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**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, JUNE 19, 2019**

SUBJECT LEECH WATER SUPPLY AREA RESTORATION UPDATE

ISSUE

To provide an update on the priorities and activities conducted with Regional Water Supply capital funding to restore and prepare the Leech Water Supply Area (WSA) for future water supply.

BACKGROUND

The Leech Water Supply Area (9,628 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 drinking water supply for the Regional Water Supply system. At the time of purchase, the Leech WSA was approximately 95% harvested, planted and had an extensive network of permanent and temporary gravel roads.

In 2009, a consultant consortium recommended restoration priorities for the Leech WSA. These recommendations were presented to the Regional Water Supply Commission (Commission) and a plan for long term capital (\$5.756 million) and operating budget increases (up to \$437,500 per annum) to 2025 was approved to fund the restoration activities (RWSC 2009-05).

In 2015 the consultants' work and recommendations were detailed and updated in a CRD report: *Leech Water Supply Area: An Assessment for Source Water Protection and Land Management*.

In 2013, the Commission was provided an update of the progress of activities and budget from 2009 to 2012 to restore the Leech WSA for water supply (RWSC 2013-17). This report summarizes activities for the following period from 2013 to 2018, priorities for the next five-year period, and any ongoing or remaining challenges/opportunities.

PROGRESS ON PRIORITIES IDENTIFIED IN 2009

1. ROADS

Completed 2013 - 2018 (Capital Expenditure: \$2,132,075)

- Closure and rehabilitation of a permanent road on steep unstable terrain along the Leech River;
- Establishment of an east-west access route between Sooke WSA and the Leech WSA including two new bridges (24m and 11m length) and one bridge moved & re-used;
- Establishment of a north-south access route along Horton Ridge between Sooke and Leech WSAs;
- Upgraded/new road to Mt. Healey to support communications for the radio, video surveillance and hydromet systems;
- Establishment of a small quarry (C110) for on-site rock and gravel for road/bridge/terrain stability upgrades;
- Removal of a large failing log bridge across the West Leech River;
- Removal of access roads within the floodplain of Cragg Creek;

- Replacement of 19 stream culverts and 97 cross drain culverts;
- Total of 13.6km of road closed and rehabilitated, 14.5km of road upgraded/constructed; and
- Planning of the Leech WSA road system to best serve watershed management needs (fire protection/security/access for restoration activities).

Note: Maintenance and planning of the road network is funded through operating funds, including a continuous operating budget increase of \$50,000 since 2018.

Priorities 2019 - 2023 (Capital Requirement: \$1,400,000)

- Re-routing road access north of Weeks Lake away from fish bearing wetlands and streams including supply and install of a new bridge (\$550,000);
- Rehabilitation of the portion of Weeks Lake gravel pit (historic) that is contaminated with lead from previous informal use for target shooting (\$200,000);
- Replacing Leech River large diameter culvert with bridge (\$300,000); and
- Establishing access to the West Leech area (\$350,000).

2. REFORESTATION AND FOREST HEALTH

Completed 2013 to 2018 (Capital Expenditure: \$18,512)

- Forest cover mapping update;
- Planting of 300 red alder seedlings as part of road rehabilitation (operating);
- Silviculture surveys and assessments to ensure adequate reforestation (operating);
- Brushing around regenerating seedlings 153ha (operating);
- White pine blister rust surveys and treatment (operating);
- Annual aerial surveys of forest health (operating); and
- Operational trial – planting Scouler willow whips at mid-high elevation to develop regeneration strategies at higher elevations and to reduce fuel hazard.

Priorities 2019 to 2023 (Capital Requirement: \$120,000)

- Terrestrial ecosystem mapping (\$120,000);
- Silviculture surveys or assessments to monitor growth of forest cover;
- Thinning trials and treatments to reduce forest fuel and diversify the forest cover at a landscape level (funded under wildfire/forest fuel management priority); and
- White pine pruning to prevent mortality from white pine blister rust.

3. SECURITY

Completed 2013 to 2018 (Capital Expenditure: \$124,432)

- Amendment of Greater Victoria Water Supply Area (GVWSA) Protection Bylaw No. 2804 to include the Leech WSA (operating);
- Installation of three additional gates and fencing to fully close the Leech WSA to unauthorized access;
- Successful application for a mineral reserve over the Leech WSA barring new mining claims from being staked (operating);
- Facilitated a recreational access permit application by the Westcoast Flyfishers

- Association to access Leech lakes (operating);
- Revised key groups and replacement of all Leech keys;
- Annual Leech boundary security assessment by helicopter (operating);
- Three staff with advanced bylaw enforcement training designated as Watershed Security Officers (operating); and
- Re-purposed an existing FTE to provide weekend patrol coordination and consistency (operating).

Priorities 2019 - 2023 (Capital Requirement: \$20,000)

- Strategy/actions to further limit placer/mineral mining exploration and development (capital & operating);
- Gate and fence at West Leech access point;
- Integrate use of drone technology in patrols to view larger areas (operating); and
- Maintain core security staff with advanced bylaw enforcement training designated as Watershed Security Officers (operating).

4. SLOPE STABILITY AND SOIL EROSION CONTROL

Completed 2013 - 2018 (Capital Expenditure: \$96,077)

- Rehabilitation of spur roads on unstable terrain (capital under Roads); and
- Detailed channel and terrain stability field assessment of Cragg Creek, West Leech and Leech River.

Priorities 2019 - 2023 (Capital Requirement: \$150,000)

- Assessment of inaccessible overgrown roads for environmental concerns, deactivation prescriptions for those needing intervention (\$150,000).

5. WILDFIRE PROTECTION AND FOREST FUEL MANAGEMENT

Completed 2009 – 2012 (Capital Expenditure: \$10,832)

- Revised wildfire management plan (2015) incorporating the Leech WSA (operating);
- Wildfire Risk Analysis (2018) incorporating the Leech WSA (operating);
- Secondary fire weather station in the northern portion of the Leech WSA;
- Fire preparedness activities: daily ground patrols during fire season, air patrol during high and extreme fire danger (operating);
- Establishment of an emergency helicopter staging area (operating);
- Establishment of road access to Worley Lake as a primary water pumping station; and
- Fuel management corridor on Horton Ridge (operating) and access through Horton Ridge for firefighting.

Priorities 2019 – 2023 (Capital Requirement: \$225,000)

- Installation of infrared camera(s) on Mt. Healy and/or Survey Mountain to aid in detecting fire/smoke during fire season (\$50,000);
- Integration of drone technology to supplement patrol wildfire detection work (operating);

- Forest fuel management within densely forested immature stands – thinning or spacing with management of woody debris; and, trial prescribed burning to aid in forest fuel management and ecological restoration (\$175,000).

6. HYDROLOGY & WATER QUALITY

Completed 2013 – 2018 (Capital Expenditure: \$79,379)

- Development of Watershed Hydrology Monitoring Plan for Leech WSA (operating);
- Installation of four primary hydrology stations (capital and operating).

Priorities 2019 – 2023 (Capital Requirement: \$410,000)

- Installation of additional hydrology and weather stations and equipment indicated in the Leech Hydrology Plan;
- Monitoring, analysis and modelling of Leech WSA hydrology (operating); and
- Integration of water quality sampling with hydrology monitoring (operating).

7. WILDLIFE AND INVASIVE PLANTS

Completed 2013 – 2018 (funded by operating)

- Beaver detection and control;
- Bullfrog detection, no control required so far;
- Monitoring of wildlife species; and
- Scotch broom removal in fuel management corridors, gravel pits and helicopter landings.

Priorities 2019 - 2023 (Capital Requirement: \$150,000)

- Canada goose monitoring at Jarvis and Weeks Lake (operating);
- Fish habitat and presence surveys in main streams (\$100,000);
- Wetland mapping (\$ 50,000); and
- Mapping and assessing habitat for species of concern (operating).

8. FIRST NATIONS INTERESTS

Completed 2013 – 2018 (Capital expenditure: \$0)

- Annual T'Sou-ke First Nation (FN) silviculture crew contract work, annual meeting with T'Sou-ke Administrator (operating);
- Traditional Use Access Agreement (operating); and
- Traditional Use Study Agreement (operating).

Priorities 2019 – 2023 (Capital Requirement: \$60,000)

- Facilitate T'Sou-ke FN in completing a traditional use study/cultural assessment of the Leech watershed (capital);
- Establish the environment/culture monitoring crew envisaged by the Traditional Use Access Agreement to aid both CRD and T'Sou-ke FN in protecting and environmental restoration of the Leech watershed (operating); and
- Establish T'Sou-ke FN and/or other FN traditional knowledge in the public and school tours program (operating).

The map in Appendix A shows the location of some of the larger Leech WSA rehabilitation projects that were completed.

LEECH WSA RESTORATION CHALLENGES/OPPORTUNITIES

Remaining or ongoing challenges and opportunities in rehabilitation and management of the Leech WSA include:

- Longer distance and travel time from the field office to work sites;
- Difficult access to the Leech River and Cragg Creek (canyons);
- Lack of formal road use agreements on some TimberWest roads to access the Leech WSA, and lack of a formal agreement of TimberWest's use of the CRD-owned portion of West Jordan Main; and
- Opportunity to trial forest management treatments (forest fuel treatments such as prescribed burning, forest stand species and age diversification) while the area is not yet supplying water to Sooke Lake Reservoir.

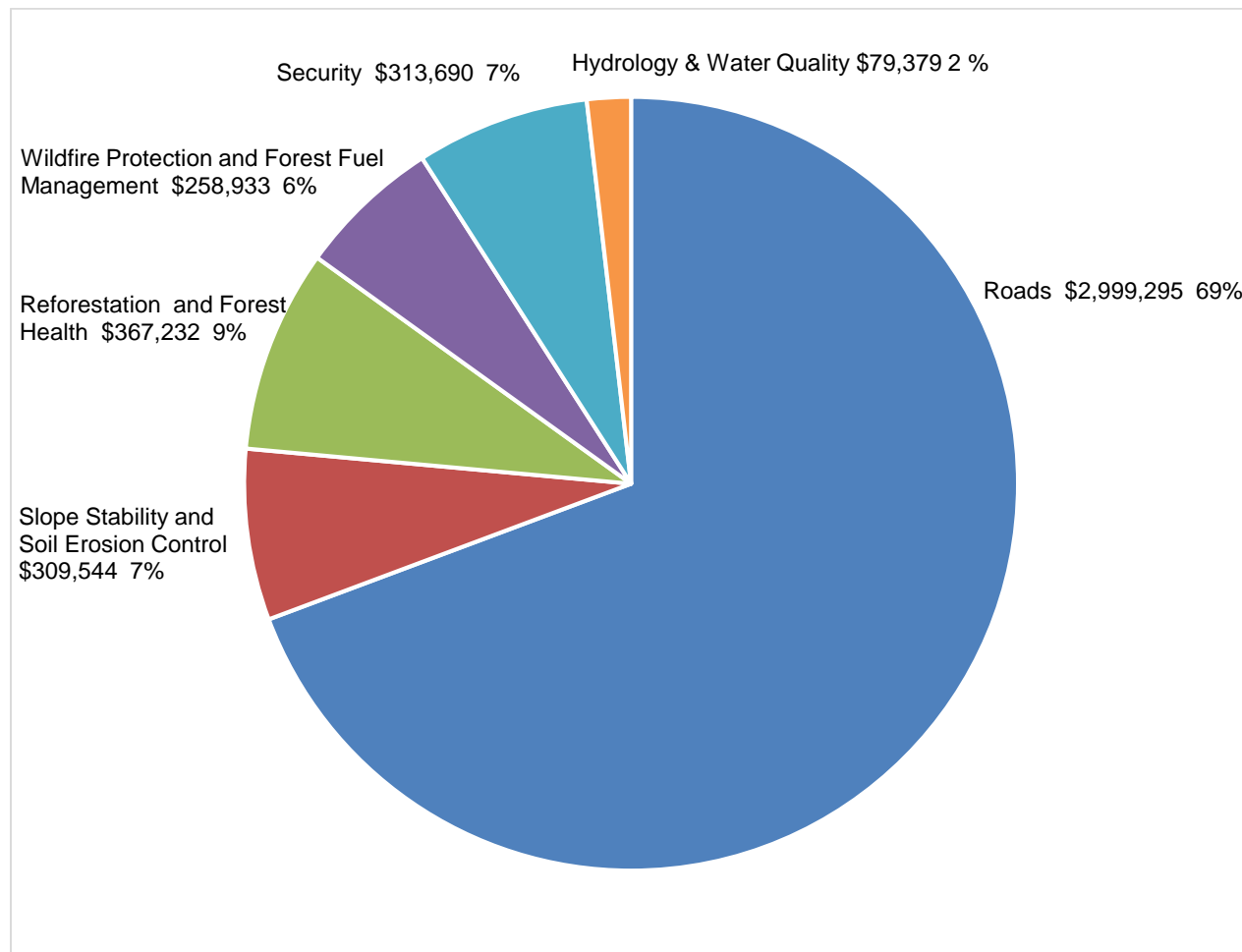
CAPITAL BUDGET PERFORMANCE

The following table and figure provides a summary of the capital expenditure by priority for the first 10 years of the project.

Leech Restoration Capital Expenditures by Priority Type, Capital Fund and Period

Priority Type	Expenditure 2009 - 2012		Expenditure 2013 - 2018		Expenditure 2009 - 2018	Proposed Expenditure 2019-2023
	Leech Restoration Capital (\$)	Other Leech Capital (\$)	Leech Restoration Capital (\$)	Other Leech Capital (\$)	All Capital Accounts	All Capital Accounts
Roads	867,220		2,060,084	71,991	2,999,295	1,400,000
Reforestation and Forest Health	348,720		18,512		367,232	120,000
Security		189,258		124,432	313,690	20,000
Slope Stability and Soil Erosion Control	181,885	31,582	20,978	75,099	309,544	150,000
Wildfire Protection & Forest Fuel Management	220,833	27,268		10,832	258,933	225,000
Hydrology & Water Quality				79,379	79,379	410,000
Wildlife and Invasive Plants					0	150,000
First Nations Interests					0	60,000
TOTAL per capital fund	\$1,618,658	\$248,108	\$2,099,574	\$361,733		
TOTAL per period	\$1,866,766		\$2,461,307		\$4,328,073	\$2,535,000

Leech Restoration Capital Expenditures from 2009 - 2018



The Leech Restoration Capital Project, as planned in 2009, set out annual spending from 2009 to 2025 totalling \$5,756,000. To the end of 2018, \$3,718,232 (65%) of the planned budget has been implemented, leaving \$2,037,768 to spend in the last seven years (approximately \$300,000 per year 2019 to 2025). Given a lower annual allocation in recent years (\$150,000 per year currently), larger initiatives in the Leech WSA have been conducted under separate capital accounts.

Considering all capital expenditures in the Leech WSA, a total of \$4,328,073 (75% of the planned \$5,756,000 for Leech restoration) has been implemented leaving \$1,427,927 to spend in the last seven years (approximately \$200,000 per year 2019 to 2025).

Operating Funding

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.

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 total of \$265,500 in annual continuous operating budget supplement is currently in effect to manage the Leech WSA (the Leech WSA represents 47% of the area of the GVWSA).

Further increases may be needed for road maintenance in future but are not considered necessary at this time.

CONCLUSION

The capital plan for rehabilitation and preparation of the Leech Water Supply Area (WSA) for future water supply is progressing within budget and timeline parameters. The priority for Leech WSA rehabilitation in the next five-year period is to fully complete road access upgrades using Leech Restoration Capital Project funds. Additional priorities such as implementation of the Leech hydrology monitoring plan and wildfire management initiatives will seek funding under separate Leech capital accounts.

RECOMMENDATION

That the Regional Water Supply Commission receive the report, *Leech Water Supply Area Restoration Update*, for information.

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Attachments: 1

Appendix A Map of completed Leech WSA rehabilitation projects