To: Water Committee

From: Vanessa Anthony, Director, Planning Policy and Analysis, Water Services
Daniel Roberge, Deputy General Manager, Operations, Water Services

Date: October 18, 2024 Meeting Date: November 6, 2024

Subject: **Summer 2024 Water Supply Performance**

RECOMMENDATION
That the Water Committee receive for information the report dated October 18, 2024, titled "Summer 2024 Water Supply Performance".

EXECUTIVE SUMMARY
The water supply system performed well during the 2024 high-demand season. Metro Vancouver experienced a low snowpack year due to a milder winter caused by the El Nino weather pattern, however the spring was relatively cool and wet, which allowed the snowpack to build at higher elevations, and slowed snow melt. The climate outlook called for drier and warmer summer weather and in preparation Metro Vancouver took proactive steps to manage the water supply by starting seasonal dam and reservoir operations earlier than usual to maximize the storage ahead of the dry season.

Overall, the water supply areas received near-normal precipitation for the period of May 1 to October 15, 2024. July and September were notably dry and warm, but June and August saw above average precipitation. As a result, daily and peak day demands were slightly lower in 2024 than in 2023.

PURPOSE
To provide the Water Committee with an overview of water use and water supply system performance during the 2024 high-demand season.

BACKGROUND
The report titled "Water Supply Update for Summer 2024" was provided to the Water Committee at the May 8, 2024 meeting ahead of the high demand season. The report included a summary of past trends in water use, the state of source water supply, plans for operating the source reservoirs ahead of the high demand season, as well as an update on the regional public education program in support of activating Stage 1 of the Drinking Water Conservation Plan (DWCP). As per the Committee's 2024 Work Plan, this report provides an overview of the performance of the regional water supply system during the high demand season and is based on data available from May 1 to October 15, 2024.

Metro Vancouver's reservoirs get filled every winter and spring by precipitation and snowmelt, and that water needs to last through the summer and into the fall. In 2024, Metro Vancouver's

snowpack was below historical average during the winter months however the region experienced more typical weather conditions through the summer. The water supply areas received near-normal precipitation for the period of May 1 to October 15 with a series of well-timed storms each month that benefitted the water supply areas by relieving local drought conditions and reducing wildfire danger.

OPERATING AND MANAGING THE RESERVOIRS

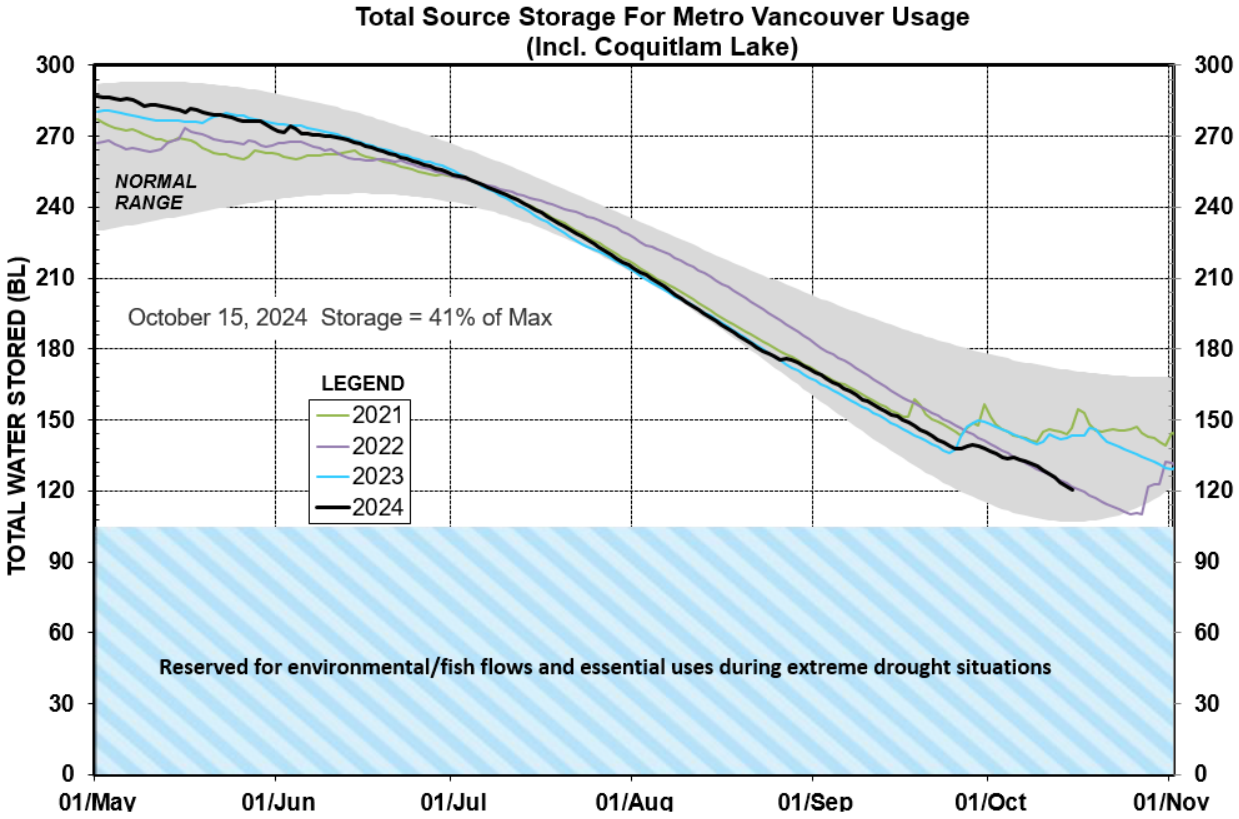
The source reservoirs were proactively managed through the spring and early summer to capture the incoming streamflow to ensure Capilano and Seymour Reservoirs reached their full pool water levels which happened on May 4 and June 14 respectively. By June 1, the snow survey measurements indicated that the snow water equivalent was at 33 percent of the historical average, but wetter than normal conditions enabled the reservoirs to retain full pool levels until late June.

Palisade Lake was opened on May 31 to supplement Capilano Reservoir and closed on July 17 for necessary maintenance work. Burwell Lake was opened on August 15, and Loch Lomond was opened on August 29 to supplement natural flows into Seymour Reservoir. Loch Lomond was closed on September 24 and Burwell closed on October 3.

Figure 1 illustrates that through the high-demand period when the regional drinking water use increases to over 1 billion litres per day, the total source storage levels were maintained within the normal range. The high volume of storage at the end of the spring can be attributed to increased inflow in the spring due to melting snowpack. Storage volumes started decreasing more rapidly in early July as the region experienced typical seasonal weather with high temperatures and minimal precipitation.

During this period of seasonal warm dry weather, and the resulting increased demands, the source reservoirs were managed to maintain a reliable water supply for the region by closely monitoring the overall system demands, river inflows, and system storage.

Figure 1 - Total Source Storage for Metro Vancouver Usage (Incl. Coquitlam Lake)



DRINKING WATER DEMANDS

Year Over Year Comparisons

As shown in Table 1, the average 2024 summer daily demands were lower than at the same time in 2023, however in 2023, water consumption was significantly higher in May, June, and July leading to rapid drawdown of the reservoirs early in the season. Additionally, in 2023 the forecasts were calling for continued hot and dry weather and continued drought conditions into the fall which led to Metro Vancouver's decision to activate Stage 2 watering restrictions. The decision to activate additional water restrictions is made on several factors, including snowpack, weather, and regional drinking water use trends through the summer.

Table 1: Daily Water Demand During High Season (billion litres per day)

Month	2023	2024
May	1.23 BL/d	1.12 BL/d
June	1.35 BL/d	1.19 BL/d
July	1.46 BL/d	1.41 BL/d
August*	1.33 BL/d	1.29 BL/d
September	1.17 BL/d	1.18 BL/d
October 1 - 15	1.05 BL/d	1.06 BL/d

*Stage 2 activated on August 4, 2023 until October 15, 2023

Total Volume Used During the High Demand Season

In 2024 the region used about 5 per cent less water during the period May 1 to October 15 as compared to the same period of 2023. The reduction in water use in 2024 could be attributed to having a wetter summer season, receiving over 105 per cent of normal precipitation from May 1 to October 15, while in 2023 the region received only 50 per cent of the normal precipitation.

Table 2: Total Volume of Water Used During High Demand Season (billion litres)

May 1 to October 15	
2023	**2024**
216 BL	205 BL

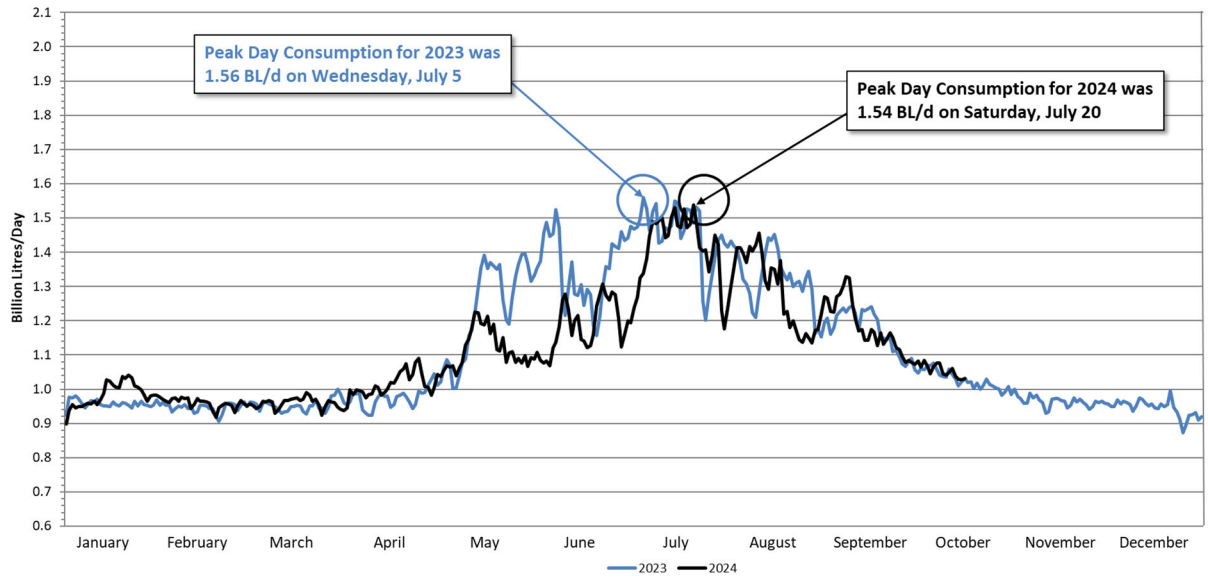
Peak Day and Peak Hour Demand

The peak day consumption data for summer 2023 and summer 2024 is shown below in Table 3 and is illustrated in Figure 2. It's encouraging to see that the peak day in 2024 occurred on a designated lawn watering day as compared to 2023 when the peak day occurred on a non-designated lawn watering day. And, in 2024 most peak days during a one-week period occurred on allowable lawn watering days, which is a testament to the education and enforcement efforts of member jurisdictions.

Table 3: Peak Day and Peak Hour Demand During High Season (billion litres per day)

	2023	**Day/Time**	**2024**	**Day/Time**
Peak day	1.56 BL/d	Wed. July 5	1.54 BL/d	Sat. July 20
Peak hour	1.96 BL/d	Sat. July 1 at 5:00 am	1.94 BL/d	Sat. July 20 at 6:00 am

Figure 2 - Metro Vancouver Daily System Consumption Comparison 2023 and 2024



Environmental Flows
In addition to drinking water needs, Metro Vancouver's reservoirs must also provide the required environmental flows to sustain fish populations. Raw water discharges from the Cleveland and Seymour Falls Dams were maintained throughout the season to provide flow to the river basins downstream of the dams.

WATER CONSERVATION MEASURES

With a relatively low snowpack this year and climate outlooks that were calling for above-average temperatures and reduced rain for the region for the spring and summer seasons, Metro Vancouver began its Stage 1 region wide communication earlier than usual. The messaging focused on reminding the public and stakeholders that limiting excessive outdoor water use will help avoid moving to Stage 2 where lawn watering is banned. Additionally, reducing lawn watering will help reduce seasonal demand for water and save treated drinking water for where it is needed most: for drinking, cooking, and cleaning.

Metro Vancouver's key initiatives during summer 2024 included the following:

- Early region wide communication of Stage 1 watering restrictions ahead of the May 1 start; an updated water conservation communication campaign which ran from June 24 to September 1; a promotion to celebrate the 100-year anniversary of the creation of the Greater Vancouver Water District; and the Water Wagon Program. The results of these communication efforts are shared in the separate report to this Committee titled "2024 Water Conservation Communications and Public Outreach Results".

- Metro Vancouver, in close coordination with the Provincial government, aligned on conservation and drought response messaging ahead of the 2024 high-demand season. Staff from Metro Vancouver and Ministry of Water, Land and Resource Stewardship have also been working together to clarify messaging between the Province's drought levels and Metro Vancouver's Drinking Water Conservation Plan stages. Both Metro Vancouver's and the Province's webpages have also been updated to include an explanation of the difference between the two as well as a links to each other's webpages for ease of finding information.

- The Drinking Water Conservation Plan Summer Support Program was offered for its final year in 2024 with participation from 10 member jurisdictions. The program was originally introduced to support and augment members' implementation of the updated DWCP in 2022. In 2024 the program was updated to target specific areas for monitoring and included early weekday morning shifts. When non-compliance was observed, details were recorded, and informational materials were left at the resident's door to support bringing them into compliance. Non-compliance data, including photographic evidence, was recorded and shared with member jurisdictions for follow-up. Preliminary feedback indicates that the program was valuable for local enforcement efforts. Collection of detailed feedback from participating member jurisdictions is planned later in 2024.

ALTERNATIVES

This is an information report; no alternatives are presented.

FINANCIAL IMPLICATIONS

Revenues from water sales as of October 1 are 1.4 per cent or about $4.3 million below budget.

CONCLUSION

Metro Vancouver's water supply system demonstrated resilience during the 2024 high-demand season despite the challenges posed by a low snowpack and the forecasted warm and dry weather. Average and peak day consumption were lower than in 2023 which can be attributed to proactive measures such as early dam and reservoir operations, a wetter-than-expected spring, as well as extensive communication and outreach initiatives supported by robust local government enforcement.

Annual Stage 1 lawn watering restrictions of the Drinking Water Conservation Plan were automatically activated on May 1, 2024 and the combination of snowpack, weather, and regional drinking water use trends through the summer ensured the region's water needs were met while adhering to Stage 1 watering restrictions.

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To: Water Committee

From: Shellee Ritzman, Division Manager, Corporate Communications, External Relations
Dana Carlson, Project Coordinator, Corporate Communications, External Relations

Date: October 18, 2024 Meeting Date: November 6, 2024

Subject: **2024 Water Conservation Communications and Public Outreach Results**

RECOMMENDATION

That the Water Committee receive for information the report dated October 18, 2024, titled "2024 Water Conservation Communications and Public Outreach Results".

EXECUTIVE SUMMARY

Metro Vancouver undertakes annual communications to educate residents on the value of drinking water and to support drinking water conservation across the region. This includes communication of the annual water restrictions, the water conservation campaign, and the Water Wagon program. Also in 2024 was a promotion to celebrate the 100th anniversary of drinking water service in our region.

Media placements (broadcast, print, digital, and out-of-home) reached residents across the region, delivering 68.5 million impressions (compared to 59.6 million in 2023) and over 40,000 website visits. There were 277 earned media hits, delivering 324 million impressions for a total ad value equivalent of $10.3 million. The post-campaign survey indicates that the campaign is effectively capturing attention (48% recall) and driving incremental change (23% made changes to use less water). The Water Wagon program resulted in 8,227 water bottle refills and fountain uses, and nearly 3,000 conversations with residents.

PURPOSE

To update the Committee on regional communications to support the 2024 water restrictions, water conservation campaign, Water Wagon program, and the 100th Anniversary of the Greater Vancouver Water District.

BACKGROUND

Metro Vancouver educates residents on the value of drinking water and encourages more mindful water use to reduce overall demand. Reducing per capita demand is important because the available water needs to meet the needs of the growing population and allow the region to be resilient to climate change, which is causing increased instances of drought in summer months. Communication efforts support Metro Vancouver's Drinking Water Conservation Plan and Water Supply Outlook 2120 through three complementary initiatives:

- Water restrictions: Educate residents about the annual water restrictions
- Water conservation campaign: Change behaviour to reduce outdoor usage of treated drinking water

- Water Wagon program: Highlight Metro Vancouver's water system and high-quality drinking water, as well as encourage water conservation

Also in 2024, the 100th anniversary of the Greater Vancouver Water District was celebrated using communications that aimed to increase awareness of Metro Vancouver's role in delivering high-quality drinking water.

WATER CONSERVATION COMMUNICATIONS

Both the water restrictions promotion and water conservation campaign aimed to reduce the overall demand for treated drinking water.

Approach and Timing

Metro Vancouver began promoting outdoor water use restrictions with a media release on April 9. A second release was issued when the water restrictions came into effect on May 1. Promotions were in market until water restrictions ended on October 15. Materials included direct mail (postcard), posters, social media, as well as translated Chinese and Punjabi ads in multicultural community newspapers.

The full regional water conservation campaign was in market from June 24 to September 1. It highlighted the importance of water conservation to ensure our drinking water is available for where it's needed most: drinking, cooking, and cleaning. The campaign targeted homeowners in detached houses, duplexes, and townhouses with lawns, as they are most likely to engage in outdoor water uses, primarily lawn watering, which contributes to higher seasonal water demand. Media placements included digital (YouTube, digital banners, Facebook/Instagram, Google Search), television, radio, and digital billboards.

Two secondary social media promotions rounded out the water conservation campaign:

- During the spring, a promotion about the source of drinking water ran, aiming to increase awareness of Metro Vancouver's water system
- Seasonal maintenance tips to help lawns thrive with less water ran in the spring and fall

Creative Direction

The creative direction for the water restrictions promotion and the water conservation campaign (Attachment 1) was updated in response to focus group findings and to make a stronger connection between the two programs. The creative was simplified and features bold, attention-grabbing colours and graphics. The key message and tagline were "Water one hour a week for a healthy lawn" and "It's all drinking water". Water conservation tips were woven throughout the creative.

Metro Vancouver Member Engagement

Metro Vancouver made materials available to all Greater Vancouver Water District members for display, distribution, and to supplement members' education and enforcement programs. Items included social media content, co-branded materials such as posters, rack cards, transit shelter ads, digital billboards, and translated assets.

Evaluation

Combined performance for both the water restrictions promotion and water conservation campaign are below.

Website

- There were 47,000 page views across the campaign website (Reference 1) and water restrictions web page (Reference 2).

Regional Paid Media Placements

- Paid media placements delivered a total of 68.5 million impressions (up from 59.6 million in 2023 — an increase of 15%).
- A 15-second video aired on Global Television, resulting in 10.3 million impressions.
- Radio ads ran on eight stations, achieving 13.4 million impressions.
- YouTube delivered 2.57 million impressions, reaching 584,000 people an average of three times. The video view rate was 67%, surpassing the 48% benchmark.
- Social media posts (Facebook and Instagram) delivered 9.15 million impressions and were seen by more than one million residents on average nine times. There were 1,509 likes, comments, shares, and saves, and 9,177 clicks to the web page.
- Online banner ads exceeded targets, delivering 7.18 million impressions and 6,186 clicks.
- Google Search served 47,258 impressions and 18,551 clicks with a 39.06% click through rate, similar to 2023 and higher than previous years (38.84% in 2023, 37.03% in 2022, 31.08% in 2021).
- A postcard was mailed early July to 553,050 single-family homes and townhouses across the region.
- Eleven digital, weather-triggered billboards, delivered 25.6 million impressions.
- Print ads were placed in multicultural community papers with Asian and South Asian readership and delivered 102,000 impressions across four publications.

Earned Media

- There were 277 earned media hits, delivering 324 million impressions for a total ad value equivalent of $10.3 million.

Post-Campaign Survey

- 83% of respondents say they believe that a browning lawn will turn green again in the fall rainy season, a slight decrease from previous years (84% in 2022, 87% in 2021, 88% in 2020). This is highest amongst those 45 and older.
- Nearly one-half (48%) of residents say they saw or heard Metro Vancouver's ads or similar ads over the past few months, a 16-percentage point increase since 2022. The campaign was even more successful reaching its target audience of homeowners aged 35 and older living in single detached homes (58% aware).
- 23% of residents who saw or heard Metro Vancouver's water conservation ads say they made changes to use less water.
- Four-in-ten (39%) residents who saw or heard the ads say they talked about them with others, a marginal five percentage point decrease since 2022.

WATER WAGON PROGRAM

The Water Wagon and Tap Water Outreach Team offered free water bottle refills at community events across the region. The program highlights Metro Vancouver's water system and our high-quality tap water, and reduces the use of single-use bottled water. The outreach team engages with residents through displays and interactive games that share the "mountain to tap" story of Metro Vancouver's drinking water and ways to conserve it. This year the Water Wagon exterior was refreshed to feature the Water Service 100th Anniversary branding (Attachment 2).

The Water Wagon attended 24 community events across nine member jurisdictions between May 22 and September 15 for a total of 32 event days (Attachment 3). The outreach team tallied 8,227 water bottle refills and fountain uses and engaged in 2,931 discussions with residents.

100TH ANNIVERSARY CELEBRATION

2024 marks the 100th anniversary of the Greater Vancouver Water District. Metro Vancouver is celebrating this legacy of service and collaboration with member jurisdictions in providing drinking water to the region through activities and communications throughout the year.

Launching with a media release on January 11, the anniversary was highlighted on the website, social media (Facebook, Instagram, Twitter/X, YouTube), the PNE Fair showcase, Water Wagon, and at construction projects. An outdoor celebration event was held on July 20 in the Lower Seymour Conservation Reserve. Members of the public enjoyed a fun-filled day with food trucks, live music, and activities showcasing how water is stored, treated, and supplied to the region. (Attachment 2)

Celebrating this anniversary helps raise the profile of Metro Vancouver's long-standing role in delivering high-quality drinking water to the region.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The water restrictions communications, the water conservation campaign, the Water Wagon program, and the 100th Anniversary Celebration is part of the 2024 External Relations budget. All items were completed within the Board-approved budget.

CONCLUSION

In 2024, Metro Vancouver educated residents about the value of drinking water and supported drinking water conservation through four communications initiatives: the water restrictions promotion, the water conservation campaign, the Water Wagon program, and the 100th Anniversary celebration. Across all communications, there were 68.5 million impressions and over 40,000 website visits. There were 277 earned media hits, delivering 324 million impressions for a total ad value equivalent of $10.3 million. The post-campaign survey indicates that the campaign is effectively capturing attention (48% recall) and driving incremental change (23% made changes to use less water).

Looking ahead to 2025, strategic communications will continue to support the goals and objectives in the Metro Vancouver's Drinking Water Conservation Plan and Water Supply Outlook 2120.

ATTACHMENTS

1. 2024 Water Conservation Communications Materials
2. Water Service 100th Anniversary Communications Materials
3. 2024 Water Wagon Program Event Schedule

REFERENCES

1. Water Conservation Campaign Website (www.welovewater.ca)
2. Water Restrictions Web Page (www.metrovancouver.org/lawns)

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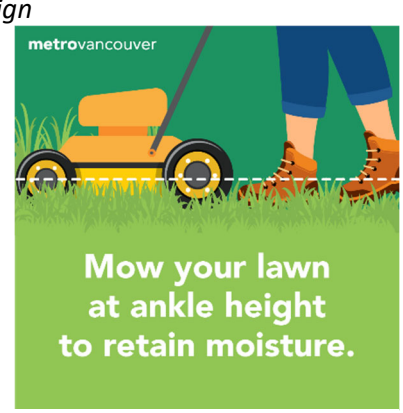
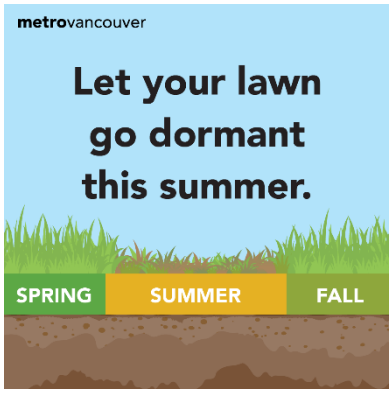
Attachment 1

2024 Water Conservation Communications — Sample Materials

Water Conservation Campaign

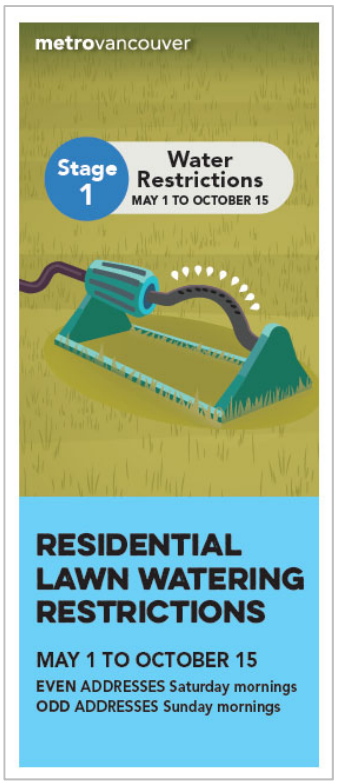
Main Water Conservation Campaign





Secondary Promotions: Water Source, Seasonal Lawn Care

Stage 1 Water Restrictions



Rack Card Front

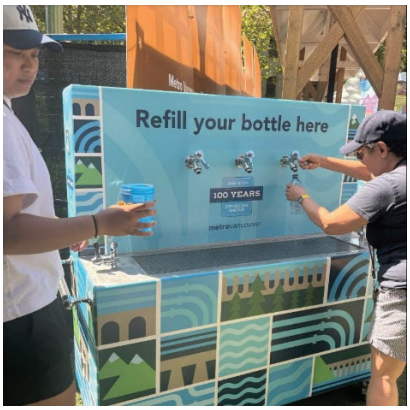
Rack Card Back

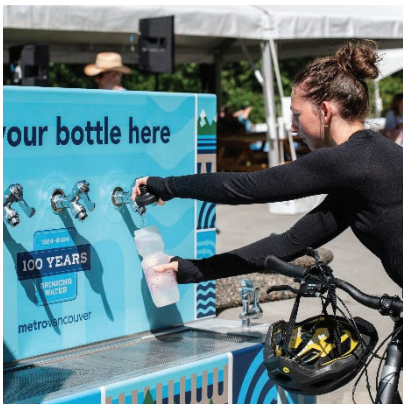
Social Media Story Image

Postcard Front

Postcard Back

Water Service 100th Anniversary — Sample Communications Materials





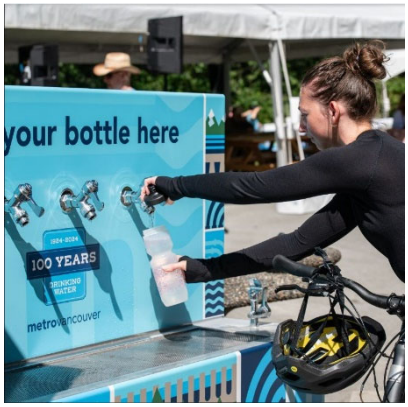
Water Wagon

Water Service 100th Anniversary Event

Attachment 3

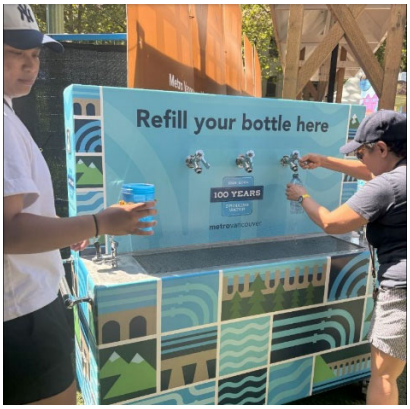
2024 Water Wagon Program Event Schedule — 44 Event Days

Event	Date	Member Jurisdiction/Location	# Days
Metro Vancouver Water Services AGM	May 22 - 23	Metro Vancouver	2
Maple Ridge Public Works Open House	May 25	Maple Ridge	1
West Vancouver Community Cultural Festival	May 31 - Jun 1	West Vancouver	2
City of Langley Community Day	June 8	City of Langley	1
Italian Day on the Drive	June 9	Vancouver	1
Splash! BC Family Fishing Day	June 16	Metro Vancouver	1
National Indigenous Peoples Day	June 16	New Westminster	1
Whey-ah-Wichen Canoe Festival	June 28 - 30	District of North Vancouver	3
Canada Day Westminster Pier Park	July 1	New Westminster	1
Squamish Nation Youth Powwow	July 5 - 7	West Vancouver	3
Boundary Bay Air Show	July 13	Delta	1
BC Summer Games	July 19 - 20	Maple Ridge	2
Water 100 Celebration Event	July 20	District of North Vancouver	1
Squamish Nation Amalgamation Day	July 23	West Vancouver	1
Maple Ridge Pitt Meadows Country Fest	July 27	Maple Ridge	1
Vancouver Dyke March and Festival	Aug 3	Vancouver	1
Delta Community Animal Festival	Aug 11	Delta	1
New West Pride Street Festival	Aug 17	New Westminster	1
Richmond Dragon Boat Festival	Aug 24	Richmond	1
Langley Global Fest	Aug 25	City of Langley	1
Car Free Day Port Coquitlam	Sept 7	Port Coquitlam	1
Maple Ridge 150 Birthday Celebration	Sept 14	Maple Ridge	1
The Fair at the PNE	Aug 17 - Sept 2	Vancouver	15



100th Anniversary Celebration, Lower Seymour Conservation Reserve

Community Day, City of Langley



Metro Vancouver exhibit, PNE Fair

To: Water Committee

From: Murray Gant, Director, Major Projects, Project Delivery

Date: October 28, 2024 Meeting Date: November 6, 2024

Subject: **Water Supply Tunnel Projects Updates**

RECOMMENDATION

That the Water Committee receive for information the report dated October 28, 2024 titled "Water Supply Tunnel Projects Updates".

EXECUTIVE SUMMARY

Metro Vancouver is upgrading its water transmission system to ensure resilience in the event of an earthquake. Included in these upgrades are six major water supply tunnels being managed and delivered by the Project Delivery department. These high risk, high value, and complex projects are in various stages of design and construction and are being designed to meet current seismic standards, protect against scour and other marine activities, and meet the drinking water needs of the growing region.

Once complete, these projects will significantly contribute to Metro Vancouver's goals to ensure that the transmission components of the drinking water system are expanded and strengthened to allow the continued supply of high-quality drinking water to the region's residents and businesses.

PURPOSE

The purpose of this report is to provide an update on the status and progress of the six water supply tunnel projects.

BACKGROUND

In accordance with the Water Committee 2024 Work Plan, updates for the water supply tunnel projects are being brought forward to the Water Committee.

PROJECT UPDATES

Six major water supply tunnel projects are in various stages of planning, design and construction to support the continued delivery of high-quality drinking water to the region's residents and businesses. Following is a summary of each project. A map of the water supply tunnels is included as an attachment.

Second Narrows Water Supply Tunnel (Construction) – Project 1

The Second Narrows Water Supply Tunnel is a 1.1 kilometre long, 6.5 metre diameter tunnel crossing of Burrard Inlet from North Vancouver to Burnaby.

The project includes three steel water mains that will replace the three existing mains which were constructed in shallow trenches at the bottom of the Burrard Inlet from the 1940s through to the 1970s. The existing mains are near the end of their service lives and do not meet current seismic standards. The project consists of vertical shafts constructed on each side of Burrard Inlet, and large underground valve chambers to regulate the water flow through the newly installed steel water mains.

Construction of this new tunnel infrastructure commenced in 2019 and is scheduled to be completed in 2024. The three new water mains will be tied into the drinking water system over the next few winters and are expected to be in service by 2028. The total budget for construction is $445 million.

Annacis Water Supply Tunnel (Construction) – Project 2
The Annacis Water Supply Tunnel is a 2.3 km long, 4.5 m diameter crossing of the Fraser River from New Westminster to Surrey.

The project consists of a tunnel and deep vertical shafts located on each side of the river which will accommodate the installation of a 2.6 m diameter welded steel water main. Large underground valve chambers will be constructed adjacent to each shaft to regulate flow and facilitate connection of the water main into the existing water transmission system.

Construction commenced in early 2022 and the new tunnel is scheduled to be completed and in-service by 2028. The total budget for construction is $450 million.

Stanley Park Water Supply Tunnel (Construction) – Project 3
Metro Vancouver is commencing construction of a new water supply tunnel deep under Stanley Park. The new water supply tunnel will replace an existing water main that was built in the 1930s, has experienced leaks in 2016 and 2023, and has reached the end of its service life. The new Stanley Park Water Supply Tunnel is urgently needed to reduce the likelihood of additional leaks from the water main.

The project involves the construction of a new water supply tunnel, designed to provide increased capacity to meet future water demand as well as to meet current seismic standards. The new tunnel will be 1.4 km long, approximately 4.5 m in diameter, include a 2.6 m diameter steel water main, and will connect to two new underground valve chambers.

To facilitate construction, three shafts will be constructed within Stanley Park. The tunnel will be constructed from an intermediary central shaft located in the existing Stanley Park Service Yard, with two exit shafts, one at the north side of park at the First Narrows Crossing of Burrard Inlet, and one at the south side of the park near the intersection of Chilco and Alberni streets. The project has been designed to minimize construction footprint, minimize impacts to the park, and reduce construction impacts to park users and residents.

Procurement for the construction contractor is complete. Construction is anticipated to start in late 2024 and is expected to be substantially complete by 2029. The total budget for construction is $470 million.

Cambie-Richmond Water Supply Tunnel (Preliminary Design) – Project 4
The Cambie-Richmond Water Supply Tunnel is a 1.1 km long, 4.5 m diameter crossing under the Fraser River from Vancouver to Richmond.

The project consists of a tunnel and deep vertical shafts located on each side of the river to facilitate the installation of a 2.1 m diameter welded steel water main. Each shaft site will also include the construction of underground valve chambers to facilitate water control functions.

The conceptual design phase of the project was completed in 2022. Metro Vancouver subsequently acquired property in Vancouver and Richmond to facilitate construction of the shafts and valve chambers, and to launch and retrieve the tunnel boring machine.

Procurement for the preliminary design phase of the project is complete and preliminary design commenced in September 2024. Construction is scheduled to commence in 2029 and is anticipated to take approximately five years to complete. The preliminary design budget including the funds for property acquisition is $60 million.

Lulu Delta Water Supply Tunnel (Definition/Conceptual Design) – Project 5
The Lulu Delta Water Supply Tunnel is a 1 to 2 km long marine crossing deep under the Fraser River from Richmond to Delta, and is located near the George Massey Tunnel. The new water supply tunnel will replace the existing Lulu Delta crossing which is near the end of its service life.

The project consists of a new welded steel water main crossing constructed using a trenchless method such as tunneling, micro-tunneling or horizontal directional drilling, which is to be confirmed during the project definition phase. The RFP for project definition closed in early October and is anticipated to commence in late 2024 or early 2025. Construction is currently anticipated to commence in 2032. The conceptual design budget is $5 million.

This project is located in close proximity to the new George Massey Tunnel Replacement project, which will require close coordination with Ministry of Transportation and Infrastructure staff on logistics, schedule and workspace requirements. These discussions have commenced.

Pitt River Water Supply Tunnel (Definition/Conceptual Design) – Project 6
The Pitt River (Haney) Water Supply Tunnel is a 1 km long tunnel crossing of the Pitt River between Port Coquitlam and Pitt Meadows. The new water supply tunnel will replace the existing Haney Mains No. 2 and No. 3.

The project consists of constructing a shaft on each side of the Pitt River connected deep underground by a tunnel, which will facilitate the installation of a welded steel water main. Each shaft site will also include the construction of valve chambers to facilitate water control functions.

The project definition, or conceptual design, phase is anticipated to be completed by the end of 2024. Construction is anticipated to commence in 2029 and will take approximately five years to complete. The conceptual design budget including funds for preliminary preparatory work is $25 million.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The budgets noted in this report have been previously approved by the Board. At this time, the total expenditures projected for each noted phase are not anticipated to exceed the budget amounts. The Water Committee will be advised of any changes required as the projects progress through design and construction.

CONCLUSION

Making sure the regional infrastructure is resilient to earthquakes is a high priority with multiple upgrades to the drinking water transmission system infrastructure underway. A major resilience initiative is to strengthen the water supply system by building large-diameter water mains in tunnels deep under the Burrard Inlet, the Fraser River, and Stanley Park. These water supply tunnel projects are critical components of Metro Vancouver's drinking water transmission system and are being designed to withstand a major earthquake, river scour and marine activities, and to meet projected future drinking water demands for the region's growing population.

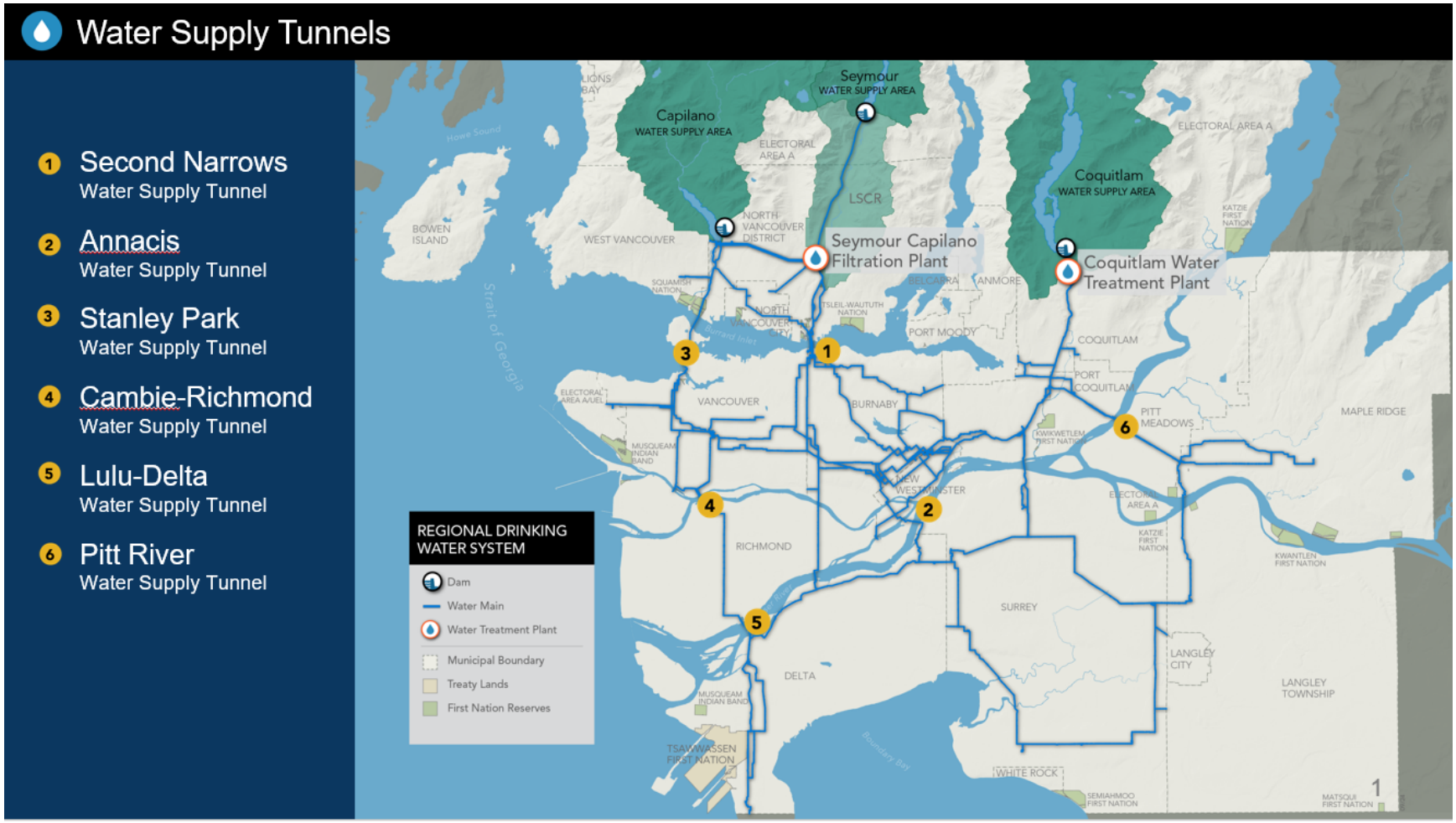
ATTACHMENT

1. Water Supply Tunnel Projects Map
2. Water Supply Tunnel Projects Update - Presentation

66894338

Attachment 1

Water Supply Tunnel Projects Map



Attachment 2

Overhead view of Second Narrows Water Supply Tunnel shaft

Water Supply Tunnel Projects Updates

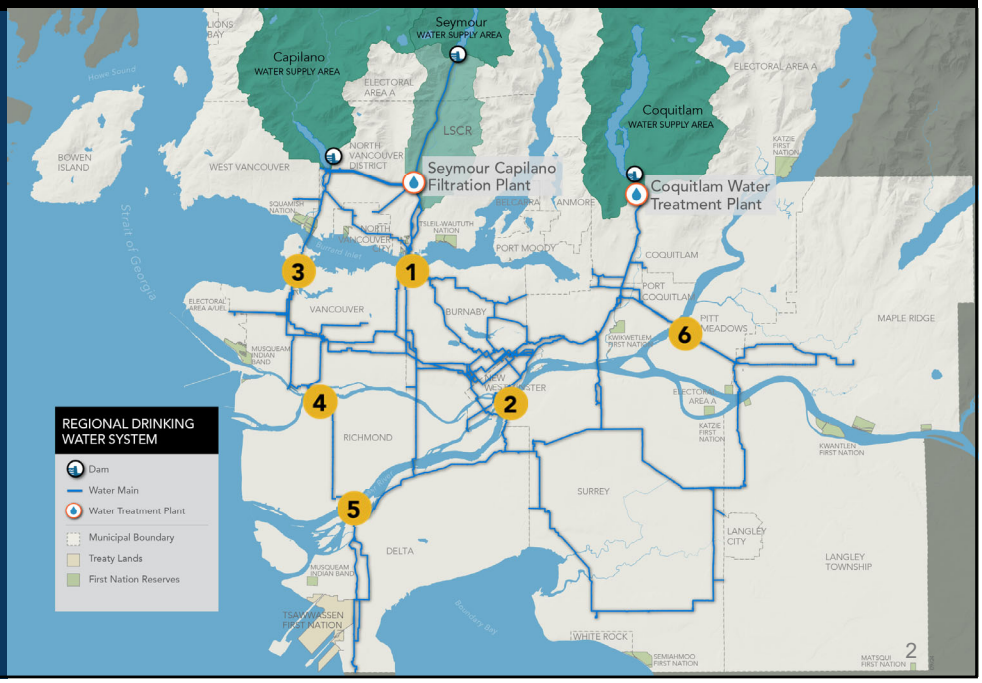
Murray Gant
Director, Major Projects, Project Delivery

Water Committee Meeting - November 6, 2024
Orbit No. 71798811

metrovancouver

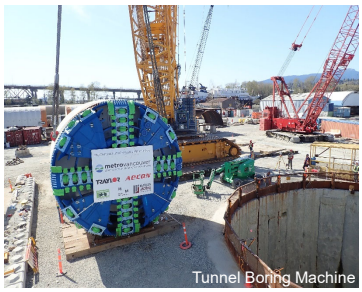
Water Supply Tunnels

1. Second Narrows Water Supply Tunnel
2. Annacis Water Supply Tunnel
3. Stanley Park Water Supply Tunnel
4. Cambie-Richmond Water Supply Tunnel
5. Lulu-Delta Water Supply Tunnel
6. Pitt River Water Supply Tunnel

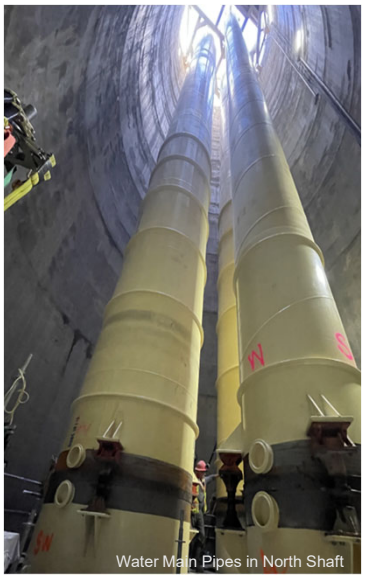


2

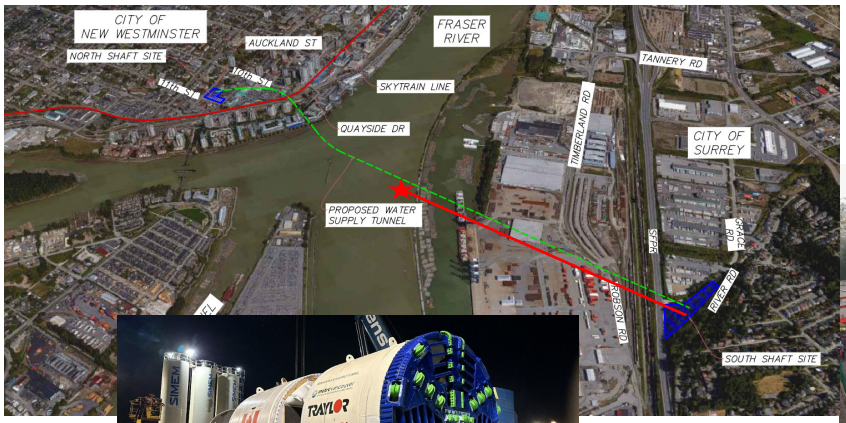
SECOND NARROWS WATER SUPPLY TUNNEL


Tunnel Boring Machine


North Valve Chamber


Water Main Pipes in North Shaft

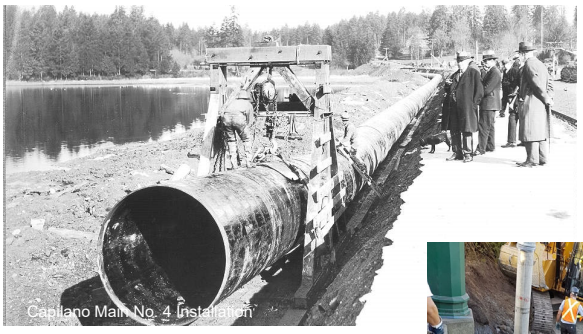
ANNACIS WATER SUPPLY TUNNEL



Annacis Tunnel Boring Machine


Annacis North Shaft and TBM

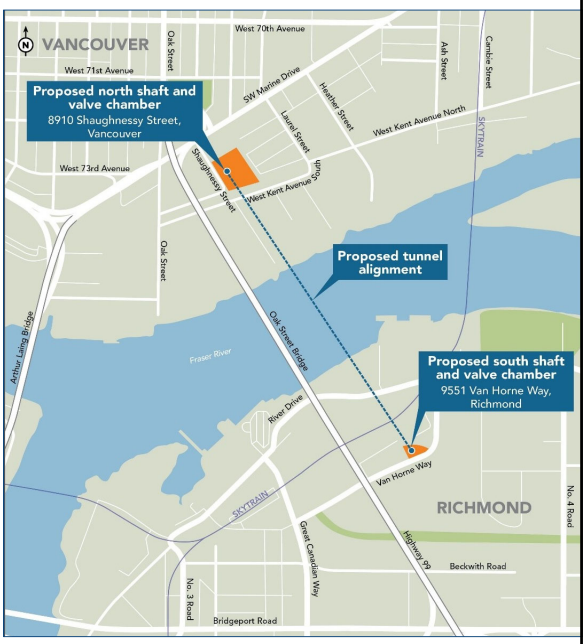
STANLEY PARK WATER SUPPLY TUNNEL


Capilano Main No. 4 Installation


Leak Repair 2016

CAMBIE RICHMOND WATER SUPPLY TUNNEL

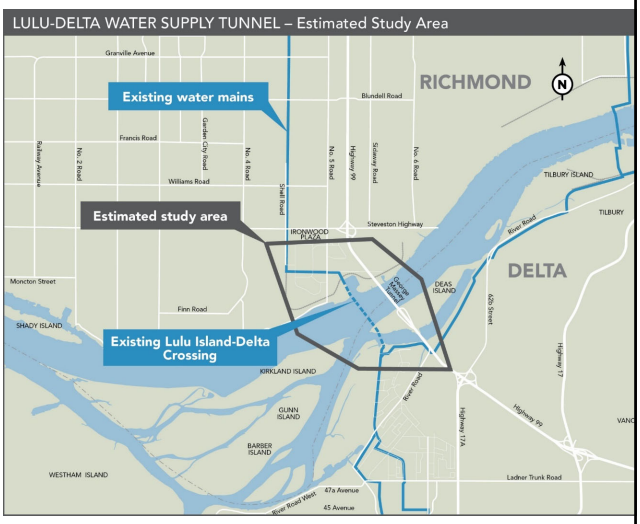
- Proposed shaft and valve chamber locations and proposed tunnel alignment
- Preliminary design recently commenced
- Construction anticipated to commence in 2029



Proposed Tunnel Alignment

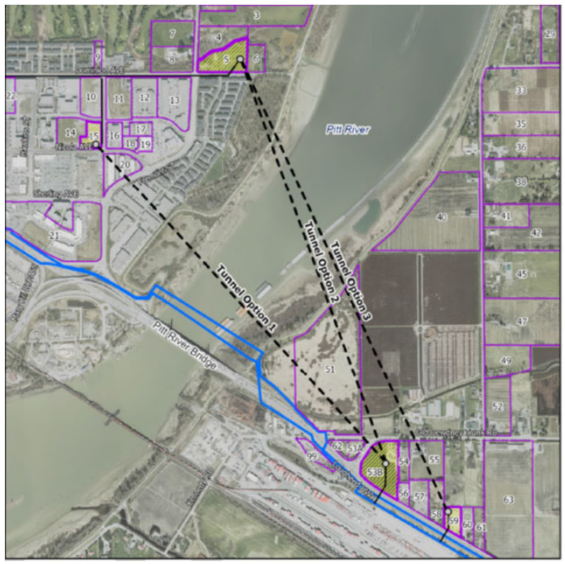
LULU DELTA WATER SUPPLY TUNNEL

- Replaces existing Lulu-Delta crossing
- Options: tunnel, micro-tunnel, HDD
- Underground valve chambers
- Project Definition to commence in 2025
- Construction anticipated to commence in approx. 2032



PITT RIVER WATER SUPPLY TUNNEL

- Replaces existing Haney Mains
- Tunnel Option 1 Preferred
- Single 2.4m diameter steel main
- Valve chambers
- Preliminary design to commence early next year
- Construction anticipated to commence in 2029



Workers inside the Second Narrows Water Supply Tunnel

Thank you

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