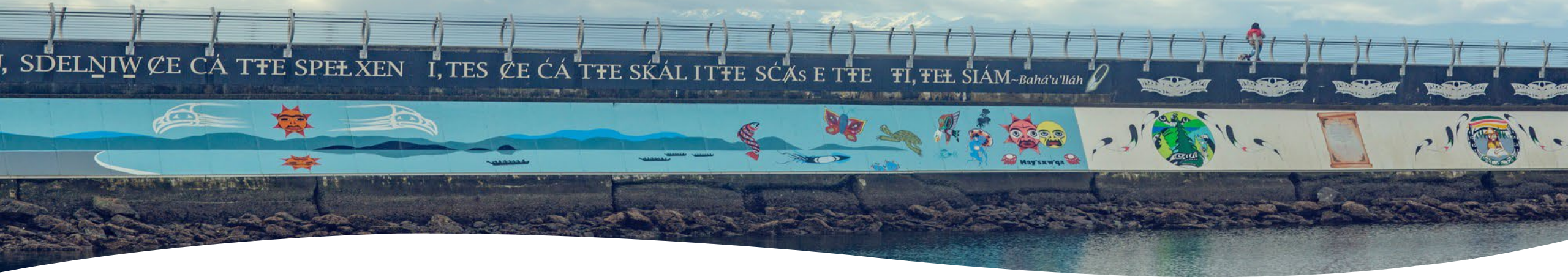


Regional Water Supply 2022 Master Plan

Regional Water Supply Commission
Overview & Status Update March 1, 2024



Territorial Acknowledgement

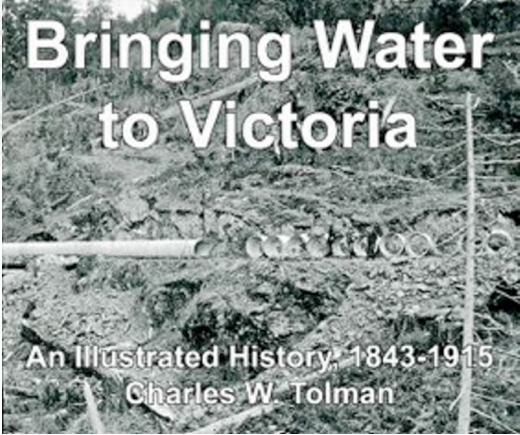
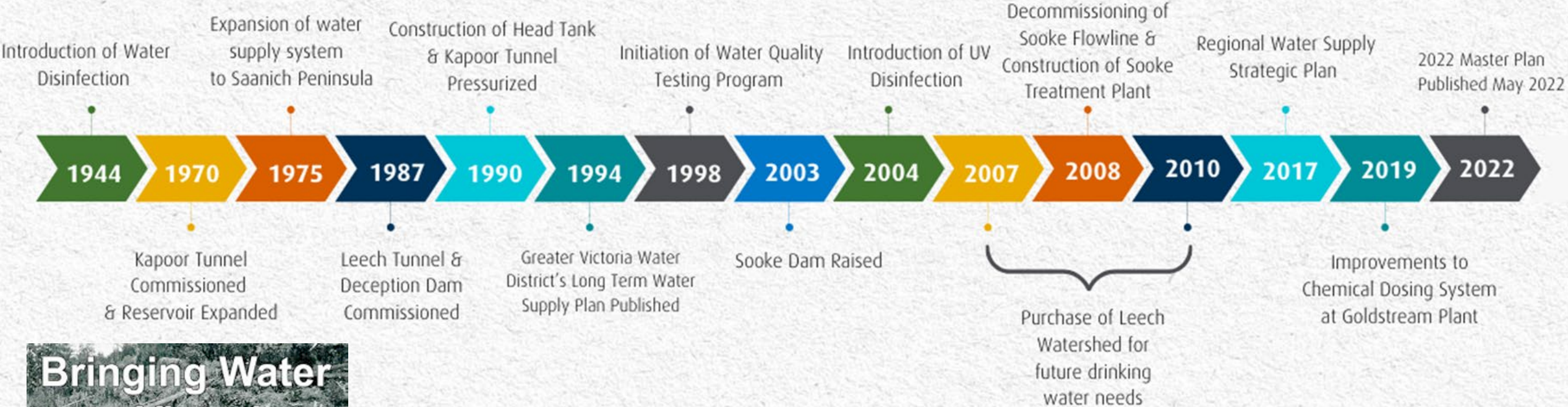
The CRD conducts its business within the traditional territories of many First Nations, including but not limited to BOKÉCEN (Pauquachin), MÁLEXEŁ (Malahat), Pacheedaht, Pune'laxutth' (Penelekut), Sc'ianew (Beecher Bay), Songhees, SÁUTW (Tsawout), T'Sou-ke, WJOLEŁP (Tsartlip), WŚIKEM (Tseycum), and x^wsepsəm (Esquimalt), all of whom have a long standing relationship with the land and waters from time immemorial that continues to this day.



Agenda

1. Background
2. Master Planning Methodology
3. Demand Forecasts
4. Master Plan Project Overview
5. Financial Implications
6. Public & First Nation Engagement
7. Progress Update

Evolution of the Regional Water Supply System



Greater Victoria Water District

LONG TERM WATER SUPPLY PLAN

Executive Summary

Key Projects Completed Since 1994

- Rehabilitate Goldstream Reservoirs/Dams
- UV Disinfection
- Raise Sooke Lake Reservoir Dam
- District of Sooke supply and treatment (replace Charters Treatment Plant) – Transmission Main #15 & SRRDF
- Replace Transmission Main #1

Other Recommended Considerations in 1994

- Filtration
- Sooke Lake Deep Northern Intake
- Leech River diversion
- Second major transmission system from Sooke Lake Reservoir
- Additional balancing storage



Strategic Plan

Are tools that provide guidance in fulfilling a utility's mission and commitments and includes specific goals and actions to achieve the mission.

"Where we want to go"



Master Plan

Road map that documents medium and long-term plans for major infrastructure projects, provides a description of significant capital improvements and framework for decision making

"How do we get there"



Capital Plan

Documents short term projects with defined scope, schedule and budget. Typically includes new and replacement machinery, structures, transmission networks etc.

"What we are doing"



Operational Plan

Detailed plans specific to different work areas that define tasks and associated roles and responsibilities, typically internal documents.

"How we work"

Master Planning

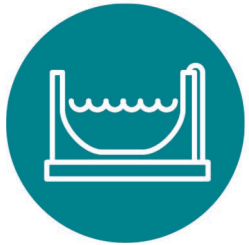
- Creation is a best management practice
- Considers how various complex but interrelated issues can be addressed in a holistic manner over many years resulting in a longer-term vision of infrastructure investments
- It does not document all activities undertaken by a utility but focuses on long range **infrastructure requirements** for existing and future service needs.
- Ensures scope of earlier projects can be informed by future project requirements
- Considers alternatives and scopes projects to conceptual level with Class D Cost Estimates
- Provides inputs/projects in future years Capital Plans

2017 Strategic Plan Commitments and Focus Areas



COMMITMENT:

Provide high quality, safe drinking water



COMMITMENT:

Provide an adequate, long-term supply of drinking water



COMMITMENT:

Provide a reliable and efficient drinking water transmission system



CRD BOARD PRIORITIES - SUSTAINABLE AND LIVABLE REGION



CLIMATE CHANGE IMPACTS - MITIGATION AND ADAPTATION



DEMAND MANAGEMENT - ADDRESSING CHANGING TRENDS IN WATER DEMAND



PLANNING FOR THE FUTURE USE OF THE LEECH WATER SUPPLY AREA



SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE



PREPARING FOR EMERGENCY AND POST-DISASTER WATER SUPPLY



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Regional Water Supply 2017 Strategic Plan

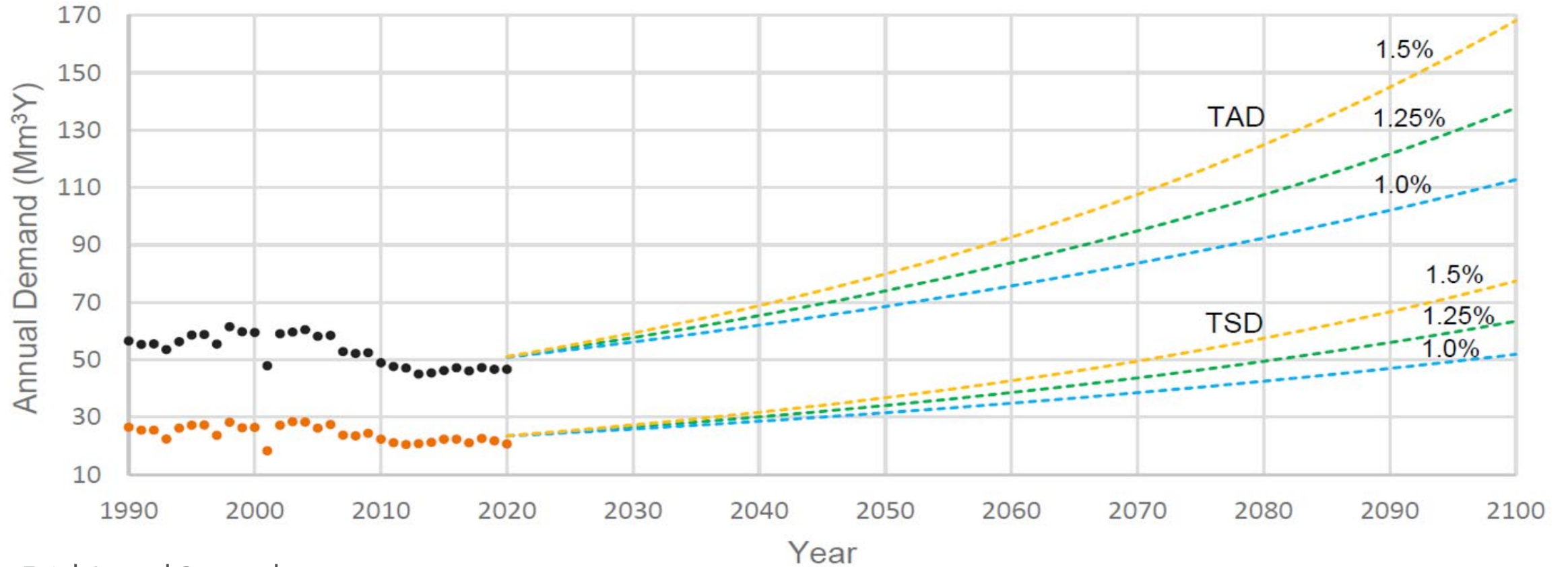


Capital Regional District | Regional Water Supply 2022 Master Plan

MAY 2022

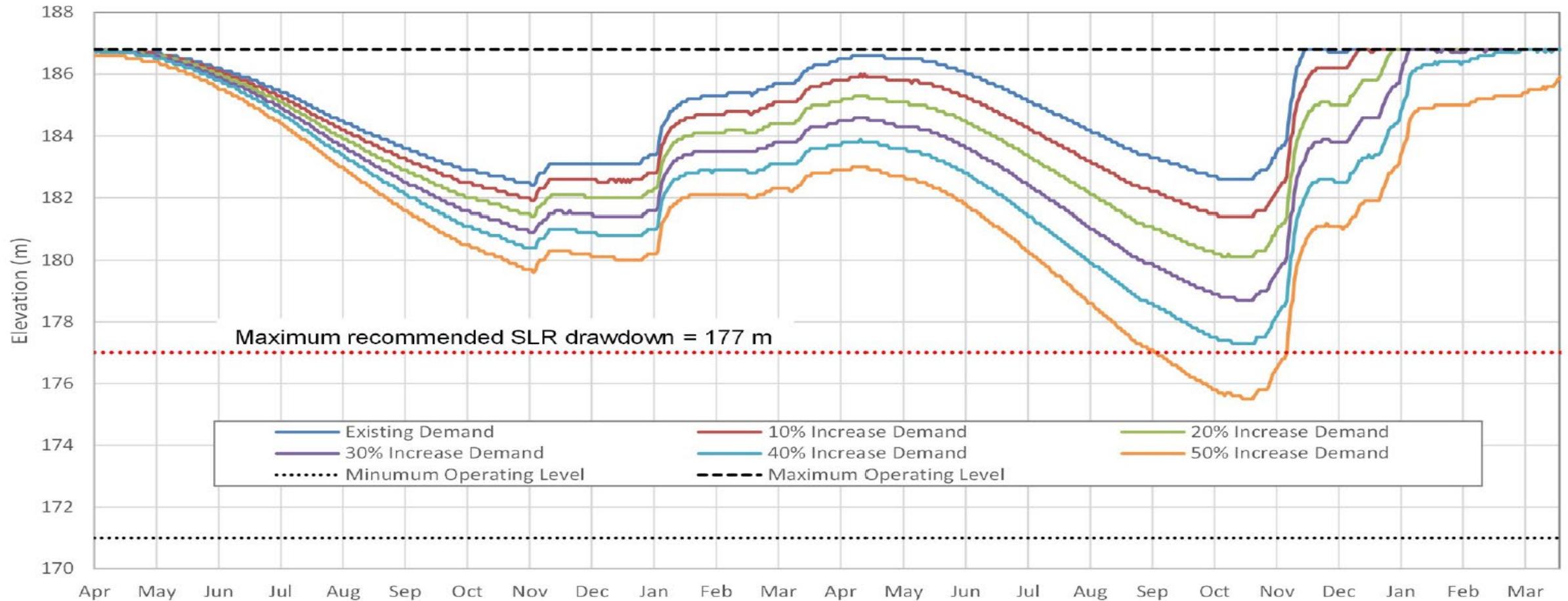


Total Annual & Summer Demands 2020 to 2100



TAD – Total Annual Demand
 TSD – Total Summer Demand
 Population growth rates (%) - (low/medium/high)

Sooke Lake Reservoir – Demand Scenarios



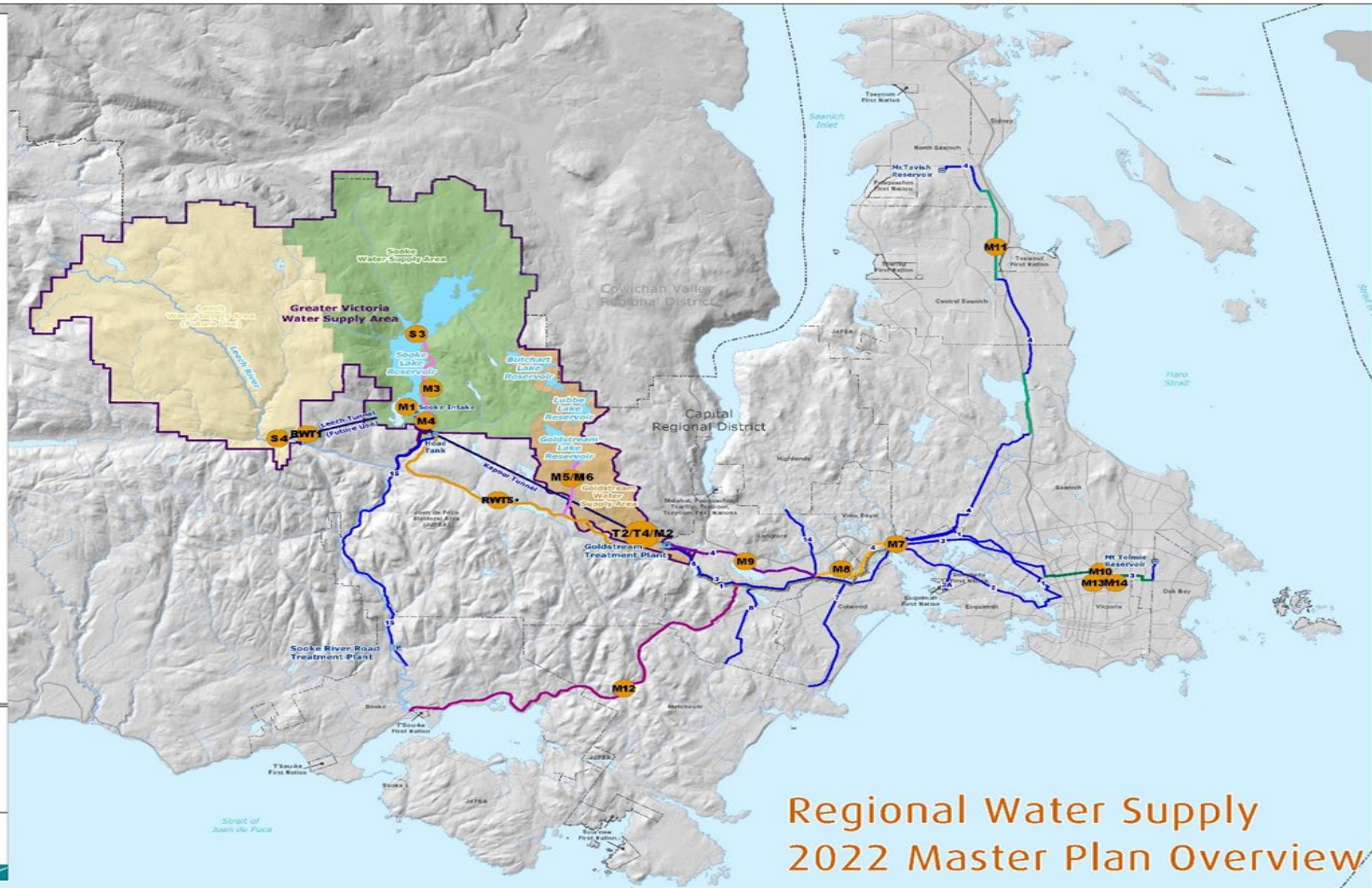
Simulated water level in Sooke Lake Reservoir for a 1:50 dry precipitation year followed by an average precipitation year with different demand scenarios

**Regional Water Supply 2022 Master Plan
Capital Works Recommendations**

- S3** Deep Northern Intake - Floating Pump Station
 - S4** Leech River Diversion
 - RWT1** Leech Tunnel to Deception Gulch Reservoir
 - M1** Sooke Lake Saddle Dam Hydraulic Upgrades
 - M3** Deep Northern Intake to Head Tank - Main
 - M4** Third Main: Sooke Lake Dam to Head Tank
 - M5/M6** Goldstream Dam to Japan Gulch Piped Connection
 - M7** Phase 1 Upgrades - Watkiss PCS
 - M8** Phase 2 Upgrades - Main No. 4 Capacity Upgrade
 - M9** Phase 3 Upgrades - Main No. 4 Capacity Upgrade
 - M10** Phase 4.1 Upgrades - Main No. 3 Critical Twin
 - M11** Phase 4.2 Upgrades - Main No. 4 Critical Twin
 - M12** East-West Connector
 - M13** Smith Hill Tank
 - M14** Smith Hill Pump Station
 - RWT5** Jack Lake Transmission Main
 - T2/T4/M2** Water Filtration Plant at Japan Gulch (Direct Filtration)
-
- M3** Deep Northern Intake to Head Tank - Main
 - M4** Third Main: Sooke Lake Dam to Head Tank
 - M5/M6** Goldstream Dam to Japan Gulch Piped Connection
 - M7** Phase 1 Upgrades - Watkiss PCS
 - M8** Phase 2 Upgrades - Main No. 4 Capacity Upgrade
 - M9** Phase 3 Upgrades - Main No. 4 Capacity Upgrade
 - M10** Phase 4.1 Upgrades - Main No. 3 Critical Twin
 - M11** Phase 4.2 Upgrades - Main No. 4 Critical Twin
 - M12** East-West Connector
 - RWT5** Jack Lake Transmission Main
 - HGL** HGL Increase to 169

- Treatment Plant
- Reservoir
- Intake
- Tunnel
- Supply Main
- Greater Victoria Water Supply Area
- Sooke Water Supply Area
- Goldstream Water Supply Area
- Leech Water Supply Area (Future)
- Regional District Boundary
- Local Government Boundary
- Source Water Reservoir
- Ocean / Lake
- River / Stream
- Major Road

Regional Water Supply 2022 Master Plan Overview



Regional Water Supply 2022 Master Plan Overview



COMMITMENT:

Provide high quality,
safe drinking water

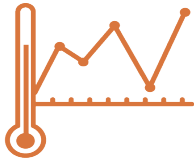
Goldstream Water Filtration Plant (T2/T4/M2)

Estimated Cost: \$1.07 Billion

A direct filtration plant located upstream of the Goldstream Disinfection Facility to better protect the Regional Water Supply from potential raw water quality fluctuations due to climate change, forest fires and the eventual integration of water from the Leech and Goldstream Water Supply Areas. The project includes a pump station, clearwell, balancing tank and the decommissioning of the Japan Gulch Dam and Reservoir.



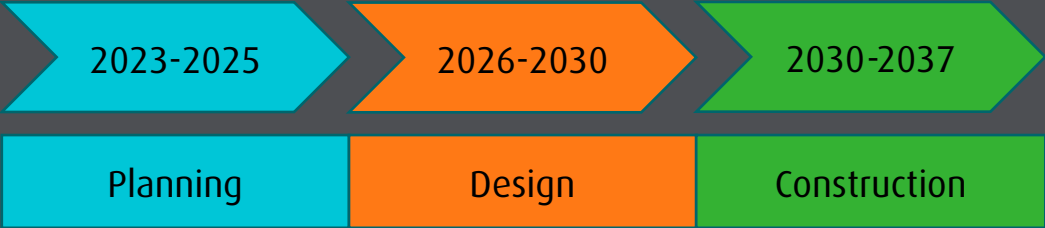
SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

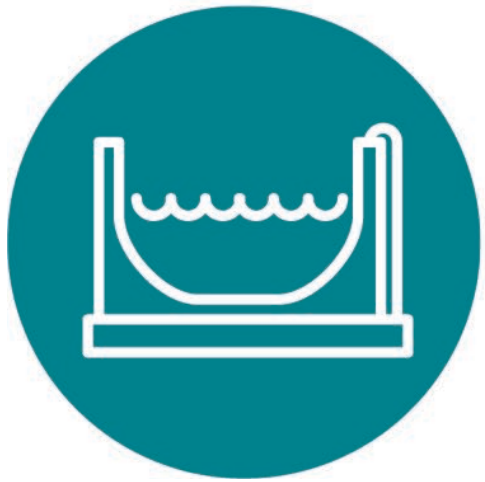


CLIMATE CHANGE IMPACTS - MITIGATION AND ADAPTATION



Proposed Project Timeline





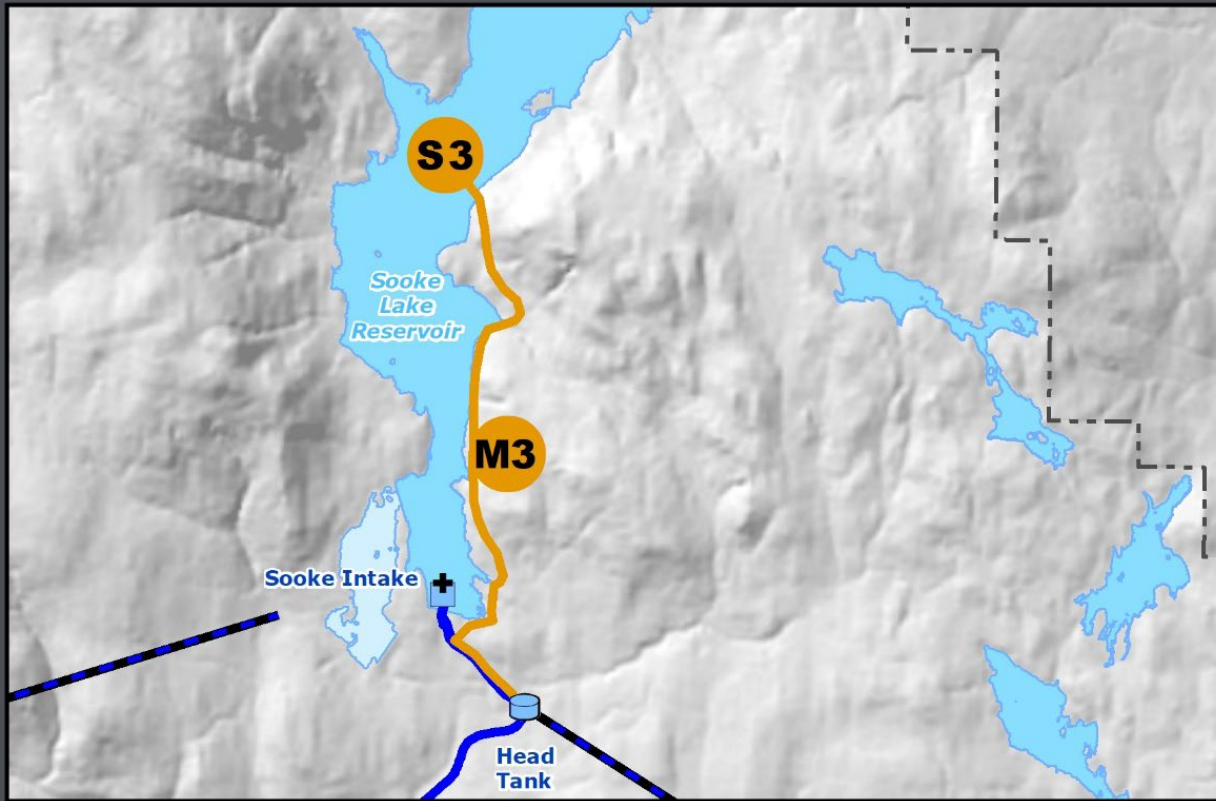
COMMITMENT:

Provide an adequate, long-term supply of drinking water

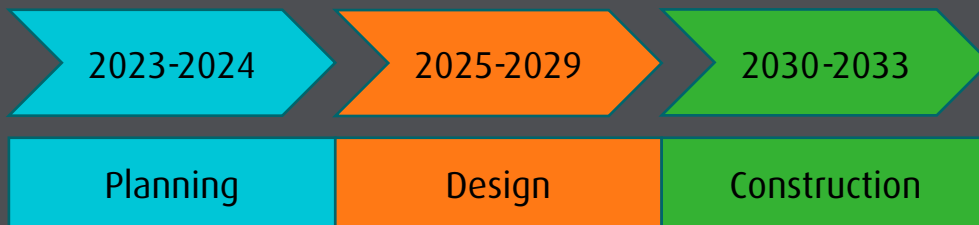
Deep Northern Intake Floating Pump Station (S3) and Transmission Main to Head Tank (M3)

Estimated Cost: \$135.41 Million

A second intake and raw water transmission main pumped to the Head Tank to add redundancy to the existing single southern intake, allow access to deeper, high-quality water and allow for further drawdown of the Sooke Lake Reservoir to increase supply.



Proposed Project Timeline



PREPARING FOR EMERGENCY AND POST-DISASTER WATER SUPPLY



SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

Sooke Basin Profile

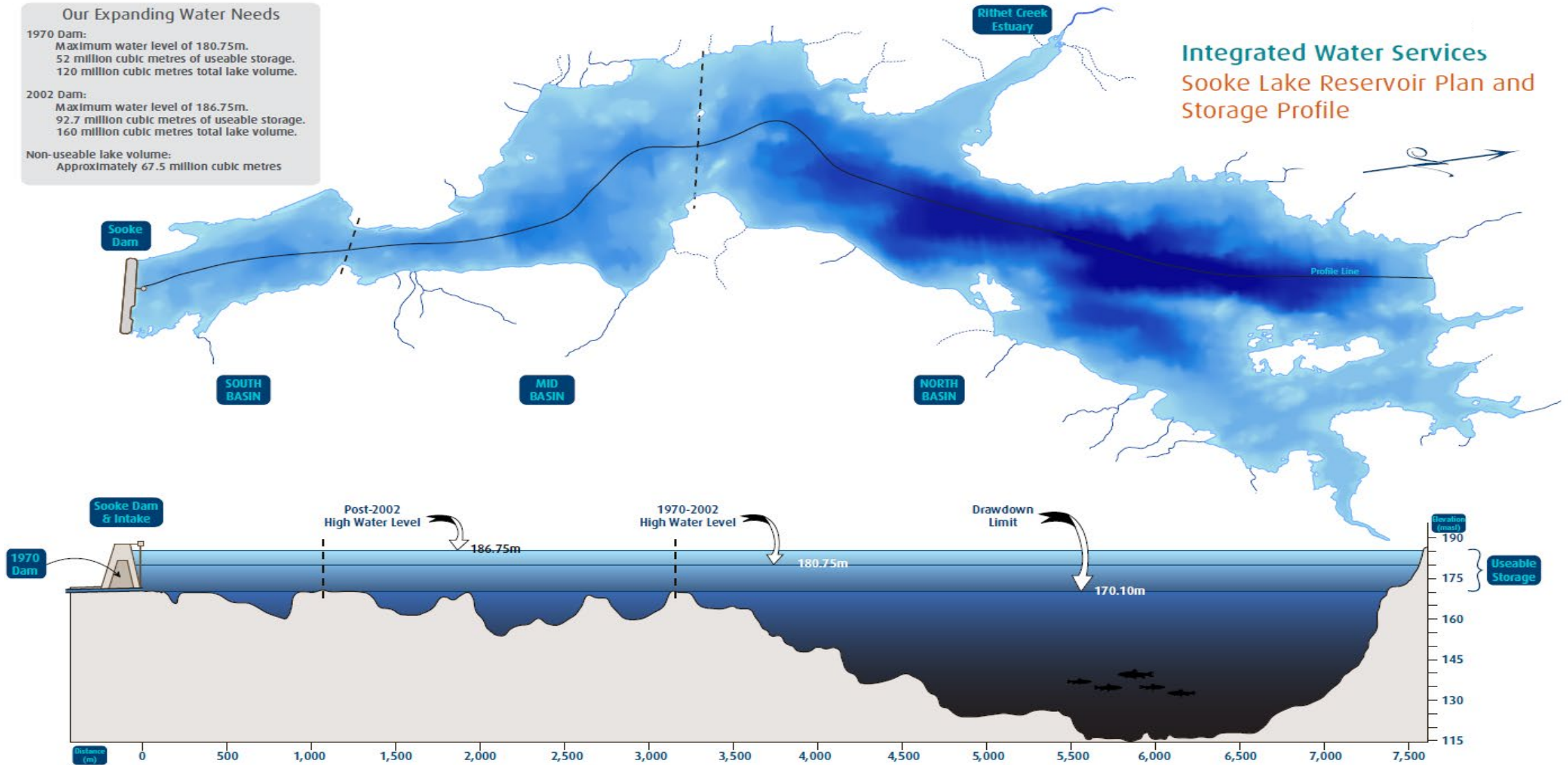
Integrated Water Services
Sooke Lake Reservoir Plan and
Storage Profile

Our Expanding Water Needs

1970 Dam:
Maximum water level of 180.75m.
52 million cubic metres of useable storage.
120 million cubic metres total lake volume.

2002 Dam:
Maximum water level of 186.75m.
92.7 million cubic metres of useable storage.
160 million cubic metres total lake volume.

Non-useable lake volume:
Approximately 67.5 million cubic metres



Leech River Diversion (S4/RWT1) and Sooke Lake Saddle Dam Hydraulic Upgrades (M1)

Estimated Cost: \$41.9 Million

An intake structure to divert Leech River water through the existing Leech Tunnel to Deception Gulch Reservoir as a supplemental source to Sooke Lake Reservoir.

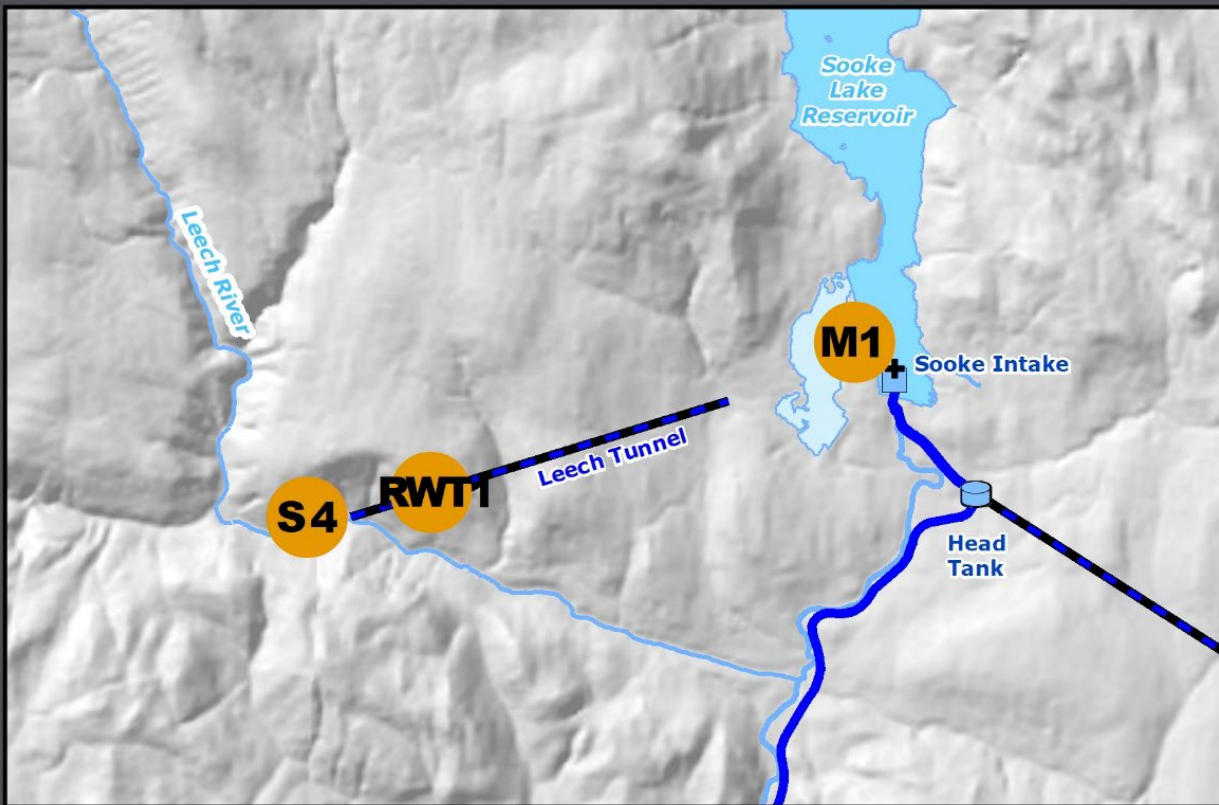
Sooke Lake Saddle Dam and Deception Gulch Dam will both require upgrades to transfer water from Deception Gulch Reservoir to Sooke Lake Reservoir



PLANNING FOR THE FUTURE USE OF THE LEECH WATER SUPPLY AREA



SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE



Proposed Project Timeline





COMMITMENT:

Provide a reliable and efficient drinking water transmission system



East – West Connector (M12)

Estimated Cost: \$77.64 Million

A transmission main to connect the proposed Filtration Plant with the Juan de Fuca Water Distribution Service.



SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

Proposed Project Timeline



Smith Hill Tank and Pump Station (M13/M14)

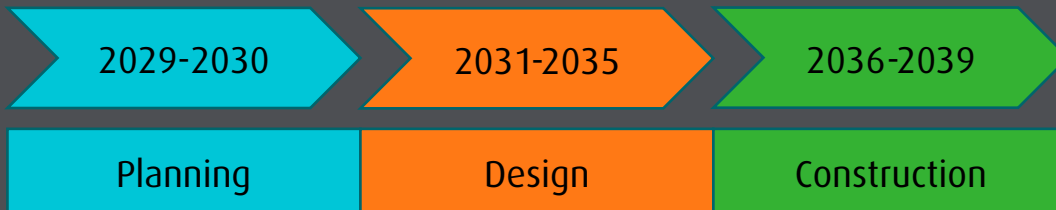
Estimated Cost: \$41.75 Million

A storage tank and associated pump station at the existing, decommissioned Smith Hill site to provide numerous benefits including emergency storage, balancing of instantaneous/peak demands, reduce the capacity required at treatment plants, reduce risk of transient pressure surges, reduce head losses and deferral of transmission main hydraulic upgrade.



SUPPLY SYSTEM INFRASTRUCTURE
INVESTMENT - RENEWING EXISTING
AND PREPARING FOR NEW
INFRASTRUCTURE

Proposed Project Timeline



Third Main: Sooke Lake Dam to Head Tank (M4)

Estimated Cost: \$9.13 Million

A third raw water main extending between the Sooke Lake Dam and the Head Tank to increase capacity, improve redundancy and ensure service continuation in the event of a natural disaster or failure.

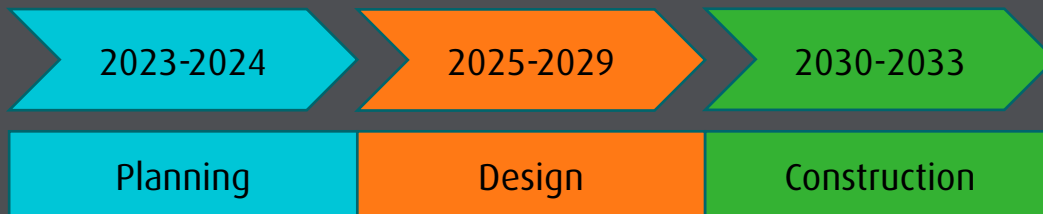


SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE



PREPARING FOR EMERGENCY AND POST-DISASTER WATER SUPPLY

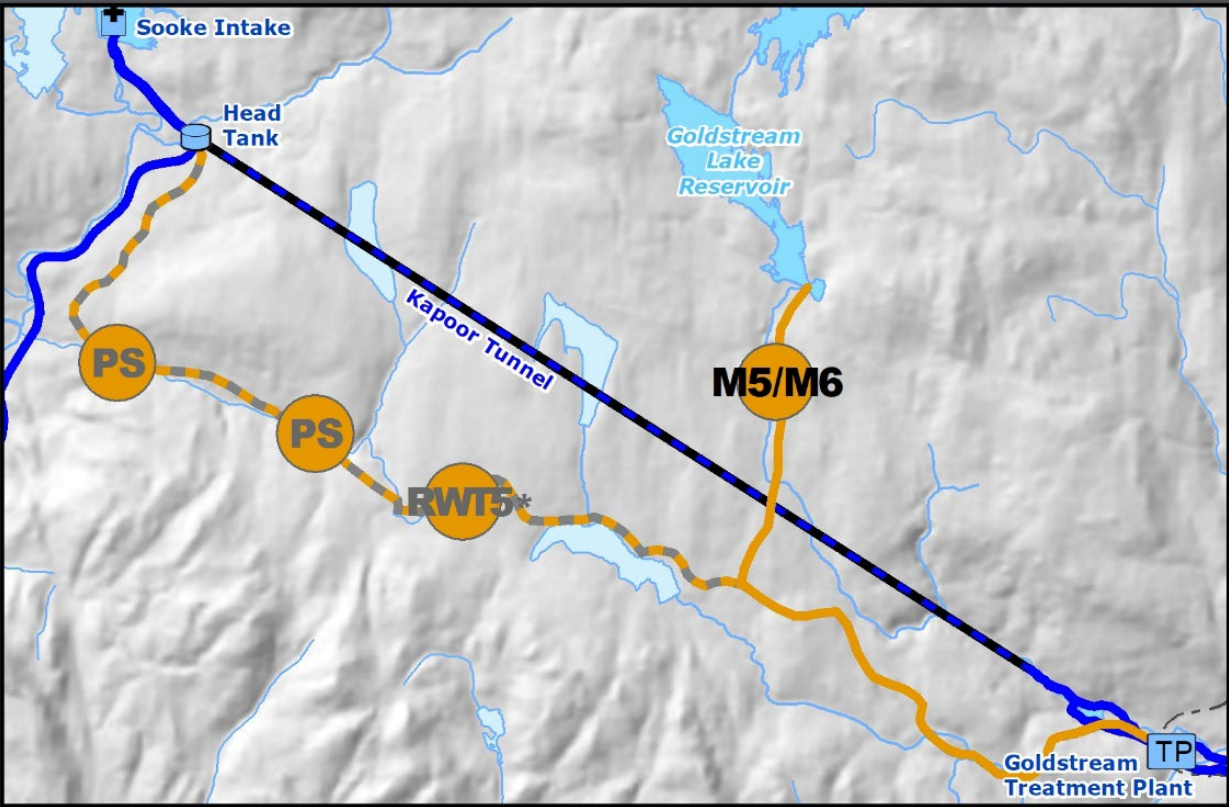
Proposed Project Timeline



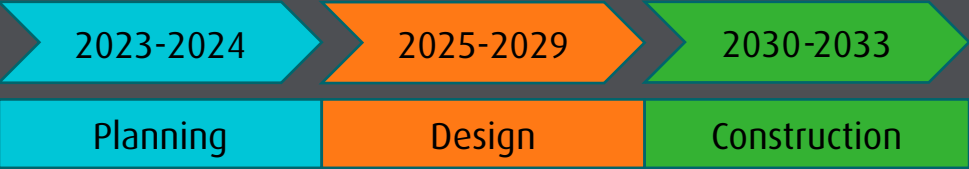
Goldstream Reservoir Connector (M5) Including Stage 1 Balancing Tank (M6)

Estimated Cost: \$89.82 Million

A piped connection between Goldstream Lake Reservoir and the proposed Goldstream Treatment Plant to protect the water quality of the secondary water supply for use during emergencies, Kapoor Tunnel shut down, and eventually allow Kapoor Tunnel redundancy and increased raw water transmission capacity.



Proposed Project Timeline



SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

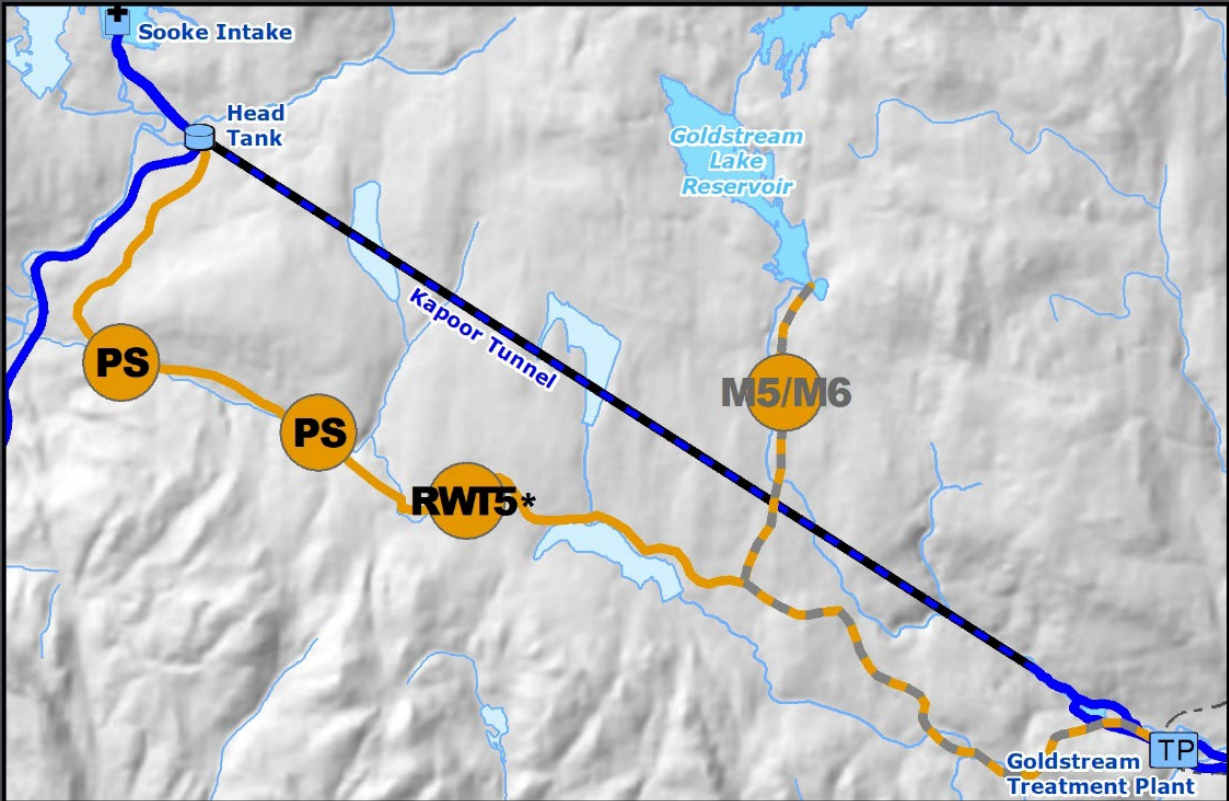


PREPARING FOR EMERGENCY AND POST-DISASTER WATER SUPPLY

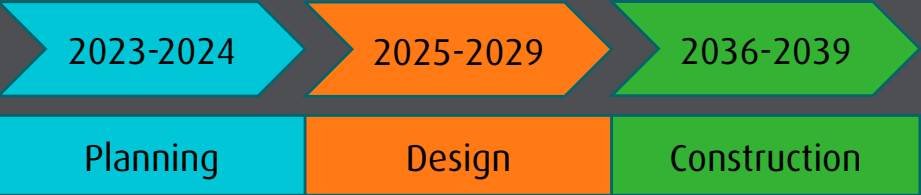
Jack Lake Raw Water Transmission Main (RWT5)

Estimated Cost: \$284.96 Million

A piped connection between the existing Head Tank and Goldstream Treatment Plant to provide redundancy to the Kapoor Tunnel for backup or emergency purposes and increased raw water transmission capacity.



Proposed Project Timeline



PREPARING FOR EMERGENCY AND POST-DISASTER WATER SUPPLY



SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE



Treated Water Transmission Main Upgrades (Phases 1-4.2 M7, M8, M9, M10, M11)

Estimated Cost: \$295.42 Million

A variety of renewal and capacity-related transmission system upgrades throughout the Regional Water Supply (RWS) aligned into a \$10M/year re-occurring annual program.



SUPPLY SYSTEM INFRASTRUCTURE
INVESTMENT - RENEWING EXISTING
AND PREPARING FOR NEW
INFRASTRUCTURE



DEMAND MANAGEMENT -
ADDRESSING CHANGING TRENDS
IN WATER DEMAND

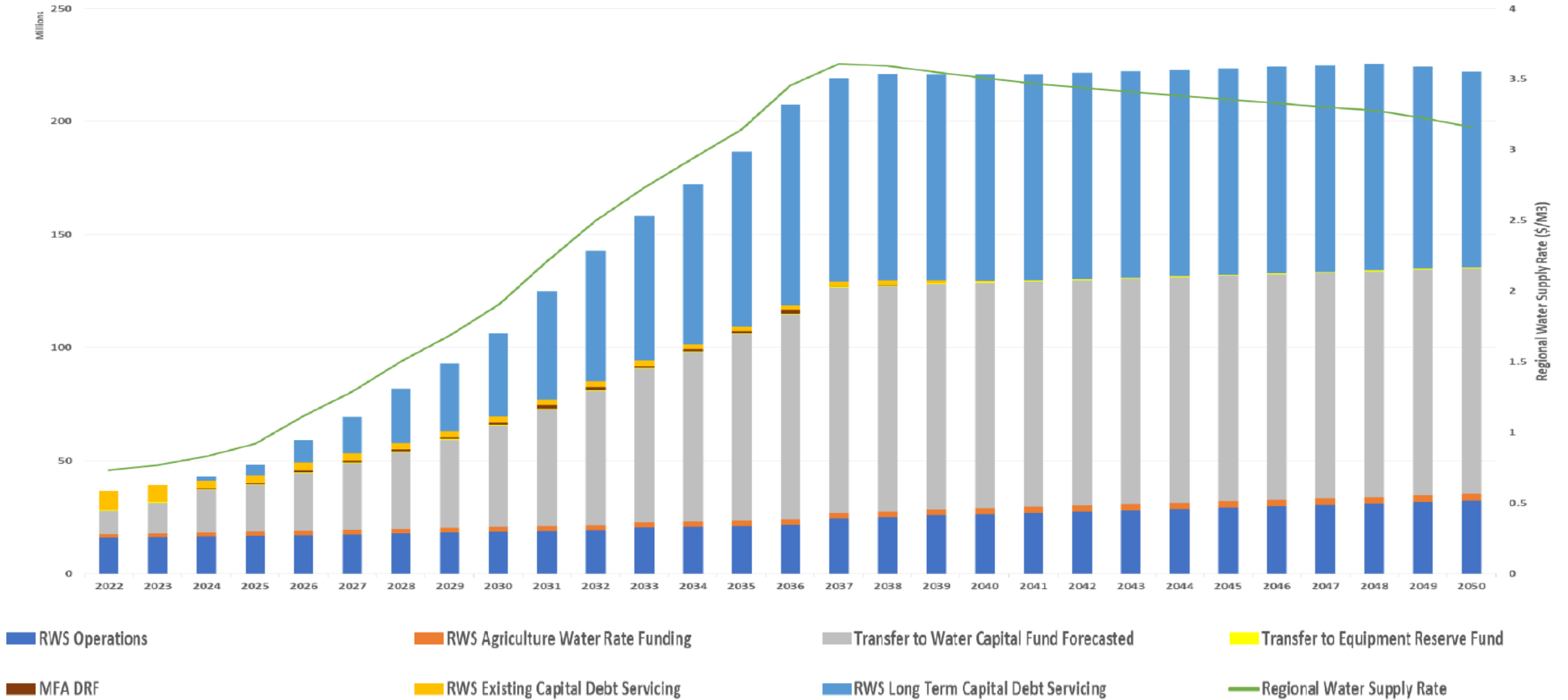
2027-2050

Annual Program

2022 Master Plan Financial Implications

- Capital and operating costs
- Funding – debt financing and cash contributions
- Financial health of Regional Water Supply Service
- Future water rates

RWS Service Conceptual Operating, Capital Cost & Rate Model



2022 Public & First Nation Engagement

Get Involved

- The Get Involved Engagement Platform launched & open for public feedback **June 9 - July 6**
- 753 page visits broken down as follows:
 - 383 people visited at least one page of the platform
 - 157 people visited multiple pages and downloaded documents the most popular document being the Executive Summary
 - 22 people emailed questions or shared comments

Media

- A media release was issued on June 9, 2022 – the release highlighted the individual proposed projects within the Master Plan , why they are needed and how the public could provide feedback on the proposed Master Plan
- Local media including CTV, CBC, CFAX and the Sooke Mirror Newspaper also covered the Master Plan media release and Get Involved Platform

Social Media

- Social media posts were created to promote the Master Plan “Get Involved” platform which invited the public to provide feedback via the platform
- Facebook posts reached 12,352 users with 382 link clicks to the Master Plan engagement platform
- Twitter posts were seen by 837 users with 32 link clicks to the Master Plan engagement platform

First Nations

- Impacted First Nations were emailed a personal letter from the General Manager of Integrated Water Services on June 10, 2022, asking the Nations to participate in a specifically designed First Nations online presentation of the Master Plan to be held on June 16, 2022
- The letter to First Nations also provided alternate options for providing feedback including personal phone calls with General Manager

Future Public and First Nation Engagement

Get Involved

- The Get Involved Engagement Platform will be refreshed and allow for public engagement on individual projects within the Master Plan as planning for each project begins

Media

- The CRD will follow its standard media communication as the Master Plan evolves which includes creating a series of media releases, interviews with local TV and radio stations and collaborations with local newspapers to amplify messaging

Social Media

- The CRD will follow its standard social media engagement strategies and communicate about future Master Plan engagement opportunities via Facebook and X (Twitter)

First Nations

- First Nations will be engaged to better understand their interests in the Master Plan and related projects, as requested and through on-going government to government meetings.
- Feedback from First Nations will inform the implementation of the Master Plan and the engagement plan for the specific projects.

Progress Updates



1. Commenced Water Quality Sampling for Leech (2019) and Deep Northern Intake (2023)
2. M7 - Increase hydraulic grade line of Main No. 1 from 116m to 169m & Watkiss PCS Upgrades
 - Consulting assignment awarded in Q4 of 2023.
 - Currently in the preliminary design stage. Project is expected to be ready for construction in 2025.
3. M8 - replacing sections of the concrete pipe sections from Niagara Main (near Goldstream Disinfection Facility) to Goldstream Avenue at Veterans Memorial Parkway.
 - Replacement of an approximately 2.0 km section concrete pressure pipe along this main has been prioritized for replacement based on lifespan, pressure rating and reduced seismic resiliency
 - Currently in the preliminary design stage
4. Design of Smith Hill reservoir decommissioning underway in 2024.
 - Public engagement to gain feedback on temporary restoration, as needed.

Thank You

Questions or Comments



@crdvictoria



Capital Regional District



CRDVictoria



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