

# Water Right Optimization and Mitigation

Snoqualmie Pass Utility District

April 28, 2022

**Tom Hastings, MBA**  
General Manager



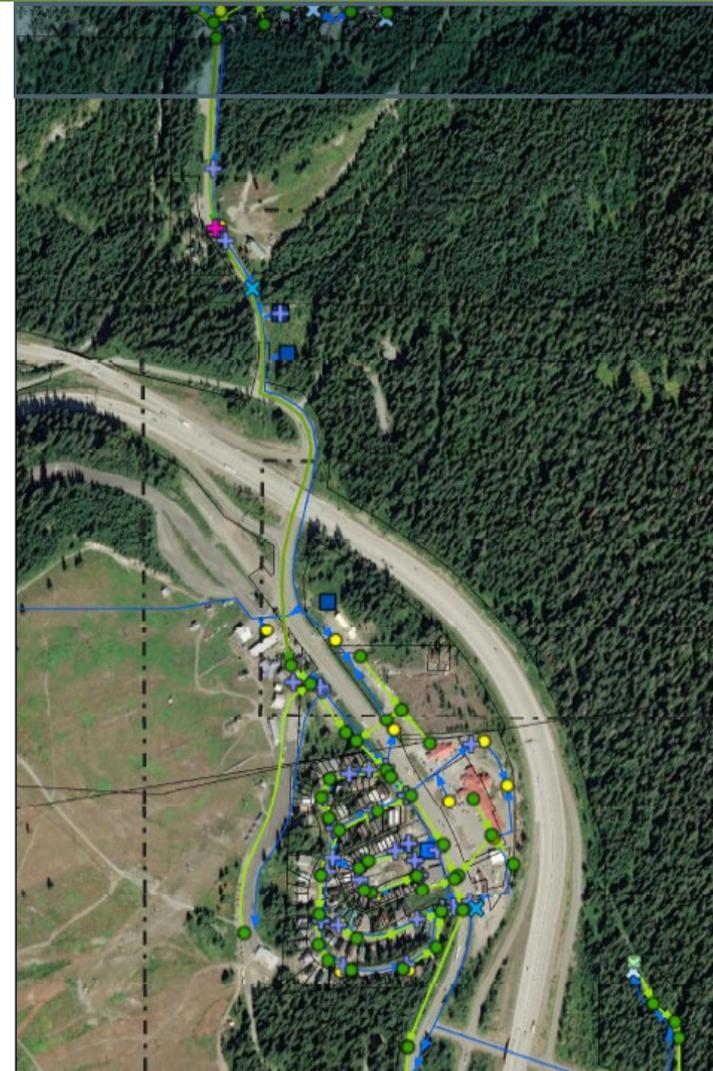
**Tyson D. Carlson, LHG, CWRE**  
Principal Hydrogeologist



# Background

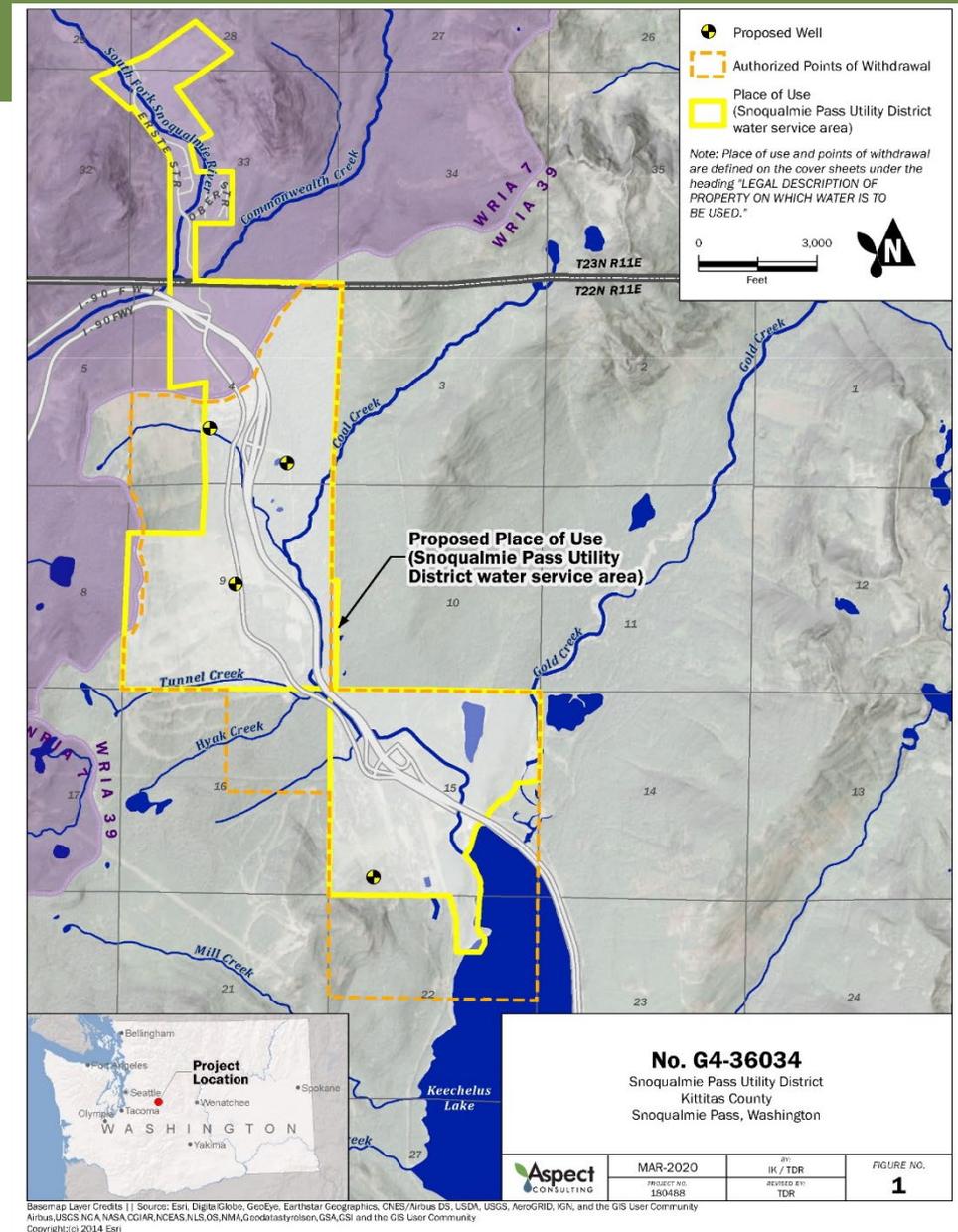
# Background

- **District formed in 1984, consolidated from sewer districts in both King and Kittitas Counties**
- **Assumes ownership of several local water systems**
  - Conifer Estates ULID 5
  - Hyak Estates ULID 6
  - Alpental Water System
  - Burlington Norther Railroad and Summit Village Lands Annexed
- **Construction of a “Pass-Wide Water System” starting service in 2001**
- **Currently Owns and Operates both Water and Sewer System**



# Background

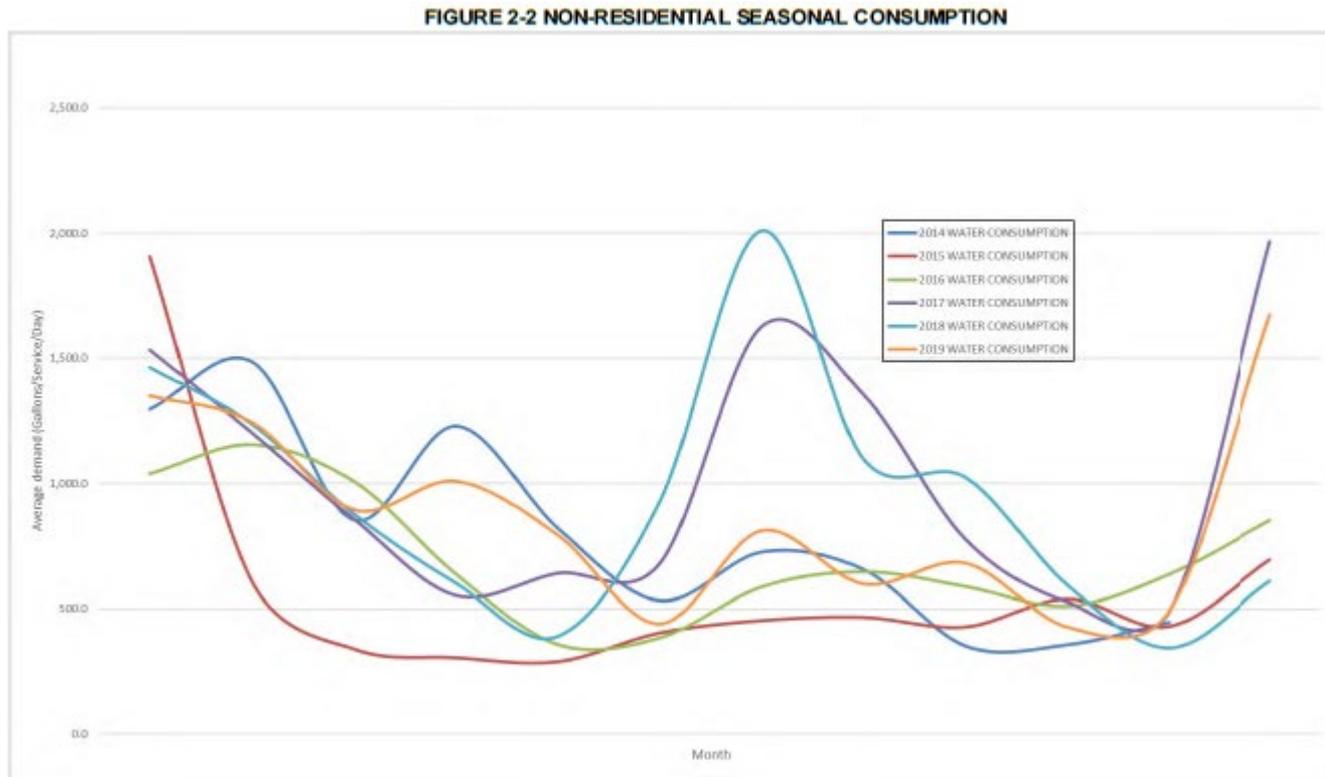
- I-90 Corridor
- Snoqualmie Pass
- Top of Two Watersheds



# Background

## Service Demographics

- 300 Full-time Residents
- 585,000 Seasonal Ski Area and Snowmaking
- 1,176 Seasonal Residents
- Travel and WSDOT Rest stop



Water System Plan (HLA 2022)

# Background

## Sources of Water Supply

- Surface Water Diversion – Alternate or Emergency Backup
- Well No. 1 – Abandoned
- Well Nos. 2 and 3 – Emergency Backup
- Well Nos. 4 and 5 – Primary Sources
  - Geothermal Test Well
  - Small Community - Alpental



# Background

## Water Quality

- Surface Water Diversion – Emergency Backup
- Well No. 1 – Abandoned
- Well Nos. 2 and 3 – Elevated Arsenic and Manganese
- Well Nos. 4 – Arsenic = 0.010 to 0.015 ppm
- Well Nos. 5 – Arsenic = 0.0 to 0.007 ppm

*District currently blends water from Well Nos. 4 and 5 to achieve MCL*

# Background

## Summary of District Water Right

Water Right	Priority Date	Qi (gpm)	Qa (afy)	Water right relationships	Existing source
SWC 10318 (S1*-18987)	4/30/1965	1 cfs (449 gpm)	112	Additive	S. Fork Snoqualmie River
G1-24445C	2/2/1984	70	56	Additive	Well No. 1**
G1-24446C	2/2/1984	160	56	Additive Qi Non-additive Qa	Well No. 2**
G1-24132C	8/12/1982	185	112	*Total Qa among two rights is 112 afy, alternate/non-additive to SWC 10318; Qi is additive	Well No. 4**
G1-24133C	8/12/1982	200	112		Well No. 5**
	<b>Total</b>	1,064	168		

*Note that Well Nos. 4 and 5 are authorized for 112 afy*

# Background

- Ecology approved a temporary change authorization on December 14, 2018, allowing water rights G1-24445C and G1-24446C to be exercised at Well Nos. 4 and 5 until October 31, 2020.
- In 2018, the District entered a self-imposed building moratorium due to limited annual quantity available.

**Table 2: Historic Water Use**

TABLE 2-6 ANNUAL WATER CONSUMPTION BY USER CATEGORY 2014-2019 (values are in million gallons per year)								
User Category	2014	2015	2016	2017	2018	2019	2014-2019 Avg	2017-2019 Avg
Single-Family Residential	8.697	9.220	10.527	11.002	10.407	9.739	9.932	10.383
Multi-Family Residential	2.899	2.673	3.164	5.522	2.411	2.425	3.182	3.453
Hotel	0.840	0.815	2.442	2.708	2.010	2.296	1.852	2.338
Commercial	8.652	6.782	8.184	9.253	6.985	9.368	8.204	8.535
Government	0.417	0.542	0.570	0.739	0.480	0.987	0.622	0.735
Ski Club	0.174	0.221	0.227	0.215	0.589	0.227	0.275	0.344
Snowmaking	1.854	1.704	0.563	1.814	0.000	1.810	1.115	1.208
Hydrant	0.858	0.012	0.036	0.000	2.482	0.243	0.726	1.363
<b>TOTAL</b>	<b>24.390</b>	<b>21.968</b>	<b>25.714</b>	<b>31.253</b>	<b>25.364</b>	<b>27.094</b>	<b>25.909</b>	<b>28.358</b>
<b>TOTAL w/o Snowmaking</b>	<b>22.536</b>	<b>20.264</b>	<b>25.151</b>	<b>29.439</b>	<b>25.364</b>	<b>25.284</b>	<b>24.794</b>	<b>27.150</b>

Year	Total Quantity Pumped in MG	Total Quantity Pumped in afy
2003	26.39	81.0
2004	24.92	76.5
2005	31.54	96.8
2006	34.33	105.4
2007	31.01	95.2
2008	29.85	91.6
2009	29.70	91.1
2010	28.83	88.5
2011	26.29	80.7
2012	29.67	91.1
2013	37.02	113.6
2014	47.66	146.3
2015	50.93	156.3
2016	50.24	154.2
2017	41.1	126.1
2018	41.90	128.6

# Well Consolidation

# Well Consolidation

Water Right	Priority Date	Qi (gpm)	Qa (afy)	Water right relationships	Existing source
SWC 10318 (S1*-18987)	4/30/1965	1 cfs (449 gpm)	112	Additive	S. Fork Snoqualmie River
G1-24445C	2/2/1984	70	56	Additive	Well No. 1**
G1-24446C	2/2/1984	160	56	Additive Qi Non-additive Qa	Well No. 2**
G1-24132C	8/12/1982	185	112	*Total Qa among two rights is 112 afy, alternate/non-additive to SWC 10318; Qi is additive	Well No. 4**
G1-24133C	8/12/1982	200	112		Well No. 5**
	<b>Total</b>	1,064	168		

# Well Consolidation

- **Four Water Right Change Applications**
  - Add all five water supply wells to each water right
  - Authorize Well No. 3
  - Create a consolidated or “well field” water right
  - Withdrawal total Qi and Qa from Well Nos. 4 and 5
- **South Fork Diversion is an Alternate Source**  
(Ecology Policy 1040)

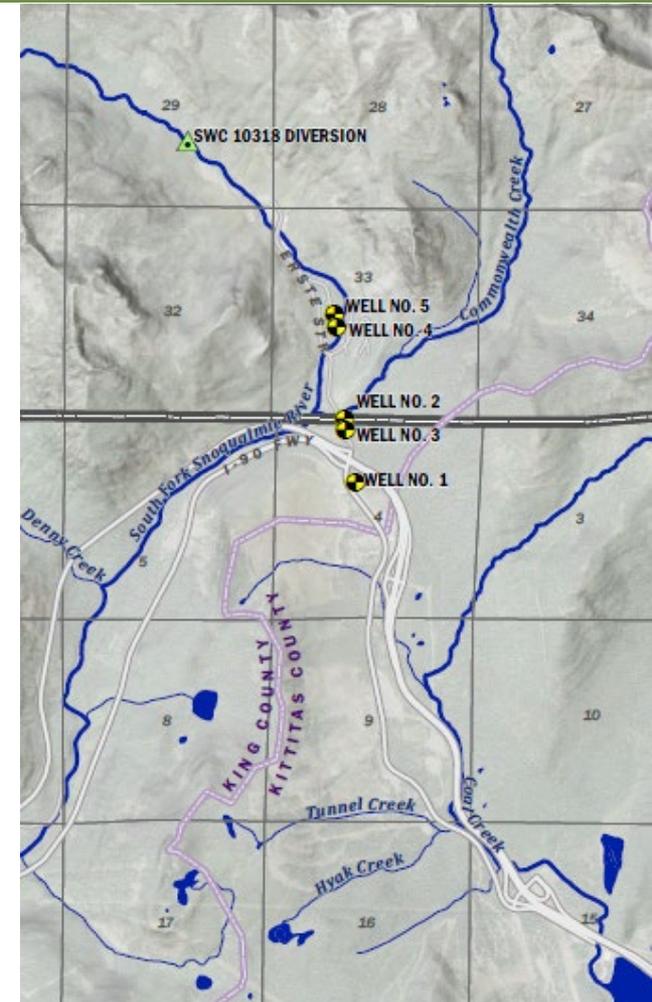
*“Alternate: A water right that can be used either instead of, or simultaneously with, another water right. Alternate rights authorize a substitute point of diversion or withdrawal under a second water right to meet or augment an existing water right...”*



# Well Consolidation

- **Same Source of Public Groundwater**  
(Ecology Policy 2012)
  - Are hydraulically connected
  - Share a common recharge (catchment) area
  - Share a common flow regime
  - Are isolated from other sources by the presence of effective barriers to hydraulic flow
- **De facto Change in Point of Withdrawal**  
(Ecology Policy 1120)

*“In some situations, changes to historic uses associated with water rights have been made in the diversion or use of water without first obtaining authorization for the changes pursuant to chapters 90.03 and 90.44 RCW. Such unauthorized changes to existing water rights are commonly referred to as “de facto...”*
- **Conformance to Municipal Supply under RCW 90.03.560**
  - Municipal Definition under RCW 90.03.015(4)
  - Inchoate Qa “in good standing” and eligible for change  
(Ecology Policy 2030)



# Well Consolidation

## Mitigation Plan

- No increase in Qi or Qa
- No Impact on Control Station defined in WAC 173-507
- No ESA-listed species or instream flow closure
- Impairment to <1 mile reach of S.F. Snoqualmie
- Restrictive Provision

## *Pumping Restrictions and Mitigation*

*Groundwater under District water rights: CG1-24445C@1 and CG1-24446C@2 shall not be withdrawn from Well Nos. 4 and 5 at the same time surface water is diverted from the existing diversionary structures in place at the South Fork Snoqualmie River under Certificate No. 10318.*

***District gained legal access to 56 afy through Well Nos. 4 and 5, lifting the moratorium.***

# **New Mitigated Water Right**

# New Mitigated Water Right

- **Wells and Surface Water Located in WRIA 7**
- **Waste Water is collected, treated, and disposed in WRIA 39A**
  - **Spray Field Application**
  - **Water Quality Concerns**
- **Membrane Bioreactor (MBR)**
  - **Enhanced Treatment**
  - **Surface Water Discharge (Coal Creek)**



# New Mitigated Water Right

- **Snoqualmie River Basin (WRIA 7)**
  - Chapter 173-507 WAC
  - Year-Round Instream Flows (at Snoqualmie Falls)
  - No Local Tributary Closures
  - No Local ESA-listed Species
  
- **Yakima River Basin (WRIA 39A)**
  - Chapter 173-539A – Groundwater only
  - Total Water Supply Available (TWSA)
  - Local Impairment

INSTREAM FLOWS IN THE SNOHOMISH RIVER BASIN (in Cubic Feet per Second)					
		12.1330.00		12.1430.00	
		So. Fk.	12.1411.00	No. Fk.*	No. Fk.**
Month	Day	Skykomish	Skykomish	Snoqualmie	Snoqualmie
Jan.	1	900	2200	260	200
	15	900	2200	260	200
Feb.	1	900	2200	260	200
	15	900	2200	260	200
Mar.	1	900	2200	260	200
	15	900	2200	300	200
Apr.	1	1100	2650	300	200
	15	1250	3250	300	200
May	1	1250	4000	300	200
	15	1250	4900	300	200
June	1	1250	4900	300	200
	15	1250	4900	300	200
July	1	1250	3250	300	200
	15	950	2170	195	140
Aug.	1	650	1450	130	100
	15	450	1000	130	100
Sept.	1	450	1000	130	100
	15	450	1000	130	100
Oct.	1	550	1300	130	130
	15	700	1700	165	165
Nov.	1	900	2200	210	200
	15	900	2200	260	200
Dec.	1	900	2200	260	200
	15	900	2200	260	200

# New Mitigated Water Right

- 100% Consumptive to WRIA 7
- Foreign Water to Yakima River Basin

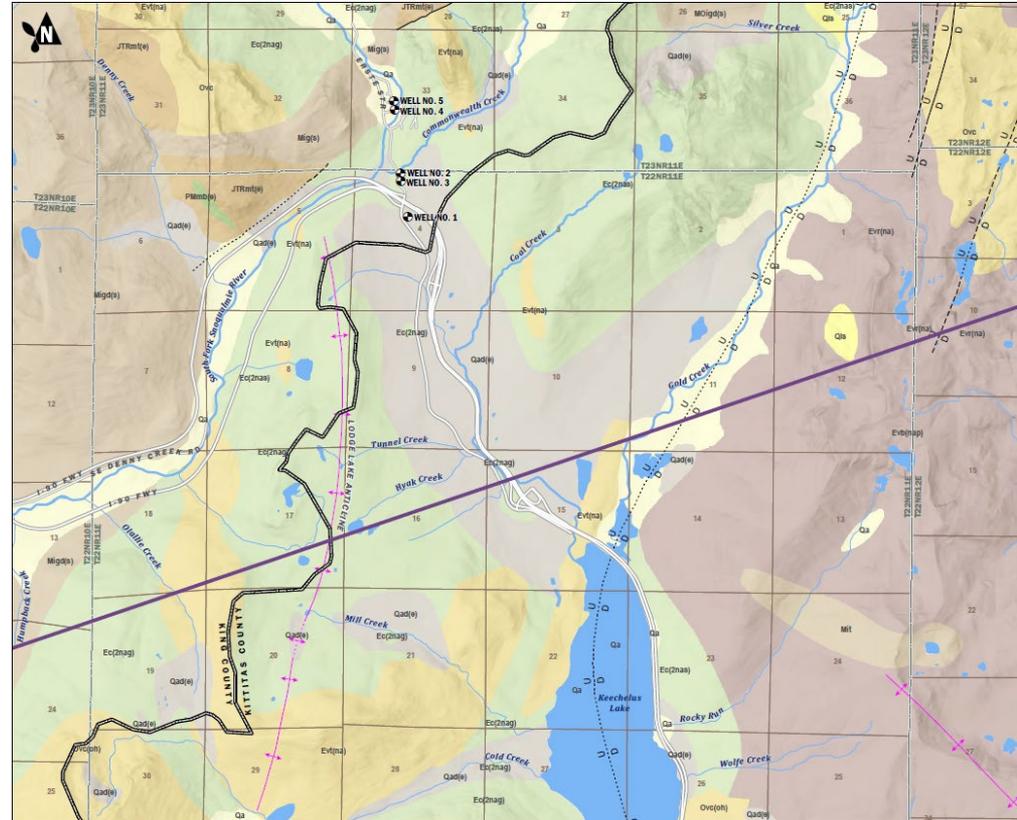
waste water and seepage water. Foreign return flows are waters which come from a different watershed which may augment the natural waters of a stream or creek and they do not become part of the natural waters of the creek even after they have entered it. Acquavella v. Ecology (1992)

- The District is TWSA positive to Yakima River
  - Assuming 20 percent %CU (WAC 173-539A)
  - 134.4 acre-feet (CU)

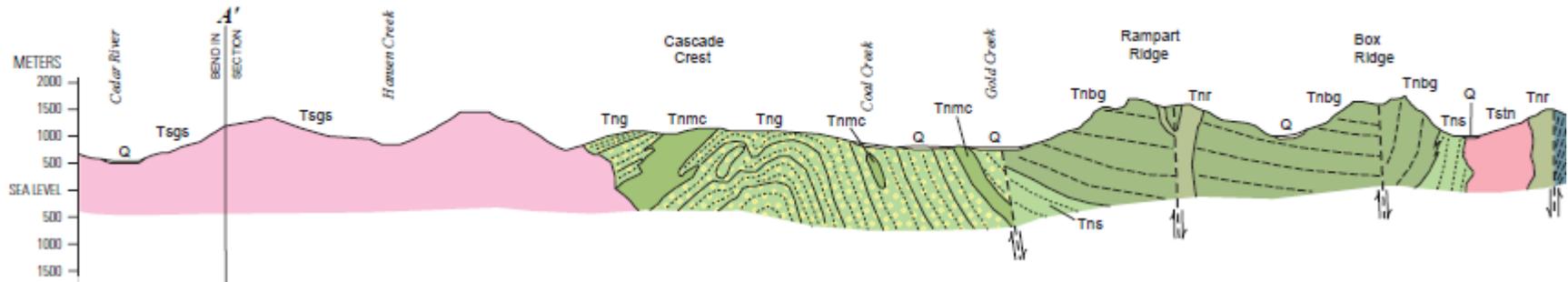
*Mitigated Water Right will provide full buildout of the District's Service Area*

# New Mitigated Water Right

- Pumping Impact Isolated to Coal Creek (above WSDOT)
- Local Impairment
  - Geology
  - Coal and Gold Creeks
  - ESA-Listed Species - Bulltrout
  - Coordination with WDFW and Yakama Nation



# New Mitigated Water Right



## Discharge to Coal Creek will offset pumping impacts

- Seasonal Keechelus Lake Elevations
- Bulltrout Migration and Spawning (Late Summer)
- Storage and Release (Pending TMDL)
- Additional benefits to Gold Creek

# New Mitigated Water Right



Snoqualmie Pass

Image USDA/FPAC/GEO

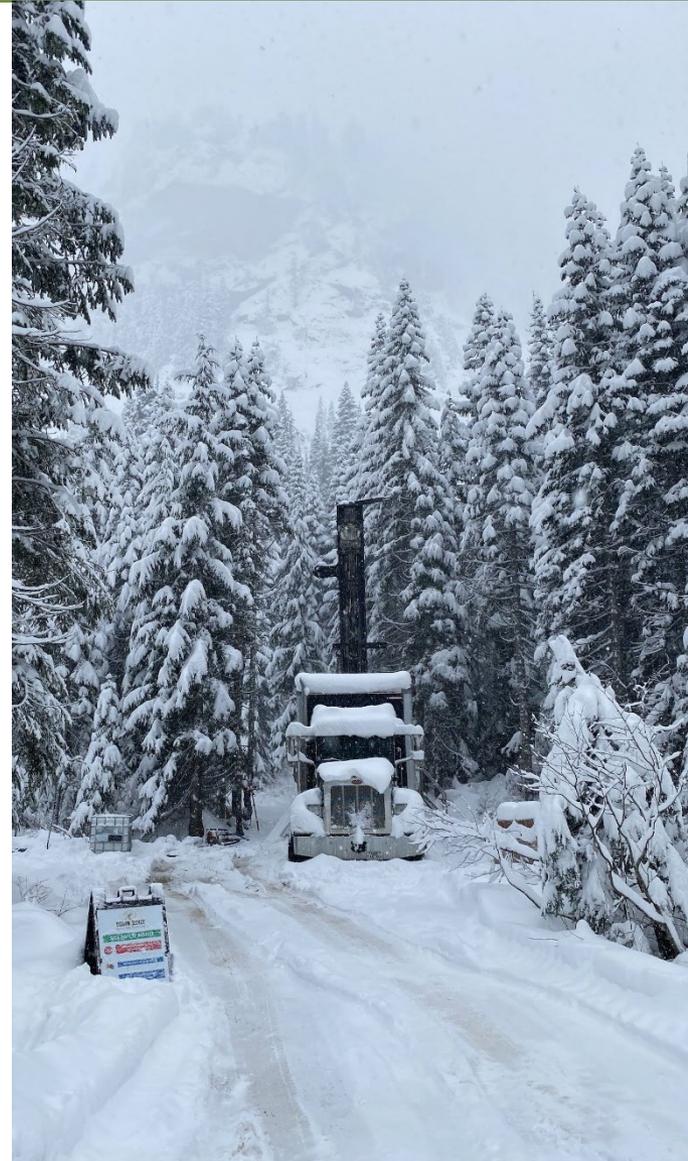
Google Earth

# Capital Improvement Projects

# Capital Improvement Projects

- Water System Plan Update (HLA Engineering)
- Leak Detection and Monitoring (DSL 41 to 10%)
- New and Replacement Water Supply Wells
- MBR Plant and Support Infrastructure
- Additional Storage (Fire Flow)
- Water Treatment
- Water Main and PRVs
- Wastewater Collection and Conveyance
- Coordination with Ski Area (Snowmaking)
- And on, and on, and on...

*Major Project Totals ~\$40 Million*



# Questions?

**Tom Hastings**

thastings@snopass.org

425-434-6633

**Tyson D. Carlson**

tcarlson@aspectconsulting.com

509-895-5923