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Fairmont Creek 2014 Annual Dike Inspection Report

Introduction

Fairmont Creek experienced a debris flow event on Thursday June 20, 2013 caused by a significant rain event on saturated soils. The magnitude of the event was significantly less than the 65,000 m^3 that occurred on July 15, 2012. The dike structure protected the NES191 Fairmont Ridge Strata development from any damage and contained the 6,000 m^3 debris flow within the Fairmont Creek channel in the bank protected strata area. At the entry to the debris flow fan area some material did overflow the creek banks and caused some minor damage to timeshare condominiums located adjacent to the creek. The material transmitted along the creek channel deposited in the golf course pond that captured the material and functioned as a debris trap. The golf course pond, a few sites along the creek channel and material affecting the time share condominiums were cleaned out and repaired through Emergency Management BC (EMBC) emergency response funding.

An EMBC Disaster Financial Assistance (DFA) funded bank protection reconstruction project was completed in late April of 2013. The reconstruction incorporated nine grade controls along the 90 m bank protection works. Six of the grade controls were significantly damaged or completely destroyed as a result to the June 20, 2013 debris flow event. The bank protection did not sustain any damage from the event. The re-established creek channel above the bank protection works sustained significant bank erosion in multiple locations. The erosion along the creek channel above the bank protection works required minor repairs to ensure the creek flowed properly into the bank protected section. The plug installed to re-establish the original creek channel did not sustain any damage during the event.

Inspector of Dikes Information

The 2014 Annual Inspector of Dikes information for reporting was available online and is reflected below.

Watercourse	Fairmont Creek	Structure Type	Dike
Watercourse 2	Cold Spring Creek	Ancillary Works	Log Crib Wall
GPS Number	52	NAD 83 Map Number	82J031/032
Dike Name	Fairmont Hot Springs	Floodplain Maps	N/A
Region	Kootenay	UTM Northing	5 575 5

UTM Easting	11U 581 742
Geographic Feature	Riverine
Type of Flooding	Spring Freshet
Local Authority Under EPA	East Kootenay Regional District

Fairmont Creek Inspection

The inspection occurred between 1:00 pm and 2:30 pm on April 30, 2014 and was conducted by RDEK engineering technician Jim Maletta. The conditions at the time of inspection were clear, sunny and approximately 23^{o} C.

April 30, 2014 Dike/Site Conditions

May 29, 2013 Dike/Site Conditions

Upstream Conditions

The section of Fairmont Creek immediately above the bank protection works is experiencing bank erosion that could be caused by water surges from flushing the Fairmont Hot Springs Resort (FHSR) large swimming pool into Fairmont Creek. The volume of water released is significant over a short period of time and could be weakening the bank structure that could result in added material generated in a debris flow.

Downstream Conditions

The Ministry of Transportation and Infrastructure (MoTI) has increased the culvert capacity at two locations along Fairmont Creek:

1. At the creek crossing of Columbia River Road
2. At the creek crossing of Fairmont Creek Road

Both locations have had larger and twinned culverts installed. All culverts were in proper working order at the time of inspection.

A gravel fan is forming at the confluence of Fairmont Creek and the Columbia River from the transmission of material along Fairmont Creek. This may be affecting Columbia River flow in the immediate downstream area.

Monitoring Inspections

Monitoring inspections have been conducted at the Fairmont Creek works and upstream and downstream of the works on May 27 (Brian Funke, Engineering Services Manager), June 3 and June 23 (Jim Maletta, Engineering Services Technician) following a May 25 very small debris flow. Other monitoring over the year typically occurs quarterly or after high rainfall events. As well, FHSR golf course staff monitor sections of Fairmont Creek daily. The May 25 debris flow transmitted an estimated 50m^3 to 100 m^3 of sediment to the entry of the golf course pond/debris trap.

Golf Course Pond/Debris Trap pre-event

Golf Course Pond/Debris Trap post event

Summary

The RDEK is in the process of amalgamating and expanding the Fairmont Creek and Cold Spring Creek service areas to include significantly more properties within the service area. The increase in contributors will provide additional funding for the repair, operation, maintenance and development of further mitigation measures along Fairmont Creek. The RDEK has been awarded a Building Canada Fund Flood Protection Project for the next phase of mitigation work on Fairmont Creek. The project will increase, slope and armour the creek banks between the end of the bank protection works and the entry to the golf course pond/debris trap. Engineering will start in the fall of 2014 and construction is expected for late winter/early spring of 2015.

The RDEK commissioned an overview inspection of Fairmont Creek following the June 20, 2013 debris flow event. The inspection and report was funded through EMBC response funding, and was completed by Jennifer Clarke of Clarke Geoscience and attended by Mr. Dwain Boyer of Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) Water Stewardship Branch, Deputy Inspector of Dikes for the Kootenay region and Jim Maletta RDEK Engineering Technician. The inspection occurred on July 29, 2013, and confirmed the findings of the January 2013 Debris Flow Hazard and Risk Assessment, that states unlimited material available for mobilization exists in the Fairmont Creek watershed and can mobilize given the right conditions.

The reconstructed bank protection works are functioning as designed, which was witnessed through, the protection of the NES191 Fairmont Ridge ll condominiums from the June 20, 2013 debris flow event.

Jim Maletta, AScT. RDEK Engineering Technician