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REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF JANUARY 21, 2026

SUBJECT **Leech Restoration Project Closeout Report**

ISSUE SUMMARY

To provide the Regional Water Supply Commission with a report on the capital project to restore and prepare the Leech Water Supply Area (WSA) forests and lands for future water supply.

BACKGROUND

The Leech WSA (9,628 hectares (ha)) was acquired by the Capital Regional District (CRD) in 2007 and 2010 to control the use and management of the watershed lands that will provide future source water for the Regional Water Supply System. At the time of purchase, the Leech WSA was approximately 95% harvested and planted, and had an extensive network of temporary and permanent gravel roads.

From 2008 to 2009, a consultant consortium worked with CRD staff to recommend restoration priorities for the Leech WSA. These recommendations were presented to the Regional Water Supply Commission (Commission) and a plan for capital ($5.756 million total) and operating funding (escalating up to $437,500 per year) for 16 years to 2025 was approved to fund the restoration activities (Appendix A).

In 2015, CRD staff developed the report: *Leech Water Supply Area: An Assessment for Source Water Protection and Land Management* (Leech Report) based on the work the consultant consortium had done. Priorities with recommendations were set out in the following risk categories: roads, soil erosion and slope stability, reforestation and forest health, wildfire protection and forest fuel management, security, wildlife and invasive plants. In addition to the assessment of conditions and risks, recommendations on water quality, hydrology monitoring and First Nations interests were also included.

The Commission previously received progress updates detailing the restoration activities and budget performance from 2009 to 2012 (RWSC 2013-17) and 2013 to 2018 (RWSC 2019-13). This report provides an overall summary and review of the capital initiative since its inception in 2009 and plans for closeout of the capital project in 2026.

In terms of ecological restoration, the Leech WSA will still take decades to re-grow back into a forest comparable to the area before forest harvesting; however, the area is well on its way to hydrologic recovery, growing reasonably, and the most important management interventions have all been completed.

PROGRESS ON PRIORITIES IDENTIFIED IN 2009

The following summarizes the management activities undertaken relative to the recommendations in the 2015 Leech Report. Appendix B provides a photographic comparison of the Leech WSA in 2007 at the time of acquisition and 2023.

1. ROADS

Deteriorating roads and drainage structures were identified as major risks to water quality, environmental values and safety in the Leech WSA. Under-designed or poorly constructed/installed and maintained roads and drainage structures have the potential to be a chronic source of sediment into streams and water bodies.

Most of the restoration effort and capital funding for the Leech WSA has gone into upgrading the road network from an extensive temporary road network to a focused permanent road network for ongoing watershed management. This included removal of deteriorated bridges, re-routing a road and bridge out of a floodplain, rehabilitation/deactivation of roads on unstable terrain, replacing undersized culvert stream crossings to larger open bottom culverts or bridges to manage higher peak flows and to ensure fish passage; establishing a quarry to provide rock and materials for upgrades, decontamination of an old gravel pit; and establishing new roads for wildfire protection and access to a new high elevation weather station.

The road network in the Leech WSA was reduced by 75% from 380 kilometers (km) (previously used for industrial forestry) to 95 km. Final road upgrades include reopening and improving 5.5 km of road required to access the West Leech area (scheduled for completion in 2025–2026), and potential future extension into the northern Lazar area. The rest of the temporary road network has naturally revegetated. A final reconnaissance is planned on these naturally revegetated roads to ensure there are no remaining drainage structures that are causing environmental harm or risk.

Objectives in the 2009 assessment have been satisfied by upgrading to a permanent road network that poses less environmental risk, reduces sources of sedimentation, provides reliable and efficient access for watershed management, future water supply infrastructure and wildfire suppression, and improves worker safety on the roads.

In total, $4,629,238 or 67% of the funding spent on the Leech WSA was on roads, bridges and culverts (Table 1 below).

2. SLOPE STABILITY AND SOIL EROSION CONTROL (and REMEDIATION)

The terrain and underlying geology in a large portion of the Leech WSA result in soils that are more erodible and subject to more slope instability than in the rest of the Greater Victoria Water Supply Area (GVWSA). There is a history of small landslides in the steep canyons of the rivers in the Leech River watershed. The goal set out in 2009 was to better understand these risks and decommission/rehabilitate roads on unstable terrain which were seen as the greatest risk.

A Senior Geoscientist was hired in the Watershed Protection division in 2010. The position greatly facilitated completion of detailed assessments and mapping of geology, terrain stability and soil erosion, as well as assessment of the Leech River channel and its major tributaries Cragg Creek and West Leech. All roads on unstable terrain (terrain class 5) have been decommissioned with

re-sloping and contouring where deemed necessary to rehabilitate and reduce risk, supervised by the Senior Geoscientist.

The Leech WSA has a higher level of risk for slope stability and soil erosion inherent with the geology, terrain and soils of the area; however, the goals of the 2009 assessment have been met in terms of quantifying the risks and acting on priority sources of manmade slope instability.

In total, $698,955 or 10% of the funding spent on the Leech WSA was on slope stability, erosion and remediation (Table 1 below).

3. REFORESTATION AND FOREST HEALTH

Reforestation

At the time of purchase of the Leech WSA, 95 % of the forest had been harvested within the last 60 years, with harvesting continuing up until the date of purchase. The goal of restoration was to ensure all sites were adequately reforested and growing to hydrologic recovery, where the ability of the forest to absorb and hold precipitation is largely as it was prior to harvest (considered to be met at 20-meter (m) tree height).

In 2009, stocking surveys of all areas that had been harvested since 1995 were carried out and understocked areas were fill planted. A minor amount of brushing was required to ensure the survival and growth of planted trees. Under climate change scenarios it is expected that Douglas-fir, which was the main tree species planted, will have good survival in a warming climate but that tree species diversity represented by other tree species adapted to cooler moister conditions will decline.

Reforestation has been achieved, and the forests are growing toward hydrologic recovery. In 2010, only 11% of the Leech WSA forest landbase was considered hydrologically effective while in 2023 the area in hydrologic recovery has increased to 28%. The majority of the Leech WSA will have recovered hydrologically in another 10 to 15 years.

The 2009 assessment goal to monitor and manage for successful regeneration of the forest to grow to hydrologic recovery is being met. Monitoring of forest growth will continue with consideration of spacing and thinning treatments in future to maintain forest health and wildfire resilience.

Forest Health

Overall forest health in the Leech WSA is good with forest pests and diseases present at low levels. Annual forest health assessment of the GVWSA including the Leech WSA began in 2007. Over the years minor isolated occurrences of typical forest insects and diseases as well as snow press (seedling deformation and breakage due to heavy snow loading) and chlorosis (yellowing due to nutrient deficiency) have been identified and monitored.

These occurrences have not required treatment or intervention, except for white pine blister rust (a non-native fungal disease), which can cause significant mortality in young white pine trees. Concentrated areas of planted white pine were assessed and priority areas pruned to avoid mortality from white pine blister rust.

The goal of continuing to monitor the health and growth of the regenerating forest stands is being achieved, with intervention when deemed necessary to ensure adequate forest cover and forest health and to maintain tree species diversity as much as possible.

In total, $516,785 or 7% of the funding spent on the Leech WSA has been on Reforestation and Forest Health (Table 1 below).

4. WILDFIRE PROTECTION AND FOREST FUEL MANAGEMENT

The consultant consortium and Leech Report identified wildfire as a major risk and recommended wildfire preparedness and response to prepare for wildfire starts, as well as implementing fuel management and considering prescribed burning in key locations to protect neighboring Sooke WSA. In addition, it recommended to prepare for post wildfire recovery by identifying and mapping areas susceptible to sediment transport and landslide post wildfire.

On purchase, remaining woody debris from the previous owners' harvest was piled and burned. The Leech WSA was quickly brought into the overall wildfire management program of the GVWSA, with patrol routes and seasonal patrollers added under an operating budget uplift, and with capital projects over the years to improve road access for water tenders to Horton Ridge, Survey Mtn, and Leech lakes, and by adding a fire weather station. Initially, it was thought necessary to provide road access throughout the Leech WSA for fire protection, but this was reconsidered and an aviation dependent strategy for inaccessible areas was implemented. Wildfire detection capability was improved first through contract air patrols, but more recently with drones and infrared camera technology on Survey Mountain.

The 2015 GVWSA Wildfire Management Plan fully incorporated the Leech WSA in terms of fire suppression and fuel management strategies including options for planned burning and/or modified wildfire response allowing fire starts to burn naturally where location, size and conditions permit. The regenerating forest stands in the Leech are at a stage where many pose an elevated forest fuel hazard. Silviculture treatments such as juvenile spacing and pruning are being implemented to reduce this hazard, and thinning is being considered going forward to manage for both fuels and forest health and resilience.

To protect the Sooke WSA, a road and shaded fuel break corridor was implemented along Horton Ridge which forms the boundary between the two watersheds. Historical data shows the ridge attracts lightning strikes making access and a fuel break to stop fires from moving between the two watersheds strategically important. This corridor is being maintained and widened in 2025.

Threats associated with wildfire are increasing with climate change (drought, heat, fire behaviour). A modelling project with University of Victoria is assessing the change in forests, wildfire hazard and the effect of fuel reduction treatments. The work will help develop a forward-looking forest management plan for the GVWSA.

In terms of risk of sediment transport and landslides after a wildfire, modeling can also help identify areas at greatest risk and help with prioritizing areas for emergency stabilization mitigation measures. To date such modelling effort has been aimed at the Sooke WSA as a priority and has not yet been completed for the Leech WSA.

Overall, the incorporation of the Leech WSA into the wildfire management program of the GVWSA has been completed. Wildfires in the Leech, which were started by lightning strikes in 2008 and 2024 were controlled before they could cause damage of concern.

Another success has been a closer working relationship with BC Wildfire Service (BCWS) in terms of the service BCWS provides under the Wildfire Response Agreement and the training CRD receives in service to BCWS under the Wildfire Resource Agreement. The CRD also continues to be an active member of the South Island Fire Management Organization which connects wildfire managers and allows partners to share information and assist one another in a first-on-scene situation.

In total, $258,933 or 4% of the funding spent on the Leech WSA has been on Wildfire Protection (Table 1 below). Forest fuel management (Horton Ridge) was completed under a separate capital project and not included in the quoted value.

5. SECURITY

The Consultant Consortium and Leech Report assessed the security of the Leech WSA as a major concern due to the risk of trespass leading to wildfire starts, environmental damage, vandalism, and staff safety concerns. The long history of overlooked or accepted trespassing on private forest lands made the risks more difficult to mitigate at the beginning.

Early strategies to improve security and reduce trespass in the Leech WSA included signage, monitoring, patrols, and public education. In 2016, the Commission and CRD Board's decision to incorporate the Leech WSA into the *Water Supply Area Protection Bylaw* provided greater certainty for management and the ability to enforce unauthorized access. Subsequently, fencing and gates were installed to fully restrict entry. In addition, a No Registration Reserve under the *Mineral Tenure Act* was established, preventing new mining claims from being staked in the Leech WSA.

Other capital projects have further improved security in the Leech WSA, including removal of two abandoned cabins, removal of mining gear and waste, and purchase and elimination of 14 mining claims.

Security concerns in the Leech WSA have been satisfactorily resolved. Trespass incidents in the Leech WSA dropped from 80 in 2010 to just 2 in 2024. Overall security of the area will again be assessed in 2026.

In total, $313,690 or 5% of the funding spent on the Leech WSA has been on Security (Table 1 below).

6. UNDESIREABLE WILDLIFE AND INVASIVE PLANTS

The Consultant Consortium and Leech Report noted risks related to the presence of Scotch broom, an introduced invasive shrub spreading to new areas and the potential presence of animal species that could pose a threat to water quality.

Scotch broom is located along roadways in the Leech WSA. While some roadside brushing has been conducted, this does not eliminate the species from a site. In general, the amount and size of Scotch broom has been declining as the regenerating stands grow and provide more shade.

Surveys have been conducted for animal species of concern. Since 2009, seven beavers have been detected and removed as well as removal of one beaver dam near Weeks Lake, all under Ministry of Environment permit. Monitoring and response to beavers and dams will continue in consultation and under permit with the Ministry of Environment.

Though the consultant's consortium did not consider aquatic invasive animals, plants and organisms, staff have identified this risk as a threat. Known aquatic invasives of concern include watermilfoil, zebra and quagga mussels. The threat has been mitigated through strict disinfection protocols for vessels and equipment entering Leech WSA waterbodies. To date aquatic invasives found in nearby Shawnigan Lake have not been detected in the Leech WSA.

The goal of monitoring and managing undesirable and invasive species in the Leech WSA has been met. The Leech WSA has not undergone a detrimental change in the level of undesirable species, and those that are present are being managed.

Funding to manage undesirable wildlife and invasive species in the Leech WSA has been conducted under operating budgets.

7. HYDROLOGY & WATER QUALITY

Though not given as a separate priority in 2009, the Consultants Consortium and 2015 Leech Report did provide recommendations regarding the potential contribution of the Leech River in terms of water quantity and quality for future water supply. At that time, only two hydrology stations measured water flow and turbidity several kilometers downstream of the Leech tunnel intake which represented Leech River water quantity and quality for future water supply.

A Senior Hydrologist was hired in 2017 to plan, set up and model Leech WSA watershed hydrology as well as work on hydrology of the other WSAs. A Watershed Hydrology Monitoring Plan for the Leech WSA was developed and endorsed by the Commission in 2019 (RWSC 2019-01). The plan was then implemented with capital investment in hydrology and weather monitoring equipment. Bathymetry mapping and biophysical assessment of the main lakes in the Leech WSA was also conducted.

In 2021, a study of Leech WSA water quality and quantity was completed, which answered many of the questions posed in the 2009 assessment, and regular water quality sampling and monitoring in the Leech watershed has continued since that time to monitor for changes. A Watershed Hydrology Technician was hired in 2024 to assist with the expanded and ongoing hydrology monitoring of the GVWSA.

The goal to understand and quantify characteristics of Leech River watershed hydrology and water quality parameters has been achieved and work continues to further monitor and understand the nature of the Leech WSA for future water supply.

In total, $504,889 or 7% of the funding spent on the Leech WSA has been on hydrology (Table 1 below). Water quality monitoring and reporting was conducted under operating budgets.

8. FIRST NATIONS' INTERESTS

At the time of the assessment in 2009, First Nations' interests in the Leech WSA lands were acknowledged as "an integral part in the culture, well-being and sustenance of local First Nations". Assessment recommendations included working toward a cultural assessment of the Leech WSA and providing capacity building opportunity through contract work.

A funding contribution agreement was signed with T'Sou-ke First Nation in 2015 to fund a traditional use study of the Leech WSA (gathering information on the history and use of the area by T'Sou-ke and other First Nations). The proposed study met the goals of the 2009 assessment, but T'Sou-ke's preferred consultant was not available to complete the project and another was not found.

In terms of capacity building, CRD preferentially hired T'Sou-ke crews to complete brushing and planting work under contract between 2009 and 2021 with good success. In 2022, T'Sou-ke discontinued their brushing crew to focus on other opportunities.

In 2018, the Leech WSA Traditional Use Access Agreement was signed with T'Sou-ke Nation. This agreement provides members access for hunting, fishing, gathering and other uses including monitoring conducted by T'Sou-ke Guardians. Collaboration to integrate First Nations' interest in the GVWSA remains ongoing, with priority actions identified in the 2025 Strategic Plan.

Funding for First Nations activities came from operating budgets rather than the capital project.

BUDGET PERFORMANCE

Capital

The following table provides a summary of the capital expenditures by priority area from 2009 to 2025. In total, $6,922,490 has been spent on capital works in the Leech WSA since 2009, with a total of $4,775,372 spent in the Leech Restoration capital account.

Table 1: Leech Restoration Capital Expenditures by Category 2009 to 2025

Restoration Priority	Leech Restoration Capital ($)	Other Leech Capital ($)	Total Capital ($)	%
Roads	3,984,444	644,794	**4,629,238**	**67 %**
Slope Stability and Soil Erosion Control	202,863	496,092	**698,955**	**10 %**
Reforestation and Forest Health	367,232	149,553	**516,785**	**7 %**
Hydrology and Water Quality	0	504,889	**504,889**	**7 %**
Security	0	313,690	**313,690**	**5 %**
Wildfire Protection & Forest Fuel Management	220,833	38,100	**258,933**	**4 %**
TOTAL per capital fund	**$4,775,372**	**$2,147,118**	**$6,922,490**	**100 %**

Operating
In terms of operating funding, the original plan set out a sliding scale of additional operating funding beginning with $125,000 per annum in 2009 to $437,500 in 2025 (see Appendix A for details).

To date, a one-time supplement was approved in 2009 ($178,930), with continuous supplements requested and approved in:

- 2009 to hire a professional geoscientist to assist with Leech terrain stability issues and road projects ($109,420);
- 2010 to fund a nine-month patrol crew to assist with extra ground patrols and wildfire preparedness activities in the Leech WSA ($106,080); and,
- 2018 to fund Leech WSA road maintenance ($50,000).

A cumulative total of $265,500 in annual continuous operating budget supplements instituted over the years as listed above is currently in effect to manage the Leech WSA (the Leech WSA represents 47% of the total area of the GVWSA).

CONCLUSION

The Capital Regional District acquired the 9,628 hectare Leech River watershed for future water supply in 2007 and 2010. Assessments in 2009 and 2015 evaluated risks and set out management priorities for roads, soil erosion and slope stability, reforestation and forest health, wildfire protection and forest fuel management, security, wildlife and invasive plants, as well as water quality, hydrology monitoring and First Nations interests. A capital and operating funding plan to complete the priorities was implemented from 2009 through 2025. The recommended management programs and actions have been established and/or substantially completed, and the area can now be considered fully integrated into the management of GVWSA lands and forests and the dedicated capital plan phased out.

Work with First Nations is ongoing to provide traditional use access and to learn and integrate traditional ecological knowledge.

The recovery of this heavily harvested watershed to a more natural state, optimal for source water protection, is an ongoing process. Recovery has been significantly aided by the actions and investment undertaken as part of the Leech Restoration Project.

RECOMMENDATION

There is no recommendation. The report is for information only.

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ATTACHMENT(S)

Appendix A: Staff Report to Commission – April 15, 2009
Appendix B: Leech WSA Photographic Comparison – 2007 and 2023