Uncertainty Ranges Around Mean Price Elasticities

	Single Family	Multi-Family	Non-Residential
Low	-0.10	-0.05	-0.15
Mean	-0.20	-0.10	-0.225
High	-0.30	-0.15	-0.30

- **Growth in real median household income:** There is some uncertainty about future growth in household income but much more uncertainty around the distribution of that growth. That means median income is harder to predict than average income. Will most income growth accrue to the households at the top end of the income scale as it has for much of the last half century, or will it be spread more proportionally as has occurred over the last decade in King County? If the former, real income growth for the *median* household would be much less than for the *average* household. If the latter, median income growth would be close to the growth in average income, which historically has been about 1.8% per year. The baseline assumption in the demand forecast is median income will grow at

[5] Past iterations of PSRC's population forecasts were designed to match up with the medium OFM forecasts at the county level.

0.9% annually, about half the rate expected for average income. This scenario might be considered mildly optimistic, but it still represents only a slowing of the rate at which the distribution of income gets worse. The uncertainty range assumed for median annual income growth is **plus or minus 33%** or between **0.6%** and **1.2%**. Even at the top end, the assumption is median income grows more slowly than average income. The low end of 0.6% is also equal to the annual rate of median household income growth between 1990 and 2021.

- **Income elasticity:** As with price elasticity, the uncertainty band around income elasticity was derived from the various estimates of income elasticity in the literature review. A range of income elasticities from **0.19** to **0.35** (i.e., **plus or minus 30%**) around the mean value of 0.27 was chosen.

- **Savings from code, standards, and market transformation:** Code savings could be more or less than modeled. If market transformation towards fixtures and appliances that exceed code occurs slower than anticipated, replacement rates are slower than modeled, or the stock of fixtures and appliances currently in place is more efficient than specified in the model, code savings could be less than estimated for the baseline forecast. Alternatively, the opposite hypotheticals would result in greater code savings than estimated for the baseline forecast. A range of **plus or minus 30%** around the baseline code savings values (which ramps to 6.3 MGD by 2045) was chosen. Another source of code-related uncertainty is how much code savings overlap with price-induced savings. The model assumes **50%** of whichever effect (code or price) is smaller overlaps with the other, so that amount is subtracted from the estimate of total price and code water savings. For the uncertainty analysis, the amount of overlap varies from **25% to 75%**.

- **Non-revenue water:** For the baseline forecast, it is assumed percent non-revenue will increase at a rate of **0.5%** a year due to age-related increases in system leaks. By 2045, the weighted average percent non-revenue water for all Cascade Members is projected to increase from 7.3% to 8.2**%**. It is assumed in the uncertainty analysis that the rate of annual growth in percent non-revenue water could vary from **0%** and **1.0%**, producing a range in non-revenue water of **7.3%** to **9.1%** by 2045.

- **Modeling uncertainty with @Risk:** The uncertainty ranges described above are assumed to have triangle distributions with the endpoint values representing the 5th and 95th percentiles. These probability distributions become inputs to an aggregate uncertainty model using @Risk software (an add-in to Excel) which employs Monte Carlo simulation to characterize uncertainty around the baseline demand forecast. During each individual run of the Monte Carlo simulation, a value is randomly selected for each input variable based on the probability density function specified for that variable[6]. Then, the complete set of input values for that iteration is used to produce a water demand forecast. The simulation procedure performs 10,000 independent iterations, each generating a separate demand forecast. These forecasts are then pooled to obtain a probability distribution of forecast water demand through 2045.

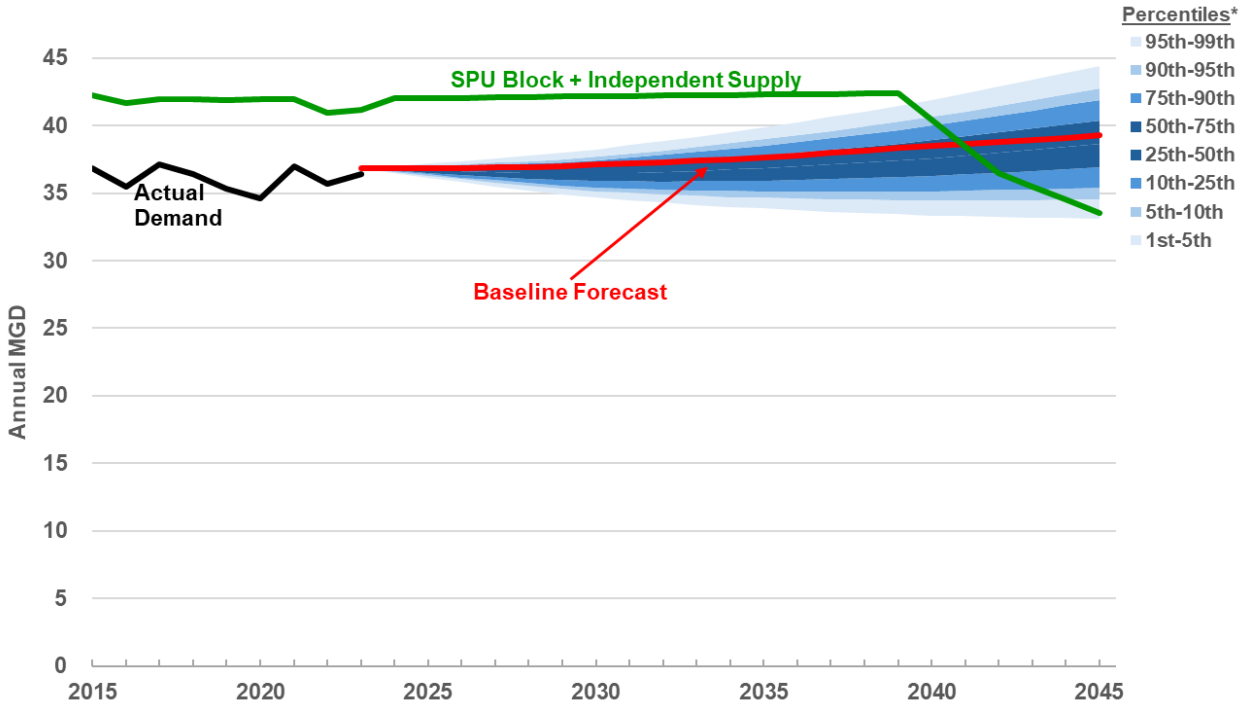
  The results of the Monte Carlo simulation are displayed in Figure 3 below. The blue bands indicate the range of uncertainty around the baseline forecast with each band representing

[6] All variables with uncertainty are assumed to be independent except for growth in households and employment. These are linked in the model because they would be expected to move together.

the indicated change in probability. For example, the top of the lowest band represents the 5th percentile. That means it is estimated there is a 5% chance actual demand will be below that level (34.5 in 2045) and, thus, a 95% chance it will be above. The bottom of the top band is the 95th percentile which corresponds to an estimated 95% probability that actual demand will be below that level (42.8 MGD in 2045).

The graph also reveals Cascade's current supply sources are sufficient to meet forecast demand through 2039, even at the top of the demand uncertainty range as modeled below. Because supply decreases sharply after 2039 due to the declining Block Contract, additional supply will be needed soon after 2039, and no later than 2045, across all levels of forecast demand in the range of uncertainty. Where the uncertain nature of future demand makes a big difference for planning purposes is in the amount of additional supply required. Simply extending the SPU block at its current level would not last long (less than 10 years) if demand were above the 75th uncertainty percentile. However, it would be sufficient to meet Cascade demand out to 2058 under the baseline forecast, and for demand scenarios lower than the baseline, it would take Cascade out beyond 2060.

Figure 3. Cascade Water Demand Forecast (2023-2045) with Ranges of Uncertainty



* Percentiles represent the probability that demand is less than the value shown. Ranges reflect uncertainty in projected household, employment, price and income growth; price and income elasticities; and conservation.

Additional sources of uncertainty that could affect future water demand, but which have not been accounted for in the uncertainty analysis, are described below.

- Weather-induced demand variability: Another source of "haziness" in the forecast is weather-induced demand variability. This is not strictly a matter of uncertainty since there is no doubt summer weather will continue to vary from year to year, and this variation will

cause water demand to fluctuate around the trend. Because base year flow factors are calculated from weather-adjusted consumption data, the forecast represents demand under average weather conditions. In any one year though, summer weather variability would be expected to boost or depress demand relative to the forecast under average weather. Analysis of Cascade Members' monthly water production and purchase data back to 2003 shows a maximum variability of about plus or minus **6%**. In other words, an extremely hot, dry summer would be expected to increase *annual* consumption *in that year* by up to 6% above the average trend. An extremely cool, wet summer would be expected to do the opposite, reducing that year's annual consumption by about 6% below the average trend. The amount by which actual demand is expected to be higher or lower than forecast due to variation in summer weather is shown as the blue band around the forecast in the graph below. Note this is based on historical weather variation and water use by customers. If the amount of weather variation around the average increases in the future due to climate change, the range of weather-induced demand variability might widen as well.

Figure 4. Baseline Demand Forecast with Range of Weather-Induced Variability

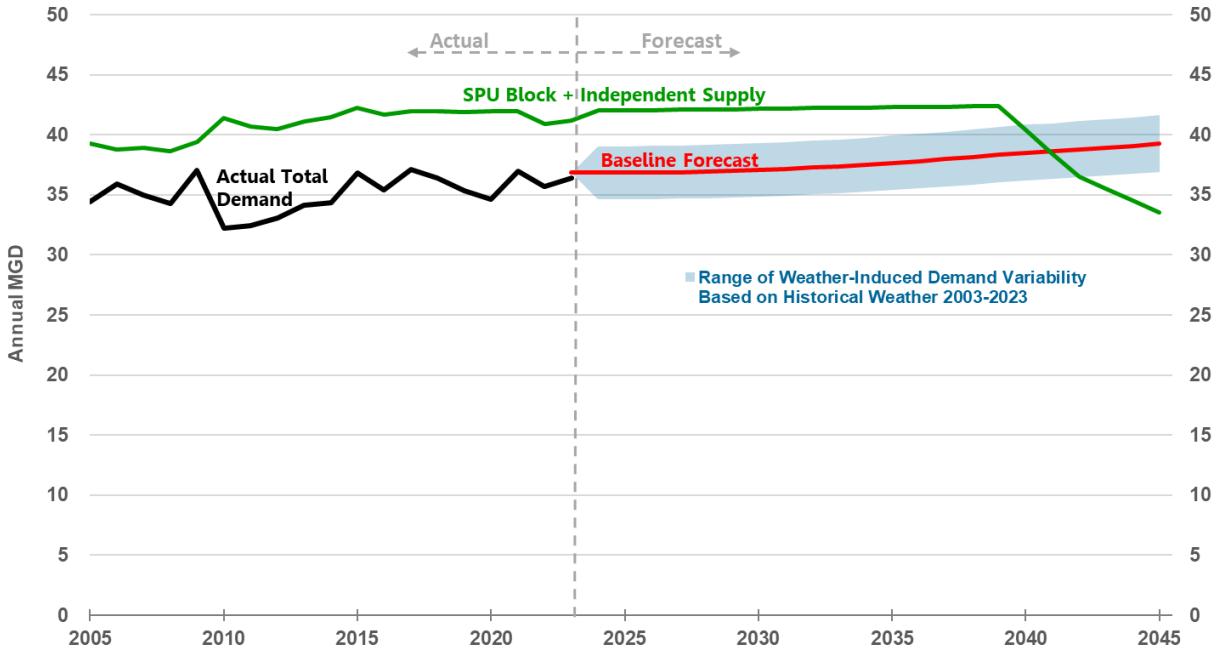


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Exhibit E

Financial Tables

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Financial Tables

Operating Fund Forecast, with Inflation

	2025	2026	2027	2028	2029	2030	2031
Annual Operating Expense	$40,037,692	$40,556,957	$40,075,359	$41,276,133	$43,302,707	$44,683,462	$46,039,616
Annual Transfers	$11,391,717	$10,015,492	$11,597,165	$12,329,248	$13,019,412	$9,197,253	$17,915,227
Rate Increases to Member Charges	3.5%	3.5%	4.0%	4.0%	5.0%	6.0%	6.0%
Annual Operating Revenue - w/ incr.	$48,505,035	$50,057,580	$51,998,162	$54,046,263	$56,707,174	$59,117,206	$62,832,212

	2032	2033	2034	2035	2036	2037	2038
Annual Operating Expense	$47,404,685	$48,843,429	$51,008,062	$52,837,843	$54,404,836	$57,018,492	$58,822,013
Annual Transfers	$22,099,037	$23,540,174	$28,632,338	$30,014,371	$38,120,132	$40,406,403	$39,738,398
Rate Increases to Member Charges	8.0%	8.0%	8.0%	8.0%	8.0%	5.0%	5.0%
Annual Operating Revenue - w/ incr.	$67,780,882	$73,106,948	$78,948,903	$85,206,029	$92,072,790	$96,639,856	$101,423,981

	2039	2040	2041	2042	2043	2044	2045
Annual Operating Expense	$61,428,802	$60,088,925	$61,461,952	$60,150,784	$60,708,804	$63,036,970	$66,146,230
Annual Transfers	$46,363,096	$48,652,563	$50,445,548	$51,166,596	$61,979,478	$65,352,756	$73,329,654
Rate Increases to Member Charges	5.0%	3.0%	3.0%	4.0%	4.0%	5.0%	5.0%
Annual Operating Revenue - w/ incr.	$106,577,073	$109,722,280	$113,039,703	$117,583,775	$122,487,340	$128,566,299	$134,962,265

Financial Tables

Capital Needs Forecast, with Inflation

	2025	2026	2027	2028	2029	2030	2031
Capital for Water Supply Contracts	$6,341,209	$5,856,828	$5,955,629	$6,055,488	$6,156,383	$6,944,870	$6,973,870
White River Lake Tapps Reservoir	$3,050,000	$3,060,000	$1,950,000	$3,310,000	$3,885,000	$3,785,000	$5,089,117
Bellevue Issaquah Pipeline	$800,000	$800,000	$50,000	$50,000	$50,000	$50,000	$0
Tacoma-Cascade Pipeline Program	$0	$1,770,000	$11,847,399	$16,949,454	$19,981,575	$63,584,683	$83,032,903
Total Capital Needs	**$10,191,209**	**$11,486,828**	**$19,803,028**	**$26,364,942**	**$30,072,958**	**$74,364,553**	**$95,095,890**

	2032	2033	2034	2035	2036	2037	2038
Capital for Water Supply Contracts	$6,973,870	$7,002,870	$7,002,870	$7,031,870	$7,031,870	$7,060,870	$7,060,870
White River Lake Tapps Reservoir	$5,267,236	$5,451,589	$5,642,395	$5,839,879	$6,044,275	$6,255,824	$6,474,778
Bellevue Issaquah Pipeline	$160,450	$0	$171,878	$0	$184,120	$0	$197,234
Tacoma-Cascade Pipeline Program	$94,736,965	$99,027,230	$125,605,744	$89,818,151	$90,800,959	$92,301,649	$51,829,618
Total Capital Needs	**$107,138,521**	**$111,481,690**	**$138,422,887**	**$102,689,900**	**$104,061,223**	**$105,618,344**	**$65,562,500**

	2039	2040	2041	2042	2043	2044	2045
Capital for Water Supply Contracts	$7,089,870	$7,089,870	$0	$0	$0	$0	$0
White River Lake Tapps Reservoir	$6,701,395	$6,935,944	$7,178,702	$7,429,957	$7,690,005	$7,959,155	$8,237,726
Bellevue Issaquah Pipeline	$0	$211,282	$0	$226,331	$0	$242,451	$0
Tacoma-Cascade Pipeline Program	$10,807,223	$14,037,016	$16,068,143	$52,072,228	$53,894,756	$98,358,987	$129,417,868
Total Capital Needs	**$24,598,488**	**$28,274,112**	**$23,246,845**	**$59,728,516**	**$61,584,762**	**$106,560,593**	**$137,655,594**

Financial Tables

Capital Funding Forecast, with Inflation

Funding Source	2025	2026	2027	2028	2029	2030	2031
Regional Capital Facilities Charges	$9,928,103	$9,729,949	$10,616,655	$11,244,175	$12,317,303	$13,645,642	$15,110,664
New Debt Proceeds	$0	$0	$0	$0	$0	$60,718,911	$79,985,225
Interest Earnings	$263,106	$848,915	$597,474	$0	$987,069	$0	$0
Water System Development Fund	$0	$0	$0	$15,120,767	$9,536,602	$0	$0
Member Charges	$0	$907,964	$8,588,899	$0	$7,231,984	$0	$0
Total Capital Funding	**$10,191,209**	**$11,486,828**	**$19,803,028**	**$26,364,942**	**$30,072,958**	**$74,364,553**	**$95,095,890**

Funding Source	2032	2033	2034	2035	2036	2037	2038
Regional Capital Facilities Charges	$15,796,553	$14,363,169	$12,861,121	$9,373,738	$9,599,516	$9,833,283	$10,073,032
New Debt Proceeds	$80,398,706	$88,761,681	$118,655,867	$83,343,433	$88,230,129	$86,900,685	$46,884,240
Interest Earnings	$0	$2,644,990	$668,450	$654,228	$535,351	$632,964	$631,632
Water System Development Fund	$10,943,262	$1,252,611	$674,099	$699,755	$726,876	$689,402	$572,687
Member Charges	$0	$4,459,239	$5,563,349	$8,618,747	$4,969,351	$7,562,009	$7,400,909
Total Capital Funding	**$107,138,521**	**$111,481,690**	**$138,422,887**	**$102,689,900**	**$104,061,223**	**$105,618,344**	**$65,562,500**

Funding Source	2039	2040	2041	2042	2043	2044	2045
Regional Capital Facilities Charges	$10,317,730	$15,847,073	$16,215,641	$16,598,947	$18,107,989	$19,663,483	$21,258,648
New Debt Proceeds	$5,895,452	$7,227,825	$0	$30,917,457	$33,128,360	$69,440,920	$98,706,137
Interest Earnings	$632,470	$711,710	$847,698	$974,287	$962,294	$1,255,255	$1,317,131
Water System Development Fund	$0	$0	$0	$0	$0	$0	$0
Member Charges	$7,752,836	$4,487,504	$6,183,507	$11,237,824	$9,386,119	$16,200,935	$16,373,678
Total Capital Funding	**$24,598,488**	**$28,274,112**	**$23,246,845**	**$59,728,516**	**$61,584,762**	**$106,560,593**	**$137,655,594**

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Exhibit F

Local Government Consistency for Wholesale Customers

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Local Government Consistency for Wholesale Customers

Pursuant to WAC 246-290-108(2), although Cascade is required to request each local government with jurisdiction over the service area to provide a consistency review, wholesale areas may be excluded from the consistency review provided the water system receiving the wholesale water complies with the requirements for a consistency review when developing a water system plan for any new connection within the service area of the system receiving the wholesale water. Cascade's service area falls within the exclusion of WAC 246-290-108(2). Cascade sought comment from the Cascade Members and adjacent water purveyors.

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Exhibit G

Outreach

- Cascade Member Outreach
- Letter to Department of Health
- Letter to Department of Ecology
- Adjacent Water Purveyor Outreach
- Public Outreach
- Comments

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Outreach Communications

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Email to Cascade Member Agencies

From:	Jami Shimada on behalf of Ray Hoffman
To:	Adib Altallal (MSO); Amanda Balzer; Carly Joerger (MSO); cynthial@skywayws.org; Ella Williams (FMCIP); Jay Krauss; Matt Ellis (MSO)
Subject:	Cascade Water Alliance DRAFT 2025 Water System Plan
Date:	Monday, January 27, 2025 7:56:50 AM
Attachments:	Cascade WSP_For Member Review_012725.pdf Cascade WSP Exhibits A-I_For Member Review_012725.pdf

Cascade Water Alliance (Cascade) is preparing its 2025 Water System Plan for submittal to the Washington State Department of Health. The 2025 Water System Plan will fulfill Cascade's responsibility to submit a plan to the Department of Health that demonstrates a water system's ability to provide timely and reasonable water service to its current and future customers. In addition, it supplements information on regional supply presented in each Members' individual water system plan.

The 2025 Water System Plan will cover the same period as Cascade's planning phase of the Tacoma-Cascade Pipeline (TCP) Program. Cascade and Tacoma Public Utilities (TPU) are in the process of finalizing two new supply agreements. Over the next two-to-three years, Cascade will focus on developing the TCP Facilities Plan. The TCP Facilities Plan will form the basis of design and requirements to construct the facilities necessary to connect Cascade's and TPU's systems.

Once Cascade completes the TCP Facilities Plan, it will develop and submit a 10-year Water System Plan to the Department of Health. The alternatives for sizing and routing transmission facilities and other key recommendations from the TCP Facilities Plan will be incorporated into Cascade's next Water System Plan.

Cascade will submit the 2025 Water System Plan to the Department of Health. Although your area is excluded from consistency review under WAC 246-290-108(2), we would appreciate your review and comment on the attached Draft by Wednesday, February 12, 2025. Cascade will consider no response as a confirmation of your Member agency's support.

In addition, an informational public hearing will be held in Cascade's office on March 12, 2025, at 1 pm.

If you have any questions, please contact Melina Thung, Cascade's Chief of Staff, at 425.628.4017 or at mthung@cascadewater.org

CASCADE WATER ALLIANCE
cascadewater.org

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CASCADE WATER ALLIANCE

March 3, 2025

Krista Chavez
Washington State Department of Health
NW Office of Drinking Water
Krista.Chavez@DOH.WA.GOV

Re: Cascade Water Alliance DRAFT 2025 Water System Plan

Dear Ms. Chavez,

Cascade Water Alliance (Cascade) has completed a draft 2025 Water System Plan (WSP) and is pleased to submit the WSP for review by the Washington State Department of Health NW Office of Drinking Water (DOH). Cascade's WSP supplements information on regional supply presented in each of Cascade Members' individual water system plans. In addition to the draft WSP, also included in this submittal are the DOH Project Approval Application Form, list of adjacent purveyors, and pre-planning checklist.

Per Cascade's meeting with DOH on September 26, 2024, Cascade's 2025 WSP does not cover a 10-year period. Instead, it covers Cascade's planning phase of the Tacoma-Cascade Pipeline (TCP) Program. Cascade and Tacoma Public Utilities (TPU) are in the process of finalizing two new supply agreements. Over the next two-to-three years, Cascade will focus on developing the TCP Facilities Plan. The TCP Facilities Plan will form the basis of design and requirements to construct the facilities necessary to connect Cascade's and TPU's systems.

Once Cascade completes the TCP Facilities Plan, we will develop and submit a 10-year WSP to DOH. The alternatives for sizing and routing transmission facilities and other key recommendations from the TCP Facilities Plan will be incorporated into Cascade's next WSP. Our tentative planned date to submit Cascade's next WSP is September 30, 2028. We will communicate regularly with DOH on the progress of the TCP Facilities Plan and any changes to the submittal date for our next 10-year WSP.

Concurrently with this submittal, Cascade is providing the draft WSP to the Department of Ecology (DOE) and adjacent utilities and jurisdictions for review. (This submittal incorporates Cascade Member comments.) In addition, SEPA review is in process, and an informational public hearing will be held in Cascade's office on April 2, 2025. Once Cascade receives and incorporates comments from DOH, DOE, adjacent utilities and jurisdictions, and the public, we will finalize the WSP. We expect to submit Cascade's final WSP in June 2025.

If you have any questions regarding this submittal, please contact Melina Thung, Chief of Staff, at (425) 628-4017 or mthung@cascadewater.org.

Sincerely,

Ray Hoffman
Chief Executive Officer, Cascade Water Alliance

CC: Brietta Carter, Department of Health

Cascade Water Alliance
11400 SE 8th Street
Suite 400
Bellevue, WA 98004

Phone: 425.453.0930
Fax: 425.453.0953

www.cascadewater.org

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Drinking Water

Project Approval Application (PAA) Form

331-149 F • Revised 11/2/2022

Please complete all appropriate sections of this application form and include it with your project.

WATER SYSTEM Information

Cascade Water Alliance	Enter ID#
Water System Name	PWS ID #
Water System Plan	King
Submittal Description	County
A-Community	0
Classification	# of Service Connections

OWNER Information

Cascade Water Alliance			Enter text
Name			Owner ID #
contact@cascadewater.org			425.453.0930
E-mail address			Phone
11400 SE 8th St #400	Bellevue		
Mailing address	City	State	Zip

PROJECT CONTACT Information

Melina Thung		Chied of Staff	
Name/Position			
mthung@cascadewater.org		425.628.4017	
E-mail address		Phone	
11400 SE 8th St #400	Bellevue	WA	98004
Mailing address	City	State	Zip

CONSULTING/DESIGN ENGINEER Information

N/A		N/A	
Name/Firm			
N/A		N/A	
E-mail address		Phone	
N/A	Enter text	WA	Zip
Mailing address	City	State	Zip

SMA Information

N/A		Enter text	
Name/SMA		SMA #	
Enter text		Enter text	
E-mail address		Phone	
Enter text	Enter text	WA	Zip
Mailing address	City	State	Zip

BILLING Information*

N/A			
Name			
Enter text		Enter text	
E-mail address		Phone	
Enter text	Enter text	WA	Zip
Mailing address	City	State	Zip

GENERAL Submittal Information

☐ Check here if you need a Box.com folder set up for transferring your project to us electronically. (You will receive an invite by email after we have received the PAA form.)

Do you have projects currently under review by us? ☐ Yes ☒ No

☐ This is a new water system (if so, include a completed Water Facilities Inventory Report Form with your project).

☐ DWSRF Loan
Application # Enter Number
Loan # Enter Number

☐ Enforcement
Docket # Enter Number
Type Enter Text

☒ Water System Plan (complete Planning Information)

☐ Small Water System Management Program (complete Planning Information)

☐ Engineering (complete Engineering Information)

☐ Group B (complete Engineering Information)

☐ Satellite Management Agency Plan (complete SMA Information)

☐ Alternate Technology (complete Engineering Information)

ENGINEERING Information

Choose Project Report	Choose Special Report or Plans
Project Report Type	Special Report or Plans
Choose Predesign Study	Choose Existing System Approval
Predesign Study	Existing System Approval
Choose Construction Documents	Choose Waiver
Construction Documents	Waiver
Choose Other	
Other	

PLANNING Information

How many connections does system currently have?	0
If system is private-for-profit, is it regulated by UTC?	☐ Yes ☒ No
Is system expanding?	☐ Yes ☒ No
Expanding service area?	☐ Yes ☐ No
Increasing number of approved connections?	☐ Yes ☐ No
If the number of connections is expected to increase, how many *new* connections are proposed in the next ten (10) years?	0
Is your system pursuing additional water rights from Department of Ecology in the next 20 Years?	☐ Yes ☒ No
Is a new intertie proposed?	☐ Yes ☒ No
Is the system located in a Critical Water Supply Service Area (is there a Coordinated Water System Plan)?	☐ Yes ☒ No
If yes, have you sent a copy of the plan to the county or responsible agency for the CWSP?	☐ Yes ☐ No
Are you requesting distribution main project report and construction document submittal exception?	☐ Yes ☒ No
If so, does the WSP contain standard construction specifications for distribution mains?	☐ Yes ☐ No
The water system/purveyor is responsible for sending a copy of the plan to:	
• Adjacent utilities for review or a letter notifying them that a copy is available for their review and where it is located	☒ Yes ☐ No
• All local governments within the service area	☒ Yes ☐ No
• County and city planning departments, one or both if applicable, adjacent water systems, etc.	☒ Yes ☐ No
List who have you sent the WSP to for review other than ODW?	See attached
Are you proposing a change in the place of use of your water right?	☐ Yes ☒ No
If "yes," the purveyor must send a copy of the WSP or SWSMP to all local governments within the service area (county and city planning departments) for a local consistency determination. Has this been completed?	☐ Yes ☐ No
What are the years of the requested plan approval period (for example 2022 to 2032)?	2025 to 2028
Does your plan follow your preplan checklist?	☒ Yes ☐ No

SMA Information

☐ Ownership only ☐ Management and Operations only ☐ Ownership, Management & Operations

Where can we find the *SMA Notice of Intent* 331-590, in your plan..... Enter Text

Please submit all documents electronically. We request one paper copy of planning documents be submitted to the address for your regional office below.

☐ **Eastern Regional Office**
Department of Health
eroadmin@doh.wa.gov
Phone: 509-329-2100

☒ **Northwest Regional Office**
Department of Health
dw.nwro.wsprojects@doh.wa.gov
Phone: 253-395-6750

☐ **Southwest Regional Office**
Department of Health
swro.admin@doh.wa.gov
Phone: 360-236-3030

Washington State Department of Health

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.

Adjacent Water Purveyor List

AGENCY	CONTACT	ADDRESS	EMAIL
Seattle Public Utilities	Kelly O'Rourke	700 5th Avenue Seattle, WA 98104	Kelly.ORourke@seattle.gov
Tacoma Public Utilities	Jessica Knickerbocker	3628 53rd St. Tacoma, WA 98409	jknicker@cityoftacoma.org
Northshore Utility District	Amanda Campbell	6830 NE 185th St. Kenmore, WA 98052	acampbell@nud.net
Woodinville Water District	Kathy Curry	17238 NE Woodinville Duvall Rd. Woodinville, WA 98072	kcurry@woodinvillewater.com
Union Hill Water Association	Teresa Fowlkes	5020 236th Ave NE Redmond, WA 98053	teresa@uhwa.org
NE Sammamish Water and Sewer	Laura Keough	940 1st Ave NE Issaquah, WA 98027	laura@nesswd.org
Coal Creek Utility District	Robert Russell	6801 132nd Pl SE Newcastle, WA 98059	rrussell@ccud.org
City of Renton Utilities	Martin Pastucha	1055 S Grady Way Renton, WA 98057	mpastucha@rentonwa.gov
Highline Water District	Jeremy DelMar	23828 30th Ave SE Kent, WA 98032	jdelmar@highlinewater.org
City of Kent	Sean Bauer	220 4th Ave S. Kent, WA 98032	sbauer@kentwa.gov
Ames Lake Water Association	Jeremy Reier	27905 NE 33rd St. Redmond, WA 98053	jeremy@ameslkwater.org
Fall City Water District	Dustin Possert	33015 SE 43rd Fall City, WA 98024	fcw@isomedia.com
King County Water District 125	Shane Young	3460 S 148th St. #110 Tukwila, WA 98168	shaneyoung@waterdistrict125.com
King County Water District 20	Michael Martin	12606 1st Ave S Seattle, WA 98168	Kcwd20@kcwd20.com
Soos Creek Water and Sewer District	William Appleton	14616 SE 192nd St. Renton, WA 98063	wappleton@sooscreek.com
King County	Dan Cardwell	201 S Jackson St. Seattle, WA 98104	dcardwell@kingcounty.gov
Pierce County Planning and Public Works	Brian Stacy	Tacoma Mall Plaza 2702 S. 42nd St. Tacoma, WA 98409	Brian.stacy@piercecountywa.gov

Preplan Checklist

Cascade, Department of Health NW Office of Drinking Water (DOH), Department of Ecology (DOE), and King County Utilities Technical Review Committee (KC UTRC) staff met on September 26, 2024 to discuss the content and time period of Cascade's water system plan (WSP). In an October 8, 2024 email, DOH provided Cascade with the following list of items to be included in the WSP. Cascade's draft WSP includes more information than is listed below.

Content Item	WSP Section
1. Cover letter describing the planning period	1. Executive Summary
2. Ownership and management – organizational chart	2. Section 1.4
3. System history and background	3. Section 1.1
4. Service area	4. Section 1.2
5. Inventory of existing facilities	5. Section 2.2
6. Related plans: Coordinated Water System Plan, watershed protection plans, etc.	6. Section 2.7
7. Shortage management plan	7. Section 2.5, Exhibit A
8. Consistency from local planning – KC UTRC	8. Exhibit I
9. Water Supply and Operations	9. Chapter 2
10. Water Right Self-Assessment	10. Section 2.6, Exhibit C
11. SEPA checklist	11. Exhibit H*
12. Water demand and production	12. Chapter 3, Exhibit D
13. Capital projects	13. Chapter 5
14. Water use efficiency program and goal setting meeting minutes	14. Chapter 4
15. Financial programs	15. Chapter 6, Exhibit E
16. Adjacent water purveyor/tribal outreach	16. Exhibit G
17. Cascade member outreach	17. Exhibit G
18. Public customer meeting	18. Exhibit G*
19. Comment and response letters	19. Exhibit G*
20. Resolution adopting the 2025 Water Supply Plan	20. Exhibit J*

*Will be added when WSP is finalized.

CASCADE WATER ALLIANCE

March 3, 2025

Mike Shaljian
Washington State Department of Ecology
mish461@ECY.WA.GOV

Re: Cascade Water Alliance DRAFT 2025 Water System Plan

Dear Mr. Shaljian,

Cascade Water Alliance (Cascade) has completed a draft 2025 Water System Plan (WSP) and is pleased to submit the WSP for review by the Washington State Department of Ecology (DOE). Cascade's WSP supplements information on regional supply presented in each of Cascade Members' individual water system plans.

Per Cascade's meeting with DOE and Department of Health (DOH) on September 26, 2024, Cascade's 2025 WSP does not cover a 10-year period. Instead, it covers Cascade's planning phase of the Tacoma-Cascade Pipeline (TCP) Program. Cascade and Tacoma Public Utilities (TPU) are in the process of finalizing two new supply agreements. Over the next two-to-three years, Cascade will focus on developing the TCP Facilities Plan. The TCP Facilities Plan will form the basis of design and requirements to construct the facilities necessary to connect Cascade's and TPU's systems.

Once Cascade completes the TCP Facilities Plan, we will develop and submit a 10-year WSP to DOH and DOE. The alternatives for sizing and routing transmission facilities and other key recommendations from the TCP Facilities Plan will be incorporated into Cascade's next WSP. Our tentative planned date to submit our next WSP is September 30, 2028.

Concurrently with this submittal, Cascade is providing the draft WSP to DOH and adjacent utilities and jurisdictions for review. (This submittal incorporates Cascade Member comments.) In addition, SEPA review is in process, and an informational public hearing will be held in Cascade's office on April 2, 2025. Once Cascade receives and incorporates comments from DOE, DOH, adjacent utilities and jurisdictions, and the public, we will finalize the WSP. We expect to submit Cascade's final WSP in June 2025.

If you have any questions regarding this submittal, please contact Melina Thung, Chief of Staff, at (425) 628-4017 or mthung@cascadewater.org.

Sincerely,

Ray Hoffman
Chief Executive Officer, Cascade Water Alliance

Cascade Water Alliance
11400 SE 8th Street
Suite 400
Bellevue, WA 98004

Phone: 425.453.0930
Fax: 425.453.0953

www.cascadewater.org

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EMAIL TO ADJACENT PURVEYORS

March 3, 2025

To: LIST OF ADJACENT PURVEYORS

Re: Cascade Water Alliance DRAFT 2025 Water System Plan

Cascade Water Alliance (Cascade) is preparing its 2025 Water System Plan for submittal to the Washington State Department of Health. The 2025 Water System Plan will fulfill Cascade's responsibility to submit a plan to the Department of Health that demonstrates a water system's ability to provide timely and reasonable water service to its current and future customers. In addition, it supplements information on regional supply presented in each Cascade Members' individual water system plan.

The 2025 Water System Plan will cover the same period as Cascade's planning phase of the Tacoma-Cascade Pipeline (TCP) Program. Cascade and Tacoma Public Utilities (TPU) are in the process of finalizing two new supply agreements. Over the next two-to-three years, Cascade will focus on developing the TCP Facilities Plan. The TCP Facilities Plan will form the basis of design and requirements to construct the facilities necessary to connect Cascade's and TPU's systems.

Once Cascade completes the TCP Facilities Plan, it will develop and submit a 10-year Water System Plan to the Department of Health. The alternatives for sizing and routing transmission facilities and other key recommendations from the TCP Facilities Plan will be incorporated into Cascade's next Water System Plan.

Cascade will submit the 2025 Water System Plan to the Department of Health. If you have any comments, please submit them to Melina Thung at mthung@cascadewater.org by Friday, March 28, 2025. In your comment letter, please indicate the chapter and section for each comment.

In addition, an informational public hearing will be held in Cascade's office on April 2, 2025, at 1 pm.

If you have any questions, please contact Melina Thung, Cascade's Chief of Staff, at 425.628.4017 or at mthung@cascadewater.org

Attachment: DRAFT 2025 Water System Plan

Adjacent Water Purveyor List

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Pierce County Planning and Public Works	Brian Stacy	Tacoma Mall Plaza 2702 S. 42nd St. Tacoma, WA 98409	Brian.stacy@piercecountywa.gov

Public Outreach

[Public outreach documents will be added later. Cascade plans to issue a press release and public hearing notification by March 17, 2025 and hold a public hearing on April 2, 2025.]

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Comments

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Comments from Bellevue

Bellevue submitted the following comments to Cascade on February 25, 2025. The comments were noted directly on the draft Water System Plan.

Table of Contents

1. Some sections that are typically required (DOH 331-068 WSP Guidebook) appear to be missing, maybe requirements are different for regional supply?
2. Source Water Protection Chapter, including the Watershed Control Program for Cascade sources required?
3. Operations and Maintenance Chapter required? Shortage Management Plan could be part of this Chapter.

Executive Summary

4. Clarify why peak day so much lower than average two years later? Maybe *After 2062 following anticipated development of Lake Tapps for municipal supply, Cascade will receive.... [referring to the new contracts with TPU]*

Table 1.1

5. *[Bellevue's population is]* 162,200

Section 2.1. Contracted Supply

6. and Bellevue (RH545 Zone, only reason for question mark is if it meets the definition of "wheeled" water)? *[referring to wheeled water]*
7. Table 2.2: The flow limits in this table are not presented consistently with the 2020 management agreement, which groups the limits by segment. Is there a more recent management agreement? If not, this table should be revised for consistency with the 2020 management agreement.
8. Table 2.2: *[The last column]* should say guaranteed.

Figure 2.2. Schematic of Cascade's Water Rights

9. Significance of the 1-4 numbering? Add to legend?

Section 3.3.1. Dealing with Uncertainty

10. Were impacts from the recently passed House Bills 1110 and 1337 considered in the variable flow model?

Section 3.4.1. Supply Through 2045

11. Any annual average limit? *[referring to the 2025 Wholesale Agreement]*

Section 5.2. Bellevue-Issaquah Pipeline (BIP) CIP

12. Is this referring to pipe segment joints or at specific components?

Section 5.3. Tacoma-Cascade Pipeline (TCP) Program

13. This sentence would fit well in Paragraph 2 of Section 5.3. *[referring to the TCP map]*

Figure 5.1. Map of Potential Future Water Supply System

14. Is there any initial consideration for what will happen to the SPU transmission lines running through Bellevue as service declines. Also, Bellevue currently receives water off of the East Channel Bridge Pipeline, will there be a future parallel line there also?

15. CIP summary table with annual allocations of project costs for 10-year planning period and additional column for 20-year deferred projects? Include annual costs for ongoing programs and fixed/variable date cost estimates for CIP projects.

Table 6.1. Statement of Revenue and Expenses and Changes in Net Assets

16. Would also like to see annual volume of water sold included in this summary.

Exhibit D. Water Forecast Demand Model

17. This is likely to continue growing as changes to climate and urban road standards are driving installation of irrigation systems along transportation redevelopment projects. *[referring to metered irrigation customer class]*

18. Bellevue's rate of consumption has grown at an average rate over 1.5% since 2020. And population growth has averaged just under 1.7%. While this may be atypical for the whole service area, if the actual growth rate is closer to this than the assumed 0.3% how would available water volume be impacted? *[referring to projected demand through 2045]*

From: Matt Ellis
To: Ray Hoffman
Cc: Melina Thung; Henry Chen; Gaby Wolff
Subject: RE: Cascade Water Alliance DRAFT 2025 Water System Plan
Date: Wednesday, February 12, 2025 1:44:35 PM

Hi Ray,

Issaquah has completed our review of the draft water system. Below are our comments:

Table 2.2

Missing Issaquah connections:
Intersection of SR900 and Newport Way NW – 12" Meter.
650 1st Ave NE – 10" Meter with Sammamish Plateau

5.2 – Missing CIP: BIP relocation for WSDOT fish passage project at Lewis Creek

Let me know if you have any questions. Thanks,

Matthew Ellis, PE (he/him/his)| Utility Engineering Manager | City of Issaquah Public Works
Cell: (425) 539-3654 | **Direct: (425) 837-3410** | Report Spills: (425) 837-3470

City of Kirkland Comments on CWA WSP

February 2025

Alignment of Water Demand Projection & Regional Planning Coordination

Page 26 of Cascade's Plan includes a footnote highlighting discrepancies in water demand projections:

- Member agency forecasts project an annual growth rate of 1.2%.
- Cascade's projections estimate a significantly lower rate of 0.3%.

We appreciate the productive meeting on February 24, 2025, to discuss these discrepancies. It was mutually recognized that two primary factors contribute to the variance: differences in forecasting models and future growth assumptions.

Cascade utilizes a variable flow factor model, which accounts for variables such as price, income, and conservation over time. In contrast, some member agencies may use a fixed flow factor model. Regardless of the model used, household and employment growth remain key drivers. Per Exhibit D, Cascade relies on the Puget Sound Regional Council's Land Use Vision Census-Tract-Level forecasts through 2050, while Kirkland bases its projections on King County's Countywide Planning Policies (CPPs), which incorporate the impacts of missing middle housing and accessory dwelling units (ADUs). These differences significantly influence Kirkland's demand projections.

Cascade has committed to issuing a letter to address supply sufficiency concerns and mitigate the risk of the Washington State Department of Health (DOH) invalidating Kirkland's plan due to inconsistencies. However, resolving these data discrepancies remains critical to ensuring regional planning alignment and compliance with the **2012 Joint Agreement**, which mandates coordination between Cascade and its member agencies. The agreement also stipulates that each member's comprehensive water or system plan must align with Cascade's adopted plans.

Both Cascade and Kirkland staff acknowledge the importance of planning alignment and agree that coordination of model inputs and outputs is essential. We appreciate Cascade's commitment to sharing the individual demand forecast for Kirkland, allowing for further evaluation. Additionally, we recognize the value of early collaboration in establishing projection inputs to strengthen regional planning efforts.

Correction to Table 1.1 (Page 2)

The City of Kirkland's 2023 Water Service Area population is 49,200, rather than the 47,900 indicated in the table. We kindly request this correction.

Confirmation of Future Peak Demand Supply

It is noted that peak demand can reach 56.57 MGD. According to Section 3.3.1 of Cascade's Plan, the available supply is projected to be 42 MGD until 2039, decreasing to 33.6 MGD by 2045. While this supply appears sufficient to meet the projected average demand —Figures 3.2 and 3.3 indicate that peak demand can surge to 56.57 MGD during dry summer months.

Given the potential for more extreme water usage patterns due to climate change and increased summer demand, we seek confirmation that Cascade will be able to meet the region's future Peak Daily Demand. Specifically, during our meeting, we raised concerns regarding Cascade's ability to supply Kirkland's projected Peak Day Demand.

We appreciate learning that the supply contract includes provisions to meet peak demands. It is our understanding that Cascade will supplement the current plan with additional background information on the contract language related to peak demand commitments. Additionally, efforts will be made to improve the projection of peaking factors in Cascade's next 10-year Water System Plan (WSP).

Maximum Instantaneous Flow Rate Availability

In 2023, the maximum instantaneous flow rate recorded through Kirkland's three interties (Stations 72, 74, and 75) was 9,848 gpm. However, the combined **Current Limit** across these interties is 9,820 gpm, with a **Proposed Limit** of 9,860 gpm. Given that these interties supply water to Kirkland, Bellevue, and Redmond, is there a strategy in place to accommodate anticipated increases in instantaneous flow demand? As demand is expected to soon exceed the proposed **Maximum Instantaneous Flow Rate** permitted by SPU, we would appreciate insights into Cascade's approach to addressing this challenge.

Hydraulic Gradient Requirements

The contracted hydraulic gradients outlined in Table 2.2 (Page 8) do not currently meet the system needs for Kirkland, Bellevue, and Redmond. The three interties supply the **545 Zone Reservoir**, which cannot be fully filled under the minimum hydraulic gradients at two of the interties (Stations 72 and 75).

Will the future **TCP program** be designed to provide the required hydraulic gradients at the necessary flow rates? If not, should Kirkland, Bellevue, and Redmond anticipate the need to fund and construct additional infrastructure to meet these requirements? Clarifying this matter is essential for member agencies as they update their individual WSPs.

Tacoma-Cascade Pipeline (TCP) Facility Plan

Section 5.3 and Figure 5.1 provide a general overview of the **future Tacoma-Cascade Pipeline (TCP) program**. While we understand that the specific connection details will be determined through the TCP Facilities Plan (2025–2027), we noticed that the preliminary concept ends in Redmond without a direct connection to Kirkland.

We would appreciate further insights into this planning decision. As the concept continues to evolve, Kirkland is interested in participating in the design process by providing local operational knowledge to ensure that the final facility meets the needs of member agencies.

Seismic Resilience Planning

Section 2.2 mentions the potential need for seismic joints in the long term. We commend Cascade's foresight in addressing seismic resilience to prevent water supply disruptions.

However, seismic upgrades typically require system-wide replacements rather than joint retrofitting. It is unclear whether such upgrades have been factored into Cascade's **Capital Improvement Plan (CIP)**. We would appreciate Cascade providing further details on whether funding for seismic resilience improvements has been incorporated into future capital planning.

Clarification of Water Demand Figures

To improve clarity, Figures 3.2 and 3.3 should be labeled **"Demand from Cascade Members"** to indicate that the recorded water usage represents demand rather than supply.

Updates to Figures 1.1 and 2.3

The document notes that **Figure 1.1** is being updated. Will this update also apply to **Figure 2.3**?

Water Use Efficiency (WUE) Program Goals

Section 4.1 outlines Cascade's **Water Use Efficiency (WUE) program goals through 2026**. Since Kirkland's WUE program aligns with Cascade's, we would appreciate confirmation of Cascade's projected WUE goals beyond 2026. If adjustments are expected, we kindly request further details to ensure alignment with Kirkland's WSP.

Wholesale Water Supply from TPU

Figure 3.10 indicates that TPU's wholesale water supply begins in 2026. However, this does not appear to align with other projections in the plan. If there is additional context explaining this timeline, we request further clarification to ensure consistency.

Comments from Redmond

Redmond submitted the following comments to Cascade on February 25, 2025. The comments were noted directly on the draft Water System Plan.

Figure 3.1. Average Daily Water Demand, Temperatures, and Rainfall

1. Has the general trend upward in temperature (reflecting climate change) been factored into assumptions?

Figure 3.10. Cascade Water Demand and Supply Forecast (Through 2099)

2. Given that the Cascade demand numbers are not conservative it seems like a bit more buffer is needed as far as getting Lake Tapps 1 and 2 online (though it is a very long time before needed). Consider adding a 25th and 75th percentiles to graph to show range potential timeline bringing Lake Tapps on line.

Section 3.5. Reclaimed Water

3. This Agreement expires on January 1, 2026. Will there be work to either finalize the template or extend the Agreement?

4. Suggest adding in information about coordinating with King County Wastewater regarding the County's RWSP update.

Table 4.1. Water Efficiency Annual Savings

5. Should be GPD *[referring to second column header]*

Section 4.3. 2024 Water Efficiency Goal Meeting

6. It is not apparent that this meeting was for the public. Please update to clarify. How was this advertised to the public? Since there was no public participation, perhaps a new strategy of advertisement needs to be implemented.

Section 5.3. Tacoma-Cascade Pipeline (TCP) Program

7. And updates on forecast and timelines to transition to Tacoma Supply. *[referring to work that will commence upon completing the TCP Facilities Plan]*

Exhibit D. Water Forecast Demand Model

8. Table 3: This number was adjusted down after further analysis of information from Kirkland. *[referring to Redmond's 2023 actuals]*

9. Figure 2: Our numbers show demand increasing 16% from 2023 to 2033 and over 30% from 2023 to 2043. That is an average growth rate of 1.6% per year. Given that rates of reduction due to conservation have flattened out in the last several years, Cascade's growth rate does not seem conservative enough. Redmond alone is anticipating growth of 6.66 mgd peak demand over 20 years. If other members have similar demand growth

and independent supply capabilities are maxed currently, there will be a significant difference between supply and demand.

10. Table 4: Forecasts for independent supply seem high given actual supply numbers. What is Redmond's share?

Exhibit H. King County Utilities Technical Review Committee Letter

11. Per our Ops Supervisor, Redmond does distribute water in incorporated King County and believes other members may also distribute to unincorporated King County.

Sammamish Plateau Water

1510 228th Avenue SE
Sammamish, WA 98075
Main: 425.392.6256
Fax: 425.391.5389
www.spwater.org

February 24, 2025

Ray Hoffman, CEO
Cascade Water Alliance
11400 SE 8th Street, Suite 400
Bellevue, WA 98004

Re: Cascade Water Alliance DRAFT 2025 Water System Plan

Dear Mr. Hoffman,

Thank you for the opportunity to review the Cascade Water Alliance DRAFT 2025 Water System Plan (WSP). Sammamish Plateau Water and Sewer District (SPWSD) staff has collectively reviewed the draft and is providing comments in response to CWA's request for input. Our comments are suggestions for improving plan content as a useful tool for documenting current conditions and making the plan a resource for staff and elected officials who may transition into the CWA dynamics of regional water planning.

We recognize the work that has gone into preparing this WSP extension and appreciate the opportunity to contribute to its finalization. Below, we highlight key areas where additional details or considerations could enhance the WSP's effectiveness and ensure alignment with the shared goals of all member agencies. These are grouped by general category and may not strictly follow the order encountered in the WSP.

<u>Mapping:</u>

1. The service area boundaries for SPWSD in Figures 1.1 and 2.3 only include those areas that have been formally annexed to the District. These should be updated to include all areas within the SPWSD water service area, that matches those approved through the East King County Coordinated Water System Plan (EKCCWSP). Ensuring that these boundaries reflect the most up-to-date service coverage will provide clarity in future expansion discussions and growth projections.

2. Figure 1.2 – BIP – please identify the Issaquah Interties on the map.

<u>Capital Improvement Planning</u>

3. Please provide 10-year and 20-year CIP plans for all key assets to enhance long-term financial planning and investment prioritization. Clearly defined project timelines and cost estimates will allow agencies to better align their financial planning efforts with Cascade's infrastructure investments. Information on potential and expected projects are currently scattered throughout the WSP. Bringing them together in one table would be beneficial. This would include: 1) Existing WRLTR, 2) BIP – seismic

upgrades and parallel main, 3) TCP Connection to TPU, and 4) Development of Lake Tapps Water Supply (per Section 2.6.1 in 2065). Seeing all projects together would clarify schedules and the relationship between several future projects. Adding a Future Projects column for those projects that are beyond the 20-year CIP will show the full breadth of major projects.

4. For each of the major CIP categories, please include identified studies and projects, such as those listed in the WSP for the WRLTR.

5. The confidence associated with the cost estimates should also be noted. For instance, identifying Class 5 cost estimates (with -50% to +100% variability) for major projects such as the Tacoma-Cascade Pipeline (TCP) will help ensure informed decision-making and financial planning. Acknowledging this variability and providing best-case and worst-case financial projections will allow members to anticipate potential cost changes and budget accordingly.

6. The Bellevue-Issaquah Pipeline (BIP) is a critical asset, and proactive resilience planning is important for regional reliability. The WSP notes a future need for a seismic vulnerability study, but does not indicate a year or range of years, or provide an estimate of cost. The Capital Needs Forecast table in Exhibit E includes expenditures for capital needs in most years, but not any indication of the associated project(s). Additionally, a Capital Project for the assumed improvements identified by the study could be included as a placeholder to clarify the estimated timing of this future expense.

Asset Management

7. Establishing a structured condition assessment program for all critical infrastructure, including Lake Tapps, the BIP, and future transmission mains, will support proactive maintenance strategies and asset management. Routine assessment and condition monitoring will ensure that infrastructure remains reliable and cost-effective in the long term. Providing details on anticipated maintenance schedules and prioritization criteria will improve planning across all agencies.

Operation and Maintenance

8. Providing additional details on how Cascade will operate and maintain the Tacoma Public Utilities (TPU) intertie will strengthen understanding of operational responsibilities. A comprehensive operations and maintenance (O&M) plan should be developed to define the roles, responsibilities, and coordination procedures between Cascade and TPU. Establishing a structured repair and replacement (R&R) program, including prioritization criteria and funding mechanisms, will ensure the long-term functionality and sustainability of the infrastructure. Additionally, implementing a performance-based monitoring system with regular inspections, condition assessments, and predictive maintenance modeling will support data-driven asset management and improve reliability.

9. The plan should recognize anticipated functions and costs to operate and maintain CWA assets, existing or proposed, to deliver regional supply to member agencies, including estimated operation costs. This appears to be a financial gap which is not addressed.

10. Cascade's WSP should also consider emerging water quality concerns, particularly regarding potential contaminants such as PFAS in the White River Lake Tapps Reservoir (WRLTR). Establishing baseline water quality data collection and outlining a long-term strategy for source water protection will help safeguard public health and maintain compliance with evolving regulations. Addressing contaminants of emerging concern related to water quality and potential treatment may significantly affect financial projections.

Conservation & Shortage Management

11. Expanding discussion of measures to reduce peak season demand would be beneficial. Including additional detail on strategies such as pricing adjustments, rebate programs, and education campaigns will provide agencies with useful tools to manage seasonal demand fluctuations effectively. Establishing clear methodologies for measuring program effectiveness will strengthen these initiatives.

12. The plan does not recognize the use of AMI or other emerging technologies as tools for conservation and non-revenue water management. Many CWA members are transitioning to AMI platforms which result in significant water conservation due to leak detection and have a wealth of data which can be used for supply management. Encouraging and supporting the incorporation of Advanced Metering Infrastructure (AMI) and other innovative conservation technologies will support conservation efforts.

13. Please provide information regarding where Conservation and Water Efficiency fit into the Organizational Chart in Figure 1.2

14. Section 4.3 on the 2024 Water Efficiency Goal Meeting indicates that a 1-hour meeting was "held" in December 2024, and nobody attended other than the meeting organizer. Please expand on this paragraph to indicate and clearly clarify that
    - The meeting was intended for the General Public to attend, and how this meeting was advertised.
    - Clarify that Cascade Member agencies were not specifically invited to the December 13, 2024 meeting. (SPWSD reviewed emails and could not find an announcement or invitation to this 2024 meeting, although invitations to prior years meetings were found.)

15. The Shortage Management Plan (SMP) should align with Seattle Public Utilities' updated shortage plan and clarify how new TPU agreements will impact future supply resilience. Addressing evolving regional needs will ensure preparedness for supply challenges. This will also allow members to proactively adjust their local water shortage response strategies to be consistent with regional efforts, reducing confusion during periods of water restrictions.

Finance

16. Increasing transparency around minimum demand share agreements can help members plan effectively. Please clarify how demand shares are calculated and how allowing for flexibility in meeting future demand fluctuations would benefit all agencies. Providing an explanation of how fluctuations in growth rates impact these agreements will improve long-term demand planning and ensure that each member agency has a clear understanding of their obligations.

17. Offering a breakdown of projected rate impacts by member agency and translating long-term cost projections into CERUs (Customer Equivalent Residential Units) will improve financial transparency and forecasting. This will allow members to better assess the financial implications of planned infrastructure investments and make informed decisions regarding their rate structures. Providing historical trends in rate changes along with future projections will support effective financial planning.

18. The financial section of the WSP would benefit from additional clarity regarding Regional Capital Facilities Charges (RCFCs) and how they relate to the Capital Improvement Plan (CIP). Providing a direct correlation between anticipated charges and planned projects will improve financial transparency for all member agencies.

19. Other specific comments for the Financial Program:
    - A discussion of how transmission system non-revenue water is accounted for would provide useful insight into overall system efficiency. Ensuring that best practices are in place for leak detection and loss mitigation will support overall conservation goals and system sustainability.
    - Water Sales or Demand Share: Expand the language to recognize that the member demand share cost allocation should be defined as based on 3-year rolling average of ADD or Peak Season ADD and list the current members rating methodology. This would be informative to all members.
    - We request Section 6.3 be revised to include a table depicting a 10-year cost projection using a CERU metric which includes the projection by member of future cost distribution/member charges. This would allow members to project how the 10-year projections may impact individual agencies and customers.
    - Figure 6.1 Breakdown expenditures by categories such as Admin, Water Contracts, and Debt Service
      These are discussed in the text, but then not followed through in the expenses.
    - Figure 6.3 Forecasted Sources
      Anything that equals new debt = that will translate to new member charges – and that should be recognized. Either as a figure or footnote.

<u>General</u>

20. Ensuring alignment with Member Water System Plans and considering the impact of legislative changes for increased housing density initiatives such as Washington HB 1110, will help Cascade adapt to evolving regional growth patterns.

21. Exhibit F – Outreach was not included in the draft WSP. SPWSD requests the opportunity to review this section before the final plan is submitted, as outreach efforts play a vital role in engaging stakeholders and informing conservation strategies.

22. We recommend including a table to supplement Table 2.3 which summarizes member independent supply water rights by member agency.

23. The Section 3.4.2 of the plan references “measures to reduce peak season demand” but does not expand upon what these measures may be. We recommend including more information.

SPWSD greatly appreciates Cascade's leadership in regional water planning and the opportunity to contribute to this important process. We would be happy to meet to review or clarify our comments if it would be helpful. We look forward to continuing collaboration to refine and enhance the WSP in a way that benefits all member agencies.

Sincerely,

John C. Krauss
General Manager

cc: Sammamish Plateau Board of Commissioners

From: Andy Tuchscherer
To: Ray Hoffman; Melina Thung
Cc: Jay Regenstreif; Jackson Dove; Jay Krauss
Subject: RE: Sammamish Plateau WSP Comments
Date: Wednesday, February 26, 2025 3:55:12 PM
Attachments: image002.png
image003.png

One additional comment

Table 2.2, pages 8 and 9 on the draft WSP:

Please update this table to the most current version. The table on the draft plan shows the wrong intertie number for the Bellevue/Issaquah pipeline. It should be station 182, not station 60. And note #1 at the bottom of the table states that Issaquah and Sammamish Plateau do not yet take water from the intertie. This does not reflect current operation practices for either agency.

Thanks for your consideration.

Andy Tuchscherer
Operations Manager
mobile 425.495.6528

e-mail website facebook twitter youtube

Sammamish Plateau Water®

Clean water is always there because we're always here.™
1510 228th Avenue SE; Sammamish, WA 98075; main 425.392.6256 fax 425.391.5389

Exhibit H

SEPA Review

[SEPA documents to be added later.]

Exhibit I

King County Utilities Technical Review Committee Letter

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King County
Utilities Technical Review Committee
Department of Local Services
201 S Jackson Street
KSC-LS-0815
Seattle, WA 98104
www.kingcounty.gov

January 13, 2025

Melina Thung
Chief of Staff
Cascade Water Alliance
11400 SE 8th St, Suite 400
Bellevue, WA 98004

Subject: 2025 Water System Plan

Dear Melina Thung,

King County is interested in the Cascade Water Alliance's (Cascade) 2025 Water System Plan (Plan) as its membership entities provide water service to unincorporated King County. However, it is my understanding through our previous conversation that Cascade does not currently or have plans to obtain or distribute water in unincorporated King County. Consequently, King County Code 13.24 does not require the Plan to be reviewed and approved by the County. If in the future Cascade amends the Plan to serve unincorporated King County or seeks a franchise agreement for use of a County road right of way, King County approval will be necessary.

King County recognizes the valuable service Cascade provides to its membership entities and County residents. I look forward to receiving the final Plan as it will aid in reviewing future water system plans from Cascade's membership entities.

You may contact me at (206) 263 - 3733 or Dan.Cardwell@kingcounty.gov if you have any questions.

Sincerely,

Dan Cardwell

Dan Cardwell
Chair, Utilities Technical Review Committee

CC: Krista Chavez, Regional Planner, Washington State Department of Health

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Exhibit J

Resolution Adopting the 2025 Water System Plan

[Resolution to be added later.]