



Beaver Creek Water Advisory Committee Meeting

Thursday, September 18, 2025

Zoom/Board Room (Hybrid) – 3008 Fifth Avenue, Port Alberni, BC

10:00 am

Regular Agenda

Watch the meeting live at: <https://www.acrd.bc.ca/events/18-9-2025/>

Register to participate via Zoom Webinar at:

https://acrd-bc-ca.zoom.us/webinar/register/WN_8Qg3B-QCSqK6wbtUOKxLFg#/registration

PAGE

1. **CALL TO ORDER**

Recognition of Territories.

Notice to attendees and delegates that this meeting is being recorded and livestreamed to YouTube on the Regional District Website.

Introductions - Committee Members and Staff present in the Boardroom and via Zoom.

2. **APPROVAL OF AGENDA**

(motion to approve, including late items requires 2/3 majority vote)

3. **DECLARATIONS**

(conflict of interest)

4. **MINUTES**

a. **Beaver Creek Water Advisory Committee Meeting held June 19, 2025** 3-6

THAT the minutes of the Beaver Creek Water Advisory Committee meeting held on June 19, 2025 be adopted.

5. **PETITIONS, DELEGATIONS & PRESENTATIONS (10 minute maximum)**

6. **CORRESPONDENCE FOR ACTION/INFORMATION**

7. **REQUEST FOR DECISIONS**

- a. **REQUEST FOR DECISION**
North Reservoir Replacement Design Options

7-17

THAT the Beaver Creek Water Advisory Committee receive the report “North Reservoir Replacement – Conceptual Design Options Review,” AND

THAT the Beaver Creek Water Advisory Committee recommend that the Alberni-Clayoquot Regional District Board of Directors direct staff to move forward with a detailed design using Option 1, the epoxy coated steel tank on a raised concrete foundation.

8. REPORTS

- a. **Next Quarter at a Glance**

18-19

THAT the Beaver Creek Water Advisory Committee receives report a.

9. LATE BUSINESS

(requires 2/3 majority vote)

10. QUESTION PERIOD

Questions/Comments from the public:

- **Participating in Person in the Board Room**
- **Participating in the Zoom meeting**
- **Emailed to the ACRD at responses@acrd.bc.ca**

11. ADJOURN



Alberni-Clayoquot Regional District

MINUTES OF THE BEAVER CREEK WATER ADVISORY COMMITTEE

MEETING HELD ON THURSDAY, JUNE 19 2025, 10:00 AM

Hybrid - Zoom/Board Room, 3008 Fifth Avenue, Port Alberni, BC

MEMBERS Susan Roth, Chairperson, Director, Electoral Area “E” (Beaver Creek)

PRESENT: Pam Craig
Gord Blakey
Christy Arsenault
Jim Warm
Harold Carlson

REGRETS: Brad Jasken

STAFF PRESENT: Jenny Brunn, General Manager of Community Services
Eddie Kunderman, Operations Manager
Matt McLeod, Water Utilities Leadhand
Cynthia Dick, General Manager of Administrative Services
Lyndsey Page, Community Services Coordinator

The meeting can be viewed on the Alberni-Clayoquot Regional District website at:

<https://www.acrd.bc.ca/events/19-6-2025/7717/?catid=0>

1. **CALL TO ORDER**

The Chairperson called the meeting to order at 10:03 am.

The Chairperson recognized this meeting is being held throughout the Nuu-chah-nulth territories.

The Chairperson reported this meeting is being recorded and livestreamed to YouTube on the Regional District website.

Introductions - Committee Members and Staff present in the Boardroom and via Zoom.

2. **APPROVAL OF AGENDA**

MOVED: P. Craig

SECONDED: G. Blakey

THAT the agenda be approved as circulated.

CARRIED

3. **DECLARATIONS**

4. MINUTES

- a. **Beaver Creek Water Advisory Committee Meeting Minutes – February 13, 2025**

MOVED: G. Blakey

SECONDED: J. Warm

THAT the minutes of the Beaver Creek Water Advisory Committee Meeting held on February 13, 2025 be adopted.

CARRIED

5. PETITIONS, DELEGATIONS & PRESENTATIONS

- a. **Mitchell Hahn, McElhanney LTD, Beaver Creek Water Service Treatment Feasibility Study.**

6. CORRESPONDENCE FOR ACTION/INFORMATION

7. REQUEST FOR DECISIONS

- a. **Request for Decision regarding: Alternative Water Source Supply Study – Water Treatment Plant**

MOVED: S. Roth

SECONDED: J. Warm

THAT the Beaver Creek Water Advisory Committee receives the draft Beaver Creek Water System Alternative Water Source Supply study by McElhanney Ltd., and recommends the reports be finalized and received by the Alberni-Clayoquot Regional District Board of Directors.

CARRIED

MOVED: S. Roth

SECONDED: J. Warm

THAT the Beaver Creek Water Advisory Committee recommends that the Alberni-Clayoquot Regional District Board of Directors direct staff to prepare the cost estimates for land acquisition, water quality investigation and preliminary design work on development of the Beaver Creek Water Treatment Plant as presented in the McElhanney report, including First Nations engagement.

CARRIED

b. **Request for Decision regarding: Financial Plan Amendment – Kitsuksis Watermain Replacement Project**

MOVED: P. Craig

SECONDED: J. Warm

THAT the Beaver Creek Water Advisory Committee recommend that the Alberni-Clayoquot Regional District Board of Directors approve a Financial Plan amendment for the Beaver Creek Water System Capital Fund, increasing the budget for the lower Kitsuksis watermain replacement project to \$812,000.

CARRIED

8. **REPORTS**

a. Beaver Creek Water System 2024 Annual Report

b. Next Quarter at a Glance

MOVED: J. Warm

SECONDED: G. Blakey

THAT the Beaver Creek Water Advisory Committee receives reports a-b.

CARRIED

9. **LATE BUSINESS**

10. **QUESTION PERIOD**

Questions/Comments from the public. The Community Services Coordinator advised there were no questions or comments respecting an agenda topic from public:

- Participating in Person in the ACRD Board Room
- Participating in the Zoom webinar
- Submissions received by email at responses@acrd.bc.ca.

11. **IN CAMERA**

MOVED: S. Roth

SECONDED: J. Warm

Motion to close the meeting to the public as per the Community Charter, section:

- 90 (1) (k): negotiations and related discussions respecting the proposed provision of a regional district service that are at their preliminary stages and that, in the view of the board, could reasonably be expected to harm the interests of the regional district if they were held in public.*

CARRIED

The meeting was closed to the public at 11:39 am.

The meeting was re-opened to the public at 11:50 am.

12. REPORT OUT - RECOMMENDATIONS FROM IN-CAMERA

The following resolution passed at the in-camera portion of the Board of Directors meeting and is reported out in open meeting:

MOVED: S.Roth

SECONDED: J. Warm

THAT the Beaver Creek Water Advisory Committee recommend that the Alberni-Clayoquot Regional District Board of Directors authorize the CAO to negotiate and execute an interim bulk water agreement with the City of Port Alberni for the supply of potable water to the Beaver Creek Water System.

CARRIED

13. ADJOURN

MOVED: J. Warm

SECONDED: G. Blakey

THAT this meeting be adjourned at 11:52 am.

CARRIED

Certified Correct:

Susan Roth,
Chairperson

Lyndsey Page,
Community Services Coordinator



To: Beaver Creek Water Advisory Committee
From: Eddie Kunderman, Operations Manager
Meeting Date: September 18, 2025
Subject: North Reservoir Replacement Design Options

Recommendation:

THAT the Beaver Creek Water Advisory Committee receive the report “North Reservoir Replacement – Conceptual Design Options Review,” AND

THAT the Beaver Creek Water Advisory Committee recommend that the Alberni-Clayoquot Regional District Board of Directors direct staff to move forward with a detailed design using Option 1, the epoxy coated steel tank on a raised concrete foundation.

Desired Outcome:

For the Beaver Creek Water Advisory Committee (BCWAC) to receive the North Reservoir Replacement – Conceptual Design Options Review and direct staff to proceed with detailed design of Option 1.

Summary:

Staff recommend proceeding with detailed design for the North Reservoir replacement using the epoxy coated steel tank option, which balances cost-effectiveness and operational sustainability. This approach positions the project for future grant opportunities while maintaining system functionality and alignment with strategic infrastructure goals.

Background:

The North Reservoir within the Beaver Creek Water System (BCWS) was cleaned and inspected by Greatario Services in April 2023. While inspecting the tank, it was noted that the BCWS should begin the process for replacing the North Reservoir.

While investigating options, it was identified that suppliers were unable to provide the preferred glass-fused steel tank at the height requirement the system would need. Staff engaged Koers engineering to investigate alternatives that could be further investigated. There are four options outlined within this report, with capital costs ranging from \$2.23 million to \$7.5 million, using Class D cost estimates. The report highlights either option 1 or option 3 as the best option to move forward with.

Staff are recommending design option 1, the Fusion Bonded Epoxy Coated Steel Tank on Raised Concrete Foundation, which provides the lowest up-front capital cost (\$2.23 million), with a projected lifespan of 30 years. This option would allow for the gravity feed to be maintained from the North Reservoir and the tank would be installed on a raised concrete foundation sitting approximately 1.2m above the existing ground level to allow for that gravity feed. It provides the lowest cost per lifespan, allows the existing site to be utilized and does not require additional operating costs such as a booster station.

Design option 3, Concrete Slipform Reservoir, provided the longest lifespan at 75 years and would also allow for the gravity feed system to be maintained. However, it is also the most expensive with a capital cost estimate of \$7.5 million.

Options 2 and 4 both carry risks and would need to have other factors considered if they were the preferred options of the BCWAC to move forward with.

Once the preferred option is confirmed, detail design will proceed, ensuring that this project will be ready, should any grant opportunities present themselves. While staff had the project slated for 2027, as long as the tank is serviceable, it can be delayed until grant funding presents itself.

Time Requirements – Staff & Elected Officials:

It would take staff approximately 5 hours to move forward with the selected option to the detailed design.

Financial:

Staff initially budgeted \$850,000 for the North Reservoir replacement to take place in 2027, based off initial estimates.

Staff have budgeted \$50,000 in 2025 and \$25,000 in 2026 for the detailed design of the North Reservoir replacement.

There will be approximately \$550,000 in the BCWS Capital Fund entering 2026, with approximately \$220,000 forecasted to be contributed annually from the operating fund through 2029.

Staff will work to identify grant opportunities for this project once the detailed design has been completed.

Strategic Plan Implications:

This falls under Initiative 2.0: “Managing our Assets and Infrastructure.”

Policy or Legislation:

Bylaw No. E1054 “Beaver Creek Water System Local Service Area Establishment, 2012” and Bylaw No. F1148, “Beaver Creek Water Local Service Area Rates and Regulations, 2020” and their associated amendments.

Options Considered:

While staff recommend option 1, the BCWAC could instead choose to move forward with one of the other options if they desire. The recommendation could be changed to reflect the preferred option.

Submitted by: Jenny Brunn
Jenny Brunn, General Manager of Community Services

Reviewed by: Cynthia Dick
Cynthia Dick, General Manager of Administrative Services

Approved by: Daniel Sailland
Daniel Sailland, MBA, Chief Administrative Officer



TECHNICAL MEMORANDUM No. 1

Issued Date: September 10, 2025 File No.: 2462
Previous Issue Date: July 29, 2025
To: Eddie Kunderman, Operations Manager
From: Kevin Dougan, P.Eng., Project Manager
Client: Alberni Clayoquot Regional District
Project Name: North Reservoir Replacement
Subject: Conceptual Design Options Review

1. Objective

The objective of this technical memorandum is to provide a high-level review of conceptual design options for replacement of the aging North Reservoir in the Beaver Creek Water Service Area (BCWS). This includes identifying several conceptual design options, discussing some of the trade-offs for each option, and developing high level cost estimates for comparison purposes.

2. Background

The ACRD hired Greatario Services to perform an inspection on the North Reservoir in April 2023, which identified interior and exterior deterioration and recommended initiating replacement planning. In December 2024, the ACRD engaged Koers to review conceptual design options for the replacement of the North Reservoir.

The existing North Reservoir is located on Beaver Creek Road, south of Bainbridge Road, and was installed in 1996. The existing reservoir is a circular liquid epoxy coated bolted steel tank with a diameter of 4.57m and a height of 24.38 m, (15 ft dia. x 80 ft tall), providing an effective storage volume of approximately 390 m³. The top water level (TWL) is approximately ±106 m, and the reservoir services Pressure Zone 106 within the BCWS distribution system.

3. BCWS Reservoir Storage

Based on the Beaver Creek Water System Infrastructure Assessment Update, May 2017, the BCWS currently has a total storage volume of approximately 2,341 m³.

The required reservoir storage volume for the BCWS was calculated based on MMCD guidelines, which account for fire storage, equalization storage (25% of maximum day demand), and emergency storage (25% of the combined fire and equalization volumes). While emergency storage can be reduced depending on water source reliability and redundancy of supply and treatment infrastructure, availability of standby power and the number of storage facilities, full values were considered for this assessment.

Table 1: Reservoir Storage Requirements

Year	Storage Volume					
	Required (m ³)				Storage (m ³)	Surplus (m ³)
	Equalization	Fire Flow	Emergency	Total		
2017	584	1,080	416	2,080	2,341	261
2067	766	1080	461	2,307	2,341	34

As shown in Table 1, the total required storage at build-out in 2067 is 2,307 m³, based on the growth projections from the Beaver Creek Water System Infrastructure Assessment Update, May 2017. With an existing total storage capacity of 2,341 m³, the system currently meets projected long-term storage needs with a small surplus of 34 m³.

The BCWS Capital Plan Update 2023 technical memorandum also provides the following consideration for storage at the North Reservoir location:

“However, with the BCWS source at the Strick Rd Pump Station in the south and the majority of reservoir storage at the Kitsuksis reservoirs in the south, the ACRD may want to evaluate the benefits of increasing the storage at the North Reservoir. One of the benefits of increasing storage at the North Reservoir would be to provide better resiliency for the north end of the system in the event the system became severed north of the Strick Rd Pump Station and Kitsuksis Reservoirs due to seismic activity, construction impact, end of lifespan failure, or other unforeseen circumstances.”

4. Proposed Design Options

Koers initially considered replacing the existing reservoir with a new glass-fused steel tank, as this is a commonly used and economical option for local municipal reservoir of this size. However, it is understood that suppliers may be unable to provide a glass-fused steel tank of the height required that meets current seismic design standards. Therefore, the alternative options outlined in the following sections were developed.

4.1 Option 1 – Epoxy Coated Steel Tank on Raised Concrete Foundation

Option 1 includes installation of a fusion bonded epoxy coated bolted steel tank on a raised concrete foundation to achieve the height required to maintain the existing top water level (TWL) of 106m. It was found that a 5.46m dia. x 23.24m high epoxy coated steel tank is available, which could provide close to the current reservoir height of 24.38m. Therefore, it is proposed that the TWL of this reservoir could be maintained by installing the tank on a raised concrete foundation, which would raise the base of the tank approximately 1.2m above the existing ground level. The fusion bonded epoxy coating generally provides a longer life than a liquid epoxy coating, but less than a glass-fused coating.

One of the benefits of this option is that a gravity feed can be maintained from the North Reservoir with an economical steel tank design. Some of the drawbacks to this option include an epoxy coated steel tank has a shorter expected lifespan than a glass-fused steel tank or concrete reservoir, and the raised concrete foundation would have increased costs and require accommodation for access and maintenance. The expected lifespan for epoxy coated bolted steel tanks is approximately 30 years.



Photo 1 – Steel Tank on Raised Concrete Foundation

4.2 Option 2 – Short Glass-fused Steel Tank with Booster Pump Station

Option 2 includes installation of a shorter glass-fused bolted steel tank with a new booster pump station to achieve the required HGL of 106m. It was found that a 7.8m dia. x 22.0m high glass-fused bolted steel tank is available. During detailed design the trade-offs of reservoir height vs pump capacity could be analyzed in more detail to optimize the configuration. The Beaver Creek Water System does not currently have adequate emergency storage to operate without the North Reservoir gravity feed, and therefore the new pump station would need pumps sized to meet system fire flow demands in the 106m pressure zone, as well as higher head pumps to maintain the supply to the 130m pressure zone.

Some of the benefits of this option are the ability to utilize an economical glass-fused steel tank and reduce the constraints on the height of the reservoir required. One significant drawback of this option is losing the ability to feed the 106m pressure zone by gravity from this reservoir. This increases the risk of the system not being able to maintain water supply during an emergency event due to issues with the pump station, such as earthquake, prolonged power outage, etc. There would also be increased O&M costs associated with the new pumps, such as maintenance and power consumption. The expected lifespan for glass-fused bolted steel tanks is approximately 40 years.



Photo 2 – Village of Sayward Glass-fused Steel Reservoir

4.3 Option 3 –Concrete Slipform Reservoir

Option 3 includes installation of a cast-in-place concrete reservoir. A concrete reservoir could be constructed to maintain the current TWL by using slipform construction. This would involve continually raising the forms as the concrete is poured and sets.

Some of the benefits of this option are that a gravity feed can be maintained from the North Reservoir and the concrete can provide a longer lifespan than a steel tank. Some of the drawbacks include higher design and construction costs. The ground conditions would also need to be examined to confirm that suitable subgrade is available for the increased weight of a concrete reservoir. The expected lifespan for a concrete reservoir is approximately 75 years.



Photo 3 – East Courtenay Slipform Concrete Reservoir Construction

4.4 Option 4 – Glass Fused Steel Tank at Alternate Site

Option 4 includes installation of a new glass-fused steel tank at an alternate site. This option would also include relocating the booster pump station for the 130m pressure zone to the new reservoir site. It was found that a 7.8m dia. x 22.0m high glass-fused bolted steel tank is available. Therefore, a new site with a ground elevation at least 2.5m higher than the current site would be required to maintain gravity flow from this reservoir to the 106m pressure zone. It may be possible to achieve this higher elevation to the north on Beaver Creek Road near 7781 Beaver Creek Rd or to the north along Cameron Road near 7820 Cameron Rd. This option would also likely require upsizing the existing watermain between the current reservoir site and the proposed alternate reservoir site.

One of the benefits of this option is that a gravity feed can be maintained from the North Reservoir with an economical steel tank design. Some of the drawbacks to this option include more potential conflicts and costs associated with finding, securing and preparing an alternate site, and relocating and rerouting existing infrastructure.

5. Cost Estimates

5.1 Construction Cost Estimate

The Table 2 below shows a high level (Class D) estimate of anticipated costs associated with various proposed design options.

Table 2: Class D Cost Estimate Comparison

Option	Description	Capital Cost Estimate	Estimated Lifespan (years)	Capital Cost / Lifespan
1	Epoxy Coated Steel Tank on Raised Concrete Foundation	\$2,230,000	30	\$74,333
2	Glass Fused Steel Tank with Booster Pump Station	\$4,590,000	40	\$114,750
3	Concrete Slipform Reservoir	\$7,500,000	75	\$100,000
4	Glass Fused Steel Tank at Alternate Site	\$6,620,000*	40	\$165,500

*This estimate includes an allowance of \$1,000,000 for land purchase of an alternate site. The actual cost of a land purchase is unknown.

From the construction cost estimate comparison outlined in section 5.1, it appears that Option 1 would have the lowest up-front capital cost and could potentially provide the best value based on expected lifespan. However, the concrete reservoir in Option 3 would have a superior lifespan and would not incur the same replacement costs as the steel reservoir.

5.2 Cost Estimate Basis

The estimated project costs are Class D ($\pm 50\%$) as defined by the Association of Professional Engineers of BC as:

“An estimate which, due to little or no site information, indicates the approximate magnitude of cost of the proposed project, based on the client’s broad requirements. This overall cost estimate may be derived from lump sum or unit costs for a similar project. It may be used in developing long term capital plans and for preliminary discussion of proposed capital projects.”

These cost estimates include:

- a 30% general contingency allowance.
- a 20% allowance for construction, engineering, financing, legal and administrative costs.

These cost estimates don’t include inflation or unforeseen agency requirements. Construction cost estimates have a limited life span and are subject to inflation and market conditions. The estimates in this report are as of July 2025 when the Engineering News Record Construction Cost Index (ENR CCI) is at an average of 13,893.

Technical Memorandum No. 1

North Reservoir Replacement – Conceptual Design Options Review

Issued: September 10, 2025

Previous Issue: July 29, 2025

5.3 Design Fee Estimate

If the ACRD decides to proceed with design of Option 1, we estimate design fees for the North Reservoir Replacement at approximately \$75,000 + GST. This estimate includes an allowance for geotechnical and structural engineering support. This assumes that the structural design of the steel tank would be provided by the tank supplier (included in the construction cost estimates). This would include fees up to a tender ready design and does not include tendering and construction services. This estimate is in July 2025 dollars and does not include allowance for inflation. In the event the ACRD would like to pursue Option 3 for the superior lifespan, then this fee estimate would need to be revised.

6. Conclusions

The following conclusions are presented as a result of this technical memorandum:

- 1) There are several feasible options for replacement of the North Reservoir.
- 2) Replacing the existing reservoir with the same style of steel tank does not appear to be feasible under current seismic design requirements.
- 3) Design Option 1 Fusion Bonded Epoxy Coated Steel Tank on Raised Concrete Foundation appears to provide the lowest up-front capital cost and the best cost for expected lifespan.
- 4) Design Option 3 Concrete Slipform Reservoir would provide the longest lifespan and also provides good value based on expected lifespan.

7. Recommendations

Based on the results discussed in this technical memorandum we recommend the following:

- 1) The ACRD confirm selection of the preferred design concept option and budget to advance the design of the North Reservoir Replacement accordingly.

Yours truly,

KOERS & ASSOCIATES ENGINEERING LTD.

Prepared By:

Kevin Dougan, P.Eng
Project Manager
Permit to Practice 1001658

KOERS & ASSOCIATES ENGINEERING LTD.



To: Beaver Creek Water Advisory Committee

From: Eddie Kunderman, Operations Manager

Meeting Date: September 18, 2025

Subject: Next Quarter at a Glance

Purpose:

To provide the Beaver Creek Water Advisory Committee (BCWAC) with an overview of work completed this past quarter and initiatives planned for the Beaver Creek Water System (BCWS) within the next quarter. These updates support the committee's ability to keep the community informed and reflect the system's ongoing commitment to delivering cost-effective, reliable and potable water to residents.

Summary:

Staff, as always, will continue to conduct routine preventative maintenance work within the system to ensure water infrastructure remains efficient and reliable. Repairs are completed as necessary based on inspection findings to ensure the system continues to run smoothly.

The Unidirectional Flushing program (UDF) will take place in the next quarter as well. UDF is used as a method of cleaning the inside of the water mains within the system. This technique creates high flow velocities of water by isolating certain sections of water mains. The higher velocity flow allows for a better scouring and cleaning of the inside wall of water mains. The benefits include improved water quality, colour and flow of clean water through the distribution system.

The standpipe at the end of Willow Road will also be replaced this quarter. It will be relocated during replacement to allow for more protection, as it has been struck a few times by vehicles attempting to access Maplehurst Park.

Updated meter reading software will be installed within the system, likely in October and will be ready to use for the final readings of 2025. This will allow for increased staff efficiency and was completed within the budgeted amount allotted for 2025.

The Kitsuksis Concrete reservoir has developed a small leak, so staff will be getting quotes and developing a work plan to have the cracks sealed in 2026.

Brushing will continue in the first part of the quarter, as staff ensure vegetation is cleared around infrastructure to maintain accessibility and ensure staff can easily locate the necessary components.

Ongoing customer service always remains a key portion of operations, helping to support transparency and public confidence in the system.

It has been a busy and successful year so far for the BCWS and staff have worked hard to complete the projects put forth as a part of the 2025 workplan, while also still ensuring the day-to-day operations of the system meet the established standards of the BCWS.

Submitted by: *Jenny Brunn*
Jenny Brunn, General Manager of Community Services

Reviewed by: *Cynthia Dick*
Cynthia Dick, General Manager of Administrative Services

Approved by: *Daniel Sailland*
Daniel Sailland, MBA, Chief Administrative Officer