

Staff Report

RE:	Water Main Leak under Puntledge River	
FROM:	Chief Administrative Officer	R. Dyson
	Russell Dyson	Supported by Russell Dyson Chief Administrative Officer
TO:	Chair and Directors Comox Valley Water Committee	
DATE:	January 31, 2019	<b>FILE:</b> 5600-20/CVWS

## Purpose

To provide an update on a recently discovered leak of a water transmission main within the Comox Valley Water System (CVWS).

## Recommendation from the Chief Administrative Officer:

For information in advance of an amendment to the 2019 - 2023 financial plan. The proposed resolution is part of the financial plan staff report.

## **Executive Summary**

Water for the CVWS is drawn from BC Hydro's penstock and treated at the water treatment facility located on Powerhouse Road. Following treatment the water exits the facility by one of two transmission pipelines, these pipelines provide water to the entire CVWS. One of these lines is a 900mm diameter steel pipeline that runs directly from the chlorination station under the Puntledge River and onwards into the system. Over the past six weeks a leak has been discovered under the east bank of the Puntledge River; a map showing the approximate location of the leak is attached as Appendix A.

## Leak Detection

Comox Valley Regional District (CVRD) Waterworks Staff first noticed a potential leak in early December through reviewing the monthly bulk meter reads for the system. Since that time significant work has been done to identify and confirm the location of the leak, including:

- CVRD Waterworks Staff isolating parts of the transmission system to narrow down location of the leak.
- Deployment of acoustical investigation technology on identified leaking pipe to pinpoint the actual location of the leak.
- Deployment of a submersible camera into the 150mm drain line visually verifying two small pinholes and one larger (approximately 3cm) hole in the concrete encased portion of the pipe.
- Review of the cathodic protection system by a corrosion service specialist test the pipes cathodic protection and provide recommendations.
- Survey of the site with a ground crew and drone to develop detailed profile and aerial maps to assist with construction.

From the acoustical investigation work and CVRD water meter data the leak is estimated to be large in size, approximately 12 to 15 litres per second. CVRD Staff have notified the provincial authorities

## Risk Assessment and Mitigation

During the repair or, in the event of a catastrophic failure of the 900 mm line, the CVWS would be forced to rely entirely on the single, smaller line to supply water to the majority of the CVWS (approximately 25,000 people) in East Courtenay and Comox, resulting in a complete loss of redundancy until a repair is completed, significantly increasing the possibility of a loss of water supply to that part of the system in the event of a critical main break.

The water leaking into the Puntledge River is chlorinated, which poses a risk to fish health. The amount of chlorine entering the river is proportional to the volume of the leak, and the strength of chlorine residual in the water leaking out. On January 16 CVRD Staff isolated the valve on the west side of the Puntledge River to force the water through the smaller alternate line to the east half of the water system mentioned above.

- The leak is approximately 380 metres from the treatment facility, but with the alternate transmission configuration, the leak is now 15 kilometres from the treatment facility, resulting in reduced pressure/volume and chlorine concentration of water that is leaking.
- This operational change resulted in a number of dirty water complaints within the Town of Comox and City of Courtenay. Since that time the CVRD have developed a more effective procedure for notifying the Town of Comox and the City of Courtenay of major operational changes within the system that may generate concerns/complaints from residents.

Because the alternate transmission route is so much smaller than the large diameter line that is leaking, implementation of stage four water restrictions will be required to ensure water demand and fire flows can be met if the CVWS is forced to rely entirely on the alternate transmission route during the drier months, typically starting in May.

The CVRD is taking the following steps to mitigate these risks by expediting repair of the leak:

- Targeting full resolution of the repair by the end of April, 2019.
- Retaining the ability to switch flows to the 900 mm line as long as possible, should there be a main break on the alternate route.
- Structuring the repair design and process to minimize the amount of time without transmission system redundancy.
- Progressing a backup leak repair plan in parallel with the preferred leak repair plan to minimize delay if an unforeseen problem arises with the preferred solution.

Due to the potential significant impact of the leak and the necessity to repair the leak as soon as possible, the CVRD is operating under the emergency services purchasing provision within the purchasing bylaw to retain the required services necessary to complete the repair in the very tight timeline required.

# Leak Repair Approach

The CVRD's approach to resolving the leak is as follows:

• January 2019: CVRD completed a request for quotation and received five proposals from local engineering firms to develop preferred and back up engineering solutions to repair the leak. CVRD selected McElhanney Consulting to complete the engineering for the repairs based on their level of experience with similar works and strong commitment to schedule.

## Staff Report - Water Main Leak under Puntledge River

- Since January, the CVRD has met almost daily in the office and on site with our consultants and various industry specialists to discuss leak repair options, construction methodology, and risks.
- Over the coming month the CVRD will be working closely with consultants, specialists and contractors to confirm the preferred and backup approach and move towards implementation of a repair solution as soon as possible.

A staff report providing an update on progress towards repair of the leak will be provided at every Water Committee meeting until the leak repair is completed.

Prepared by:	Concurrence:	Concurrence:
Z. Berkey	K. La Rose	M. Rutten
Zoe Berkey, EIT Engineering Analyst	Kris La Rose, P.Eng Senior Manager of Water/	Marc Rutten, P.Eng General Manager of
	Wastewater Services	Engineering Services

Attachments: Appendix A - "Map of CVWS, showing expected location of the leak"

Appendix A

