Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #61

Reporting Period: May 10 – May 16, 2015

Upper Lillooet River Hydroelectric Facility (Water File No. 2002561, Water licence No. C130613), Boulder Creek Hydroelectric Facility (Water File No. 2003049, Water licence No. C129969) & Transmission Line (TX Line)

Distribution List		Prepared By
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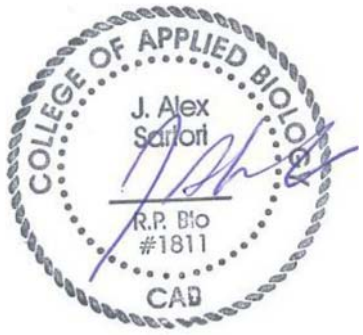
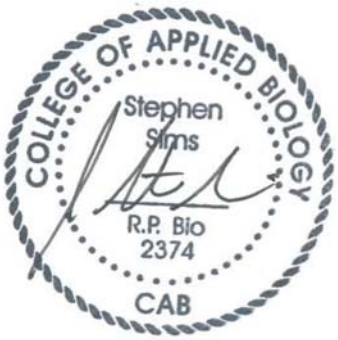
Herbert Klassen	Fisheries and Oceans Canada	 **J. Alex Sartori, RPBio** *Independent Environmental Monitor (IEM)*  **J. Stephen Sims, RPBio** *Delegated IEM*
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Owner Construction Permits and Approvals

Environmental Assessment Certificate No. E13-01 (Amendment 1, 2, 3, 4, 5 & 6)
Fisheries Act Subsection 35(2)(b) Authorization No. 09-HPAC-PA2-000303 (Amendment 1, 2)
Letter of Advice for the Transmission Line No. 09-HPAC0-PA2-000303
Leave To Commence Construction (ULRHEF) File No. 2002561
Leave To Commence Construction (BDRHEF) File No. 2002453
Leave To Commence Construction (TX Line) File No. 2002561/2002453
Conditional Water Licence (ULRHEF C130613) File No. 2002561
Conditional Water Licence (BDRHEF C129969) File No. 2002453
Conditional Water Licence (BDRHEF C131153) File No. 2003601
Licence of Occupation (ULRHEF #232384) File No. 2409871
Licence of Occupation (BDRHEF #232386) File No. 2409998
Licence of Occupation (TX Line #2423386) File No. 2410654
Occupant Licence to Cut (ULRHEF Amendments 1, 2, 3, 4, 5, 6, 7) No. L49717
Occupant Licence to Cut (BDRHEF – KM 38 laydown) No. L49698
Occupant Licence to Cut (BDRHEF Amendments 1, 2, 3) No. L49816
Occupant Licence to Cut (TX Line Amendment 1, 2, 3, 4, 5, 6, 7, 8, 9) No. L49697
General Wildlife Measure Exemption Approval Letter (TX Line & BDRHEF) File No. 78700-35/06 UWR and 39585-20 WHA
Heritage Conservation Act – Alteration Permit (ULRHEF) File No. 11200-03/2014-0033
Road Use Permit No. 6123-13-02 (Lillooet River FSR); 5673-13-01 (Rutherford Creek FSR); 7977-13-01 (Lillooet South FSR); 8015-13-01 (Ryan River); 8188-13-01 (Pemberton Creek FSR); and 9717-13-01 (Miller Bench FSR)
Junction Permit (ULRHEF & BDRHEF) File No. 11250-32/6123 (Amendment 1)
Aeronautical Obstruction Approval (Tx Line - Lillooet River Crossing) File No. 2013-004
Aeronautical Obstruction Approval (Tx Line - Ryan River) File No. 2013-005
Aeronautical Obstruction Approval (Tx Line - North Miller) File No. 2013-006
Aeronautical Obstruction Approval (Tx Line - South Miller) File No. 2013-007
Aeronautical Obstruction Approval (Tx Line - Pemberton Creek) File No. 2013-008
Aeronautical Obstruction Approval (Tx Line - Lillooet River near Pemberton) File No. 2013-009
Aeronautical Obstruction Approval (Tx Line - Lillooet River near Meager Creek) File No. 2013-010
Navigable Water Protection Act (ULRHEF) File No. 8200-2009-500434-001
Navigable Water Protection Act (BDRHEF) File No. 8200-2012-501-032-001
Navigable Water Protection Act (Tx Line – North Creek) File No. 8200-2013-500103-001
Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500101-001
Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500102-01
Navigable Water Protection Act (Tx Line – Ryan River) File No. 8200-2013-500104-001
Navigable Water Protection Act (Tx Line – South Miller River) File No. 8200-2013-500100-001
Navigable Water Protection Act (Tx Line – Boulder Creek) File No. 8200-2013-500099-001
Navigable Water Protection Act – Extension Approval (ULRHEF, BDRHEF, Tx Line)
Navigable Water Protection Act (Bridge – Ryan River) File No. 8200-2013-500381
Navigable Water Protection Act (Bridge – Upper Lillooet Side Channel; Extension Approval) File No. 8200-2013-500383
Section 57 Authorization (ULRHEF) File No. 16660-20/REC202717
SLRD Temporary Use Permit No. 34 – Boulder Creek HEF
SLRD Temporary Use Permit No. 35 – Upper Lillooet River HEF
SLRD Building Permit (10864) – Upper Lillooet River HEF Powerhouse
SLRD Building Permit (10865) – Boulder Creek HEF Powerhouse
Works Permit for Construction within FSR Right-of-Way No. 6123-14-01
Section 52(1)(b) FRPA Authorization for Ryan River Wet Crossing File No. FOR-19400-01/2014
MOTI Permit to Construct, Use and Maintain Works Upon the Right-Of-Way of a Provincial Public Highway No. 2014-06099

Contractor Construction Permits and Approvals

Magazine Licence File No. UL76018 (Renewal 1)
Section 8 Approval – Short Term Use of Water File (Lillooet River and Tributaries) No. A2006123 (Amendment 1)
Waste Discharge under the Code of Practice for the Concrete and Concrete Products Industry under the Environmental Management Act (Authorization No. 107204) Tracking No. 326969 (Renewal 1)
Wildlife Act Permits – Pacific Tailed Frog Salvage Permit # SU15-164805
BC Safety Authority – Temporary Construction Electrical Service Permit EL-140698-2014
Municipal Wastewater Regulation - Authorization # 107032
Water Supply System Construction Permits – VCH-14-613 for Main Camp
Water Supply System Permit to Operate Issued July 30th, 2014 for Main Camp
Section 6(3) and Schedule 3 Wildfire Regulations Fire Exemption for Ryan River Bridge File No. 14350-07
SLRD Building Inspection Report dated August 13, 2014 - Construction Camp Building Permit No. 10830
Lillooet River FSR Temporary Road Closures Approval File No. 11250-32/6123 (Amendment 1, 2)
Lillooet South FSR Temporary Road Closures Approval File No. 11250-32/7977
SLRD Building Permits for Mechanic Shop (10862) and Carpentry Shop (10836) dated March 18, 2015

ACRONYMS:

AMBNS	Active Migratory Bird Nesting Survey	**ISW**	Instream Works
ASMP	Archaeological Sites Management Plan	**ITM**	Environmental Issue Tracking Matrix
ARD M/L	Acid Rock Drainage and Metal Leaching	**JEM**	JEM Energy Ltd. (Delegate Independent Engineer)
BCEAO	British Columbia Environmental Assessment Office	**LTC**	Leave to Construct
BCWQG	British Columbia Water Quality Guidelines	**MFLNRO**	Ministry of Forests, Lands and Natural Resource Operations
BDRHEF	Boulder Creek Hydroelectric Facility	**MOE**	Ministry of Environment
BG	Background	**MOTI**	Ministry of Transportation and Infrastructure
BKL	BKL Consultants Ltd.	**NCD**	Non Classified Drainage
CE	CRT-ebc Construction Inc.	**OLTC**	Occupational License to Cut
DFO	Fisheries and Oceans Canada	**PAG**	Potentially Acid Generating
DS	Downstream	**ROW**	Right of Way
EAC	Environmental Assessment Certificate	**RVMA**	Riparian Vegetation Management Area
EAO	Environmental Assessment Office	**SES**	Sartori Environmental Services
Ecofish	Ecofish Research Ltd.	**Stringer Line**	Temporary Backfeed Transmission Line
Ecologic	Ecologic Consulting	**TX Line**	Transmission Line
EIR	Environmental Incident Report	**ULRHEF**	Upper Lillooet Hydroelectric Facility
ESC	Erosion and Sediment Control	**UWR**	Ungulate Winter Range
FAM	Field Advice Memorandum	**VC**	Valued Component
FSR	Forest Service Road	**WEL**	Westpark Electric Ltd.
GWR	Mountain Goat Winter Range	**WEMR**	Weekly Environmental Monitoring Report
Hedberg	Hedberg and Associates Ltd.	**WHA**	Wildlife Habitat Area
IE	Independent Engineer (True North Energy)	**WQ**	Water Quality
IEM	Independent Environmental Monitor		
INX	Innergex Renewable Energy Inc.		

1.0 Summary of Site Inspections for Reporting Period

The table presented below summarizes the IEM team site presence, weather and monitoring locations by component:

Date	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities
Sunday, May 10	BA, DA, AA	Sunny	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Ditch maintenance from 42.5 – 44km on the Lillooet River FSR ***ULRHEF Intake*** • Installation of pumps and hoses for intake dewatering and wastewater treatment system • Re-grading and excavation for north-side spoil pile expansion • Construction of sediment basins • Drilling and blasting between downstream cofferdam and intake portal excavation ***ULRHEF Downstream Tunnel Portal*** • Mobilization of dewatering and tunnelling equipment to portal ***ULRHEF Penstock*** • Fill and compaction works at 2+800 • Excavation from 4+050 – 4+075 ***ULRHEF Powerhouse*** • Rebar installation and formwork • Concrete pour ***BDRHEF Intake, Crane Pad and Access Road*** • Rock hammering and excavation above crane pad • Rope access scaling and stabilization works on right bank at intake ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Rebar installation and formwork ***TX-Line*** • No activity
Monday, May 11	BA, DA, AA	Overcast	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Ditch maintenance from 42.5 – 44km on the Lillooet River FSR ***ULRHEF Intake*** • Installation of pumps and hoses for intake dewatering and wastewater treatment system • Construction of sediment basins • Drilling and blasting between downstream cofferdam and intake portal excavation ***ULRHEF Downstream Tunnel Portal*** • Mobilization of dewatering and tunnelling equipment to portal ***ULRHEF Penstock*** • Fill and compaction works at 2+800 • Excavation from 4+050 – 4+075 ***ULRHEF Powerhouse*** • Rebar installation and formwork ***BDRHEF Intake, Crane Pad and Access Road*** • Rope access scaling and stabilization works on right bank at intake ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization

Date	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities
			BDRHEF Powerhouse • Rebar installation and formwork ***TX-Line*** • Segment 13 ➢ Clearing for structures 313 – 316.5 ➢ Construction of road 322 • Segment 14 ➢ Clearing for structures 357 – 362 and 369 – 371.5 ➢ Construction of road 371
Tuesday, May 12	BA, DA, AA	Overcast	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Ditch maintenance from 42.5 – 44km on the Lillooet River FSR ***ULRHEF Intake*** • Installation of pumps and hoses for intake dewatering and wastewater treatment system • Construction of sediment basins • Drilling and blasting between downstream cofferdam and intake portal excavation ***ULRHEF Downstream Tunnel Portal*** • Mobilization of dewatering and tunnelling equipment to portal ***ULRHEF Penstock*** • Fill and compaction works at 2+800 • Excavation from 4+050 – 4+075 ***ULRHEF Powerhouse*** • Rebar installation and formwork ***BDRHEF Intake, Crane Pad and Access Road*** • Rope access scaling and stabilization works on right bank at intake ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Rebar installation and formwork ***TX-Line*** • Segment 13 ➢ Clearing for structures 313 – 316.5 ➢ Construction of road 322 • Segment 14 ➢ Clearing for structures 357 – 362 and 369 – 371.5 ➢ Construction of road 371
Wednesday, May 13	SE, DA, TJ	Overcast	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Ditch maintenance from 42.5 – 44km on the Lillooet River FSR ***ULRHEF Intake*** • Dewatering upstream portal excavation to sediment basins • Drilling and blasting between downstream cofferdam and intake portal excavation ***ULRHEF Downstream Tunnel Portal*** • Mobilization of dewatering and tunnelling equipment to portal ***ULRHEF Penstock*** • Fill and compaction works at 2+800 • Excavation from 4+050 – 4+075 ***ULRHEF Powerhouse*** • Rebar installation and formwork

Date	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities
			BDRHEF Intake, Crane Pad and Access Road • Rock hammering and excavation above crane pad • Rope access scaling and stabilization works on right bank at intake ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Rebar installation and formwork ***TX-Line*** • Segment 13 ➢ Clearing for structures 313 – 316.5 ➢ Construction of road 322 • Segment 14 ➢ Clearing for structures 357 – 362 and 369 – 371.5 ➢ Construction of road 371
Thursday, May 14	SE, DA, TJ	Sunny	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Ditch maintenance from 42.5 – 44km on the Lillooet River FSR ***ULRHEF Intake*** • Dewatering upstream portal excavation to sediment basins • Drilling and blasting between downstream cofferdam and intake portal excavation ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***ULRHEF Penstock*** • Fill and compaction works at 2+800 • Excavation from 4+050 – 4+075 ***ULRHEF Powerhouse*** • Rebar installation and formwork • Concrete pour ***BDRHEF Intake, Crane Pad and Access Road*** • Rock hammering and excavation above crane pad • Rope access scaling and stabilization works on right bank at intake ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Rebar installation and formwork ***TX-Line*** • Segment 6 ➢ Access trail works (manual only) • Segment 13 ➢ Clearing for structures 313 – 316.5 ➢ Construction of road 322 • Segment 14 ➢ Clearing for structures 357 – 362 and 369 – 371.5 ➢ Construction of road 371
Friday, May 15	SE, DA, AS, TJ	Sun and cloud	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Ditch maintenance from 42.5 – 44km on the Lillooet River FSR ***ULRHEF Intake*** • Dewatering upstream portal excavation to sediment basins • Drilling and blasting between downstream cofferdam and intake portal excavation

Date	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities
			ULRHEF Downstream Tunnel Portal • Drilling, blasting and tunnel stabilization ***ULRHEF Penstock*** • Fill and compaction works at 2+800 • Excavation from 4+050 – 4+075 ***ULRHEF Powerhouse*** • Rebar installation and formwork ***BDRHEF Intake, Crane Pad and Access Road*** • Rock hammering and excavation above crane pad • Rope access scaling and stabilization works on right bank ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Rebar installation and formwork ***TX-Line*** • Segment 6 ➢ Access trail works (manual only) • Segment 13 ➢ Clearing for structures 314 – 315 ➢ Construction of road 322 • Segment 14 ➢ Clearing for structures 358 – 362 and 368 – 371 ➢ Construction of road 371
Saturday, May 16	SE, AS	Sunny	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Ditch maintenance from 42.5 – 44km on the Lillooet River FSR ***ULRHEF Intake*** • Dewatering upstream portal excavation to sediment basins • Drilling and blasting between downstream cofferdam and intake portal excavation ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***ULRHEF Penstock*** • Fill and compaction works at 2+800 • Excavation from 4+050 – 4+075 ***ULRHEF Powerhouse*** • Rebar installation and formwork ***BDRHEF Intake, Crane Pad and Access Road*** • Rock hammering and excavation above crane pad • Rope access scaling and stabilization works on right bank ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Rebar installation and formwork ***TX-Line*** • No activity

IEM Team Personnel: *TH – Tom Hicks; SS – Stephen Sims; BA – Blake Aleksich; VD – Vanessa Dan; AA – Anthony Andrews; AS – Anne Sutherland; DA – Danita Abraham; TJ – Tammie Jenkins; SE – Stephanie Ellis*

2.0 Administrative Summary

Key communications and meetings the IEM team had with the licensees, contractors and/or environmental authorities:

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
May 11, 2015	*Pre-work meetings*	WEL, INX, SES	Pre-work meeting to review the 261a installation work plan and to visit the Vans Creek bridge site to identify potential environmental/ engineering concerns. Discussions focused on site-specific engineering requirements, safety, and environmental concerns.	-
	Email	WEL, SES, INX	WEL formalized a map with the helicopter flight paths discussed during the May 5, 2015 Segment 15 kick-off meeting. The flight plan map will be used for all flights needed to complete the Segment 15 works.	-
	Email	WEL, SES, INX	WEL provided notification of the re-commencement of Segment 6 pole construction activities. WEL confirmed that no works will occur in the vicinity of poles 141 to respect the Grizzly Bear timing restrictions in these areas that are in place until June 15, and that helicopter flight paths will avoid the 500m UWR buffer until after May 15, 2015.	-
May 12, 2015	*Email*	JEM, MFLNRO, SES, INX	The IE submitted their April 27, 2015 site inspection report.	-
May 13, 2015	*Email, onsite discussions*	CE, SES, INX	CE provided notification of the start of tunnel blasting at the ULRHEF downstream tunnel portal. The IEM was onsite during the blast to monitor noise levels recorded on the noise meter installed near the downstream tunnel portal. No exceedance of the noise level threshold occurred.	-

3.0 Current Work Restrictions and Timing Windows

The table presented below outlines work restrictions applicable during the reporting period for each active Project component location:

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
TX Line	Segments 8 – 15	Within 150m of wetlands or 100m of Coastal Tailed Frog Streams	IEM presence is required when clearing within 150m of wetlands or 100m of CTF Streams, to ensure clearing areas are minimized.
		Riparian Vegetation Management Areas (RVMA)	IEM monitoring is required during clearing within RVMAs.
		Surface Water Quality	IEM monitoring is required during culvert installation activities in non-fish bearing waters to document adherence to the Surface Water Quality Protection Plan objectives.

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
		Suitable Raptor Nesting Habitat	IEM presence is required when clearing within suitable Northern Goshawk (NOGO), SPOW (Spotted Owl) and Western Screech-Owl (WESO) nesting habitat during the breeding period. A QP is to complete a nest survey if working within 600m of suitable Peregrine Falcon (PEFA) nesting habitat during the breeding period.
		Suitable Class 1 & 2 Grizzly Bear forage habitat	IEM monitoring is required when clearing within identified Class 1 & 2 Grizzly Bear forage habitat, to ensure clearing areas are minimized.
		Wildlife Habitat Area (WHA) 2-399	Construction of the transmission line within the Grizzly Bear WHA 2-399 must be constructed outside of April 1 to June 15 and October 15 to December 31 to minimize disturbance to Grizzly Bears expected to use the WHA during spring and fall.
		Ryan River Drainage	Construction of the TX Line into and across the Ryan River drainage will occur during the less critical Grizzly Bear summer foraging period (June 1 – September 1).
		Moose, Deer, & Mountain Goat UWRs	Helicopter flight paths will avoid UWRs and landing locations will be located further than 500m away from the UWRs during the sensitive late winter period (March 1 – May 15).
Lillooet River FSR & ULRHEF	Access roads above the lower limit of the 200m buffer Truckwash Creek Migration Corridor to the ULRHEF intake	Mountain Goat UWR & Migration Corridor	Daily construction shutdowns occurred throughout the reporting period beginning one hour before and two hours after sunrise as well as two hours before and one hour after sunset. This timing restriction is effective within the Migration Corridor and 200m buffer throughout the month of May. Noise levels monitoring is occurring near the downstream portal at two monitoring stations within the Truckwash Creek migration route, as well as one location at the ULRHEF intake with guidance from an acoustical consulting firm. If noise levels exceed 75 dBA at the edge of UWR u-2-002 UL 11 or the migration corridor during the critical winter (Nov 1 - Apr 30) and kidding (May 1 - Jun 15) periods, additional mitigation measures are to be implemented to minimize noise levels. If a goat observation occurs within 500 m line-of-sight of construction activities, construction must cease for at least 48 hours. The IEM must record and submit all goat observations to FLNR within 48 hours.

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
ULRHEF & BDRHEF	BDRHEF intake	Mountain Goat UWR habitat (u-2-002 UL 12)	During winter construction and operations (November 1 – June 15), access to Boulder Creek HEF intake must be gated at least 500 m from the original UWR u-2-002 UL 12 to restrict motorized use within the UWR, unless otherwise directed by FLNR. Noise levels are monitored during active construction works occurring between May 1 – June 15 within UWR u-2-002 UL 12. The noise level monitoring location is between the intake work area and the portion of the UWR with the highest documented use. If noise levels exceed 75 dBA at this location, activities will cease until additional mitigation measures are proposed and implemented to minimize the possibility of additional noise level exceedances.

4.0 Upper Lillooet River HEF – Monitoring Results

4.1 *Construction Camp, 38km Laydown & Lillooet River FSR*

Activities:

- Ditch maintenance (including rock lining) on the Lillooet River FSR from 42.5km to 44km (Photo 1).
- Silt fencing repair at tributary crossings on the Lillooet River FSR (Photo 2).
- Routine maintenance of construction equipment within the mechanic shop and fuel management continued at the 38km laydown.
- All electric fences were maintained and operational throughout this reporting period.

Environmental Summary:

- No environmental issues were observed during this reporting period at the construction camp, 38km laydown or on the Lillooet River FSR.

Photos:

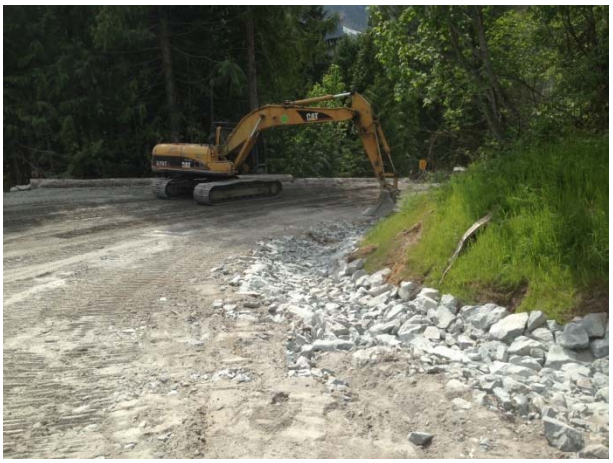

Photo 1 – Ditch maintenace near 43km on the Lillooet River FSR (May 12, 2015).

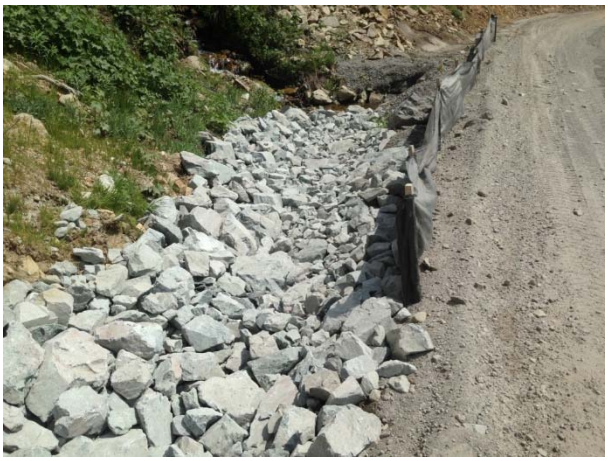

Photo 2 – Ditch maintenance and silt fencing repair at a tributary crossing near 43.5km on the Lillooet River FSR (May 12, 2015).

4.2 *Intake (North & South Sides), Access Roads and Upstream Tunnel Portal*

Construction Activities:

- Drilling, blasting and excavation between the downstream cofferdam and the tunnel portal excavation (Photo 3, Photo 4, Photo 5 and Photo 6).
- Dewatering of portal excavation to the intake dewatering and wastewater treatment system (Photo 7 and Photo 8).

Environmental Summary:

- Drill and blast works continued at the ULRHEF intake during this reporting period. Drilling and blasting occurred within 500m of the Keyhole Falls Mountain Goat kidding range under the following conditions:
  - Noise suppression measures (delays, charge weights, blast mats, etc.) be used,
  - Noise levels remain below 75 dB (measured at Keyhole Falls monitoring location), and
  - The blast schedule was provided to the IEM to allow for goat monitoring to occur during the blasts.
- On May 11, the IEM was present to monitor blasting activity between the downstream cofferdam and the portal excavation (Photo 3 and Photo 4). The force of the blast propelled rock and material below the north side of the downstream cofferdam. Seepage water contacting the introduced material caused sediment-laden water to discharge from the downstream cofferdam culvert (Photo 5). Immediately following the blast CE mobilized a 6" pump to the cofferdam and began pumping the turbid water to the portal excavation for containment (Photo 6). The IEM conducted water quality sampling at the Keyhole Bridge. Downstream water quality remained within Project guidelines set out in the Surface Water Quality Protection Plan. Please see Section 4.5 Water Quality Results.

- On May 10 (12:00), May 11 (16:45), goat monitoring was conducted at the Keyhole Falls location (MG-OBS02) during blasts for the removal of the earth berm between the ULRHEF downstream cofferdam and the intake tunnel portal. No Mountain Goats were observed during the blasts. Analysis of the data from the Keyhole Falls noise monitoring station confirmed noise levels remained below 75 dBA during all blast events.
- Operation of the ULRHEF intake dewatering and wastewater treatment system commenced during this reporting period (Photo 7). Two pumps conveyed seepage water from the portal excavation to the dewatering system sump and then in to the sediment basins (Photo 8). Valves located at the sump location function to redirect water for discharge directly to the Lillooet River. The portal excavation water will be redirected to the river only after the IEM has confirmed it is suitable for discharge as per the Surface Water Quality Protection Plan.
- The IEM was onsite to monitor construction activities within 30 metres of the Lillooet River.

Photos:

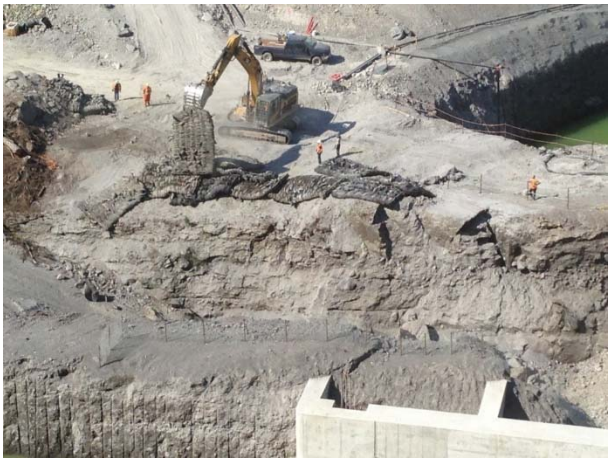

Photo 3 – Blast preparation between downstream cofferdam and portal excavation (May 11, 2015).

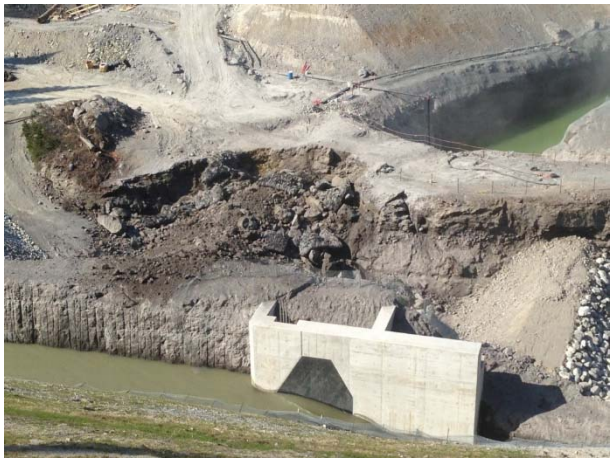

Photo 4 – Conditions after blast between downstream cofferdam and portal excavation (May 11, 2015).

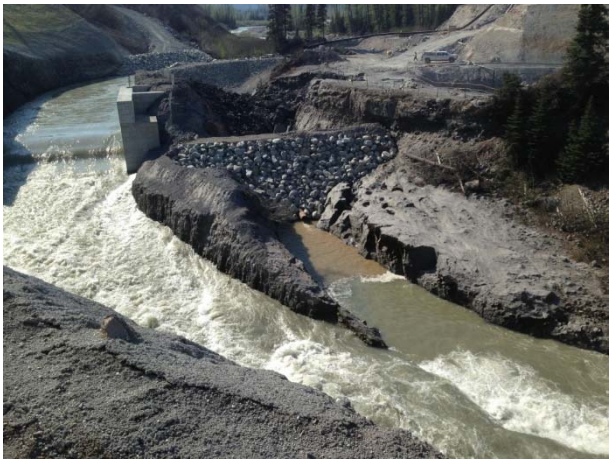

Photo 5 – Sediment-laden water discharging from downstream cofferdam culvert following blast (May 11, 2015).

Photo 6 – Pumping sediment-laden water from downstream cofferdam to portal excavation (May 11, 2015).

Photo 7 – Dewatering upstream portal excavation to sediment basins (May 13, 2015).

Photo 8 – Intake sediment basins (May 13, 2015).

4.3 *Downstream Tunnel Portal*

Construction Activities:

- Drilling, blasting, mucking and stabilization works within the tunnel (Photo 9).
- Dewatering to downstream portal settling ponds (Photo 10).

Environmental Summary:

- Tunnelling works and dewatering to the downstream portal settling ponds commenced during this reporting period (Photo 10). The settling pond water infiltrated to ground in the first cell with no discharge to the surrounding environment.

Photos:

Photo 9 – Current conditions at the ULRHEF downstream tunnel portal (May 12, 2015).

Photo 10 – ULRHEF downstream tunnel portal settling ponds (May 12, 2015).

4.4 *Penstock*

Construction Activities:

- Penstock fill and compaction works continued at 2+800 (Photo 11).
- Penstock excavation continued from 4+050 to 4+075 (Photo 12 and Photo 13).

Environmental Summary:

- High temperatures and snowmelt during this reporting period resulted in increased surface water flow on site. Multiple flows appeared on the slope above the penstock excavation between 4+000 and 4+075 (Photo 14). The emerging water was observed to infiltrate to ground at the toe of the slope. In order to prevent further erosion and to prevent water from entering the active worksite, CE intercepted the water flowing at 42.25km within a non-fish bearing, non-CTF ephemeral drainage before it entered the Lillooet River FSR culvert. A sandbag berm was built to contain the water and two pumps were installed to convey flows to a vegetated area southeast of 42.25km (Photo 15 and Photo 16). The IEM was onsite to conduct an amphibian sweep of all dewatered areas and to ensure that the discharged water infiltrated to ground in the vegetated area. No environmental concerns were noted.

Photos:

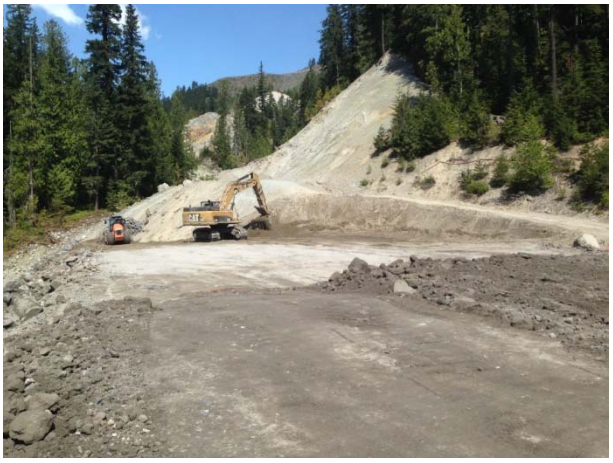

Photo 11 – Fill and compaction works at 2+800 (May 10, 2015).

Photo 12 – Penstock excavation at 4+060 (May 10, 2015).

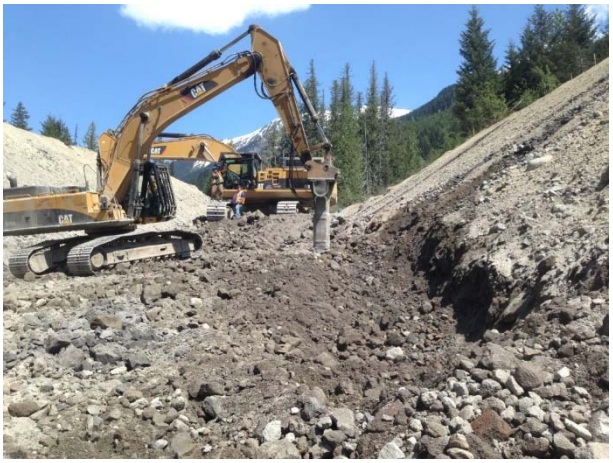

Photo 13 – Penstock excavation at 4+060 (May 12, 2015).

Photo 14 – Runoff flowing down penstock excavation slope at 4+050 (May 13, 2015).

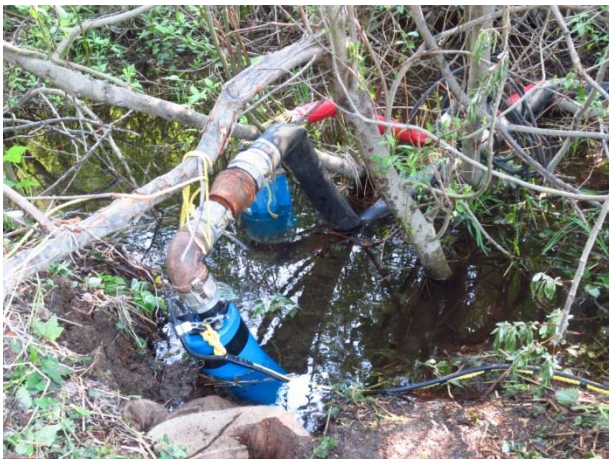

Photo 15 – Pumps installed above Lilooet River FSR at 42.25km (May 15, 2015).

Photo 16 – Pumps discharging to vegetated area near 42.25km of Lillooet River FSR (May 15, 2015).

4.5 *Powerhouse & Access Road*

Construction Activities:

- Continued rebar installation and formwork for the powerhouse structure (Photo 17).
- Structural concrete pours were completed on May 10 and 14 (Photo 17).
- Dewatering of the powerhouse sump to the Lillooet River continued (Photo 18).

Environmental Summary:

- On May 10 and 14, the IEM was onsite to inspect the ULRHEF powerhouse during a concrete pour (Photo 17). The IEM conducted water quality sampling of the powerhouse sump discharge (Photo 18 and Photo 19). All water samples were measured to have a pH <9 and suitable for discharge to the surrounding environment as per the Surface Water Quality Protection Plan (see Section 4.5 Water Quality Results).

- Dewatering of the ULRHEF powerhouse continued without environmental concerns. The IEM will continue to monitor the works area to confirm that future concrete pours are adequately isolated from flowing water and protected from precipitation during curing.

Photos:

Photo 17 – Concrete pour at the ULRHEF powerhouse (May 10, 2015).

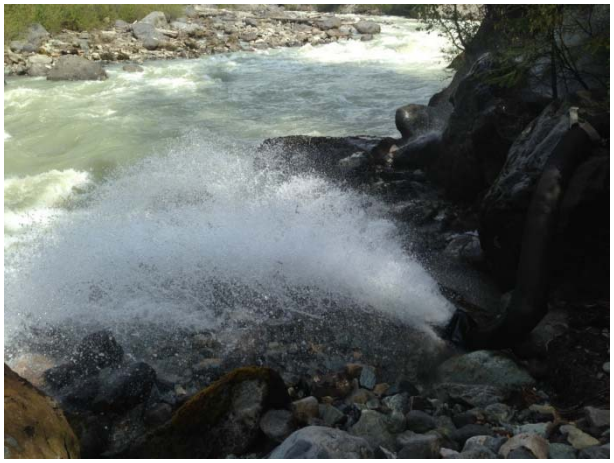

Photo 18 – Outlet of 10" powerhouse sump dewatering hose (May 10, 2015).

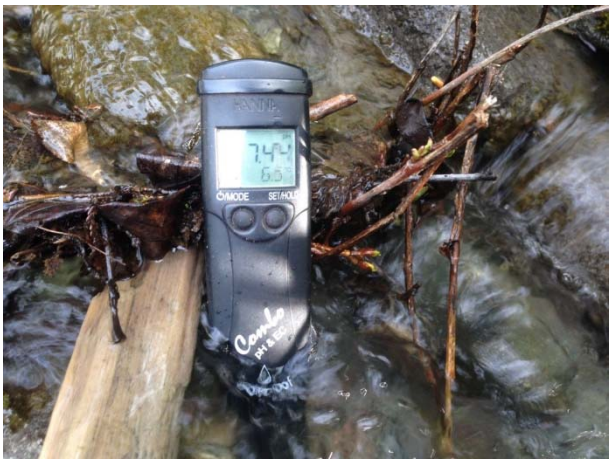

Photo 19 – pH measurement conducted at discharge point of powerhouse sump dewatering hose (May 10, 2015).

4.6 *Water Quality Results*

The following table presents the results of the routine water quality sampling program for the ULRHEF. The IEM is undertaking a weekly monitoring program according to the conditions outlined in the Surface Water Quality Protection Plan. The regular monitoring sites have been selected to quantify WQ conditions within the Lillooet River upstream and downstream of active construction areas. The IEM acknowledges the natural variability of instream WQ conditions in the Lillooet River due to seasonal melt fluctuations and large tributary inputs. In the event that an exceedance of *in-situ* water quality (turbidity or pH) is deemed to be caused by project-related activities, the IEM will highlight the exceedance, discuss the cause, and outline measures

undertaken by the Contractor to correct the issue. When an exceedance cannot be attributed to project related activities, the exceedance will be marked by an asterisk (*).

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (*u*S)	Temp (°C)
Routine Water Quality						
May 16, 2015	9:40	ULR Background – ULRHEF Intake	6.8	31.1	61	4.6
	10:02	ULR #0.5 – Downstream of ULRHEF intake at Keyhole Bridge	6.6	30.7	62	5.0
	11:06	ULR #1 – Upstream of ULRHEF Powerhouse	7.0	28.7	59	5.6
	11:34	ULR #2 – Downstream of ULRHEF Powerhouse between KM 40.5 and KM 41	6.8	29.4	58	6.0
	12:55	ULR #3 – Lillooet River FSR KM 38 Laydown – D/S of Boulder confluence	6.9	28.8	53	7.1
	7:00	ULR #4 – Lillooet River FSR KM 24 – D/S of all works and Meager confluence	6.8	33.1	60	4.5
Water Quality for Specific Works						
Blasting between intake portal excavation and downstream cofferdam						
May 11, 2015	16:08	Background upstream of ULRHEF intake	-	28.7	-	-
	17:00	Lillooet River at Keyhole bridge	-	35.0	-	-
	17:30	Lillooet River at Keyhole bridge	-	34.6	-	-
	17:45	Lillooet River at Keyhole bridge	-	45.2	-	-
	18:00	Lillooet River at Keyhole bridge	-	49.3	-	-
	18:10	Lillooet River at Keyhole bridge	-	44.7	-	-
	18:20	Background upstream of intake[1]	-	52.8	-	-
	18:30	Lillooet River at Keyhole bridge	-	54.1	-	-
Concrete pours at ULRHEF powerhouse						
May 10, 2015	10:21	Outlet of 10” powerhouse dewatering hose	6.89	-	-	-
	10:28	Outlet of 10” powerhouse dewatering hose	7.38	-	-	-
May 14, 2015	15:35	ULRHEF powerhouse settling pond	8.57	-	-	-
	15:42	Settling pond discharge point at Lillooet River	6.86	-	-	-

[1] Second background sample collected to reflect fluctuating turbidity in Lillooet River.

4.7 *Recommendations*

IEM recommendations for the ULRHEF are as follows:

- Following completion of the intake dewatering and wastewater treatment system, all seepage water in the portal excavation should be conveyed to the sediment basins unless approved for discharge directly to the Lillooet River by the IEM.

- The IEM recommends that the access roads and tributaries on the penstock alignment be monitored regularly to ensure that no erosion and sediment control issues develop with the continued excavation/fill works rock truck traffic. Temporary pumps installed at 42.25km of the Lillooet River FSR to divert water away from the penstock excavation should be monitored to ensure water continues to infiltrate to ground at the discharge location.
- The ULRHEF powerhouse sump water should be monitored regularly. Alkaline or turbid water should be pumped to the remaining settling pond for treatment.

4.8 *Upcoming Works*

The following new and/or environmentally sensitive construction activities are scheduled to occur at the ULRHEF in the upcoming reporting period(s):

- Drilling and blasting will continue at the ULRHEF intake.
- Dewatering of the upstream portal excavation will continue.
- Tunneling activities will continue at the ULRHEF downstream tunnel portal.
- Excavation and fill works will continue on the ULRHEF penstock alignment.
- Rebar installation, formwork and concrete pours will continue at the ULRHEF powerhouse.

5.0 Boulder Creek Hydroelectric Facility – Monitoring Results

5.1 *Intake Access Road & Crane Pad*

Construction Activities:

- Rope access scaling and slope stabilization works on the intake right bank (Photo 20).
- Rock hammering and excavation continued above the intake crane pad (Photo 21).

Environmental Summary:

- Noise monitoring continued from a station 375m northwest of the BDRHEF intake within the identified UWR (UL-11). Noise level monitoring was conducted to ensure that the 75 dBA noise level threshold is not exceeded as outlined in the Mountain Goat Management Plan.
- The gate to restrict public access on the BDRHEF intake access road within 500m of UWR was manned daily during this reporting period.

Photos:

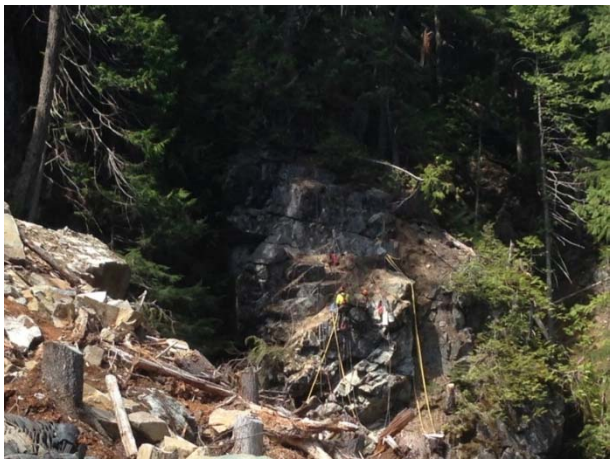

Photo 20 – Rope access crews conduct scaling works on right bank at BDRHEF intake (May 11, 2015).

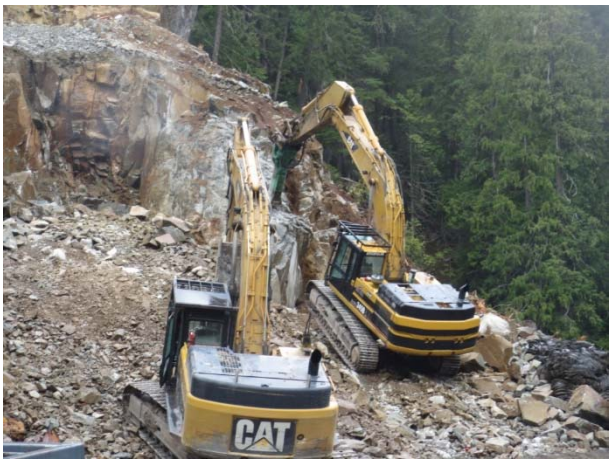

Photo 21 – Rock hammering and excavation continued at BDRHEF intake (May 11, 2015).

5.2 *Downstream Tunnel Portal and Powerhouse*

Construction Activities:

- Rebar installation and formworks for the powerhouse structure continued (Photo 22).
- Drilling, blasting, mucking and stabilization works continued within the tunnel.
- Dewatering of the tunnel and powerhouse excavation to the oil water separator and settling ponds continued (Photo 23).

Environmental Summary:

- No environmental issues were observed during this reporting period at the BDRHEF powerhouse or downstream tunnel portal.

Photos:

Photo 22 – Current conditions at the BDRHEF powerhouse (May 7, 2015).

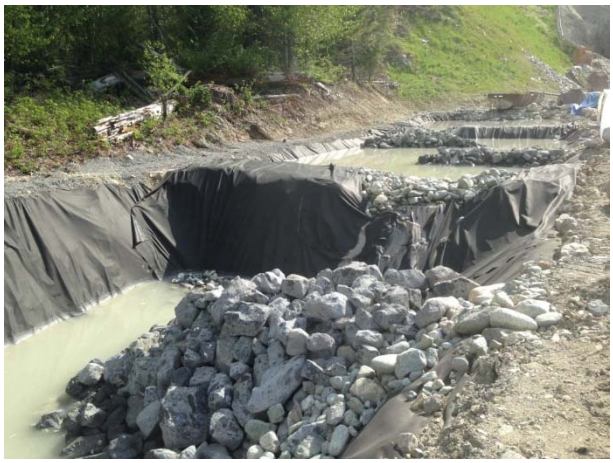

Photo 23 – Dewatering the BDRHEF tunnel to settling ponds (May 7, 2015).

5.3 *Water Quality Results*

The following table presents the results of the routine water quality sampling program for the BDRHEF. The IEM is undertaking a weekly monitoring program according to the conditions outlined in the Surface Water Quality Protection Plan. The regular monitoring sites have been selected to quantify WQ conditions within the Lillooet River upstream and downstream of active construction areas. The IEM acknowledges the natural variability of instream WQ conditions in Boulder Creek due to seasonal fluctuations in snowmelt. In the event that an exceedance of *in-situ* water quality (turbidity or pH) is deemed to be caused by project-related activities, the IEM will highlight the exceedance, discuss the cause, and outline measures undertaken by the Contractor to correct the issue. When an exceedance cannot be attributed to project related activities, the exceedance will be marked by an asterisk (*).

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (uS)	Temp (°C)
Routine Water Quality						
May 16, 2015	-	**BDR BG** – Upstream of BDRHEF intake *not currently accessible*	-	-	-	-
	-	**BDR #1** – Downstream of BDRHEF intake *not currently accessible*	-	-	-	-
	12:03	**BDR #2** – Upstream of BDRHEF Powerhouse	6.5	11.1	48	5.6
	12:24	**BDR #3** – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	6.6	11.1	45	6.0

5.4 *Recommendations*

IEM recommendations for the BDRHEF are as follows:

- The IEM recommends that all wastewater related to the BDRHEF tunnelling works continues to be contained and conveyed to the downstream portal settling ponds for treatment.

5.5 *Upcoming Works*

The following new and/or environmentally sensitive construction activities are scheduled to occur at the BDRHEF in the upcoming reporting period(s):

- Scaling and stabilization works on the BDRHEF intake right bank will continue.
- Rock hammering and excavation at the intake will continue.
- BDRHEF downstream portal tunnelling works will continue.

6.0 Transmission Line – Monitoring Results

6.1 *Transmission Line Construction Activities*

Right-of-Way Clearing:

- Hand falling in Segment 13 from structures 313 – 316.5 and for road 322.
- Hand falling in Segment 14 from structures 357 – 362 and 369 – 371.

Existing Road Upgrades and Access Road Construction

- Access trail building in Segment 6.
- Building road 322 in Segment 13.
- Building road 371 in Segment 14.

Transmission Line Pole Installation, Line Stringing and Clipping

- No activity.

Environmental Summary:

- On May 11, pre-work meetings were held at stream 261a and at Vans Creek in Segment 11 (Photo 24). Discussions covered engineering, safety and environmental concerns related to the crossing and bridge installation works at both watercourses. Mitigations were considered for the removal of the log box culvert at Vans Creek (Photo 25). It was agreed that all necessary precautions will be taken to minimize downstream turbidity and the IEM will be present to monitor water quality.
- The IEM was present as required when clearing activities occurred within 150m of wetlands, 15m RVMAs (30m for CTF streams), 100m of Coastal Tailed Frog Streams, Class 1 & 2 suitable Grizzly Bear WHA and/or suitable forage habitat, moose and deer UWR, legally designated Old Growth Management Areas (OGMAs) or within Northern Goshawk, Spotted Owl or Western Screech-Owl nesting habitat (during breeding season). All flagged boundaries were respected during clearing activities. No environmental issues were observed.

Photos:

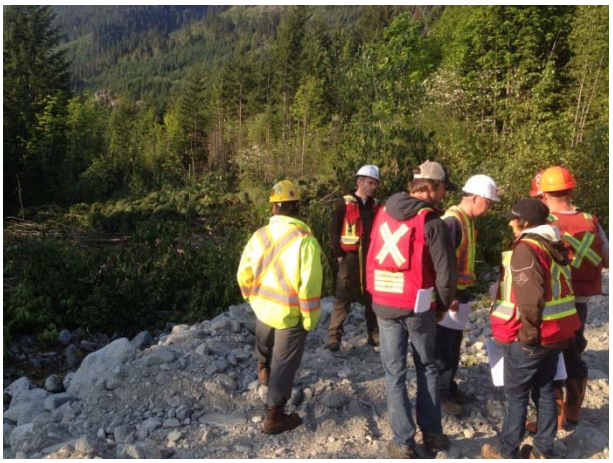

Photo 24 – Pre-work meeting held at stream 261a in Segment 11 (May 11, 2015).

Photo 25 – Old log box culvert over Vans Creek (May 11, 2015).

6.2 *Water Quality Results*

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (uS)	Temp (°C)
Routine Water Quality						
No WQ measurements were recorded at active TX Line work areas during this reporting period. Construction and clearing activities had no visual effect on WQ.						

6.3 *Recommendations*

- The IEM has no recommendations at this time.

6.4 *Upcoming Works*

The following new and/or environmentally sensitive construction activities are scheduled to occur along the TX Line in the upcoming reporting period(s):

- Stringing poles in Segment 5.
- Groundworks for pole foundations in Segment 6.
- Framing in Segment 7.
- Bridge installation and berm construction works at stream 261a in Segment 11.
- Hand clearing in Segment 13 and 14.
- Road construction in Segment 13 and Segment 14.
- Slashing in Segment 15.

7.0 Wildlife Sightings

As per the CEMP, a wildlife sightings record has been implemented and will be updated regularly by Project Personnel. It is mandatory for all personnel to report wildlife sightings including, but not limited to bears, cougars, mountain goats and deer. Wildlife sighting will be reported and recorded by the contractor(s). Wildlife Observation forms will be included in first reporting period following month end. Observation or detection of the following species will trigger notification to identified parties according to the following table.

Species Observed or Detected	Notification Period	Agencies to be Notified
Northern Rubber Boa	Immediately	IEM, Owner
Grizzly Bear	24hrs	IEM, Safety Officer, Conservation Officer, Owner
Wolverine Den	24hrs	IEM, MFLNRO, Owner
Spotted Owls	24hrs	IEM, MOE, Owner
Mountain Goats	48hrs	IEM, MFLNRO, Owner

8.0 Mountain Goat Monitoring Program

The following mitigation measures were implemented for work activity within the Migration Corridor during this monitoring period:

- Daily dawn and dusk shutdowns as outlined in the Mountain Goat Management Plan were followed.
- Noise level monitoring to ensure that the 75 dB noise level threshold is not exceeded as outlined in the Mountain Goat Management Plan.
- As of May 1, the IEM or designate was on site to monitor Mountain Goat activity within 500m of construction activities at the ULRHEF intake and the ULRHEF downstream tunnel portal. Mountain Goats were monitored from three sites:
- Truckwash Creek viewing river right of the Migration Corridor – MG-OBS01 (10U 467955 5612773):
- Keyhole Falls viewing the south side u-2-002 UL11 – MG-OBS02 (10U 466593 5613988); and,
- Garibaldi Pumice mine site viewing u-2-002 UL 19 – MG-OBS03 (10U 467388 561408).

Monitoring effort was split between all three sites between sunrise and sunset, unless safety concerns or weather conditions precluded monitors from doing so. The order of site visits rotated daily. Construction activities need to cease if a goat(s) are observed moving towards the ULRHEF intake and/or if a goat(s) are observed within a 500m line of site of a construction activity. No goats were observed within 500m line of sight of construction activities and no work stoppages were required.

Please refer to the attached Mountain Goat Monitoring Daily Observation Forms for a summary of observations from this reporting period.

9.0 Environmental Issues Tracking Matrix (ITM)

9.1 *Hydroelectric Facilities (ULRHEF & BDRHEF)*

ITM Tracking Legend:	*Work Item Open*
	Work Item Complete
	Issue Closed

Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Completed
next ITM – ULR#25							

9.2 *Transmission Line*

ITM Tracking Legend:	*Work Item Open*
	Work Item Complete
	Issue Closed

Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Completed
No outstanding environmental issues (next ITM – Tx#3)							

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Danita Abraham

Date (YYYY-MM-DD): 2015-05-10

Weather (*cloud cover*, precipitation *and temperature*): Light overcast warm

sartori environmental services

106-185 forester street, north vancouver, bc v7h 0a6
office tel 987.5588 fax 987.7740

Please submit **Mountain Goat Daily Observation Form** in person to a representative of Sartori Environmental Services (**Tom Hicks** or **Stephen Sims**) or by email to **tom@sartorienv.com** following each day of monitoring.

Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates *(approximate center of observation area)*	Daily Start Time *(24hr clock)*	Daily End Time *(24hr clock)*
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845		
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	11:15	13:20
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	08:30	10:30

Daily form #	1	of	2

If more space is needed in the below table, please fill out additional daily forms and indicate total number of forms above.

Observation Site *(indicate if location other than OBS site)*	Time *(use 24hr clock)*	UTM Coordinates or Waypoint *(10U)*	Species Observed *(indicate Mountain Goat or other species)*	Observations *(be specific - visual sign, track, other sign)*	Total # of Animals	Age/Sex *(if unknown - refer to attached info sheet)*	Description of Activities *(feeding, moving, etc.)*	Comments *(habitat, snow conditions, etc.)*	Photo #s
MG - OBS03	09:25	10U 469155 5614960	MG	Visual	1	Adult Sex unknown billy?	Resting, quickly moved to feed and lost site	Rocky bluff in snow line. Lost site no picture	N/A
MG -OBS03	09:44	10U 469155 5614960	MG	Tracks	1	Adult? Sex unknown	Traveling on pumice road, tracks went both ways. Strides and tracks were big.	Pumice road	4262-426
MG - OBS03	10:25	10U 469155 561960	MG	Visual	2	Adult Sex unknown Billy?	Feeding	On the rocky bluff in snowline	427-428
MG - OBS02	11:30	10U 466760 5613967	None	NA	0	N/A	N/A	Blast at 12:00, no sightings. Sloughing on mineral slide area again, behind ridge near top.	430-431

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Danita Abraham

Date (YYYY-MM-DD): 2015-05-10

Weather (*cloud cover*, precipitation *and temperature*): Overcast, warm

sartori environmental services

106-185 forester street, north vancouver, bc v7h 0a6
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Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates *(approximate center of observation area)*	Daily Start Time *(24hr clock)*	Daily End Time *(24hr clock)*
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	13:30	15:30
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967		
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960		

Daily form #	2	of	2

If more space is needed in the below table, please fill out additional daily forms and indicate total number of forms above.

Observation Site *(indicate if location other than OBS site)*	Time *(use 24hr clock)*	UTM Coordinates or Waypoint *(10U)*	Species Observed *(indicate Mountain Goat or other species)*	Observations *(be specific - visual sign, track, other sign)*	Total # of Animals	Age/Sex *(if unknown - refer to attached info sheet)*	Description of Activities *(feeding, moving, etc.)*	Comments *(habitat, snow conditions, etc.)*	Photo #s
MG - OBS01	14:11	10U 467898 5612845	MG	Visual	3	Adult (2) Yearling? (1)	Feeding, two jumped across the creek behind a ridge.	Across on the south side on Mt Meager. Rocky gully with snow and a creek	432-439

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Danita Abraham

Date (YYYY-MM-DD): 2015-05-11

Weather (*cloud cover,* precipitation *and temperature*): Sunny, 10% cloud, Warm

sartori environmental services

106-185 forester street, north vancouver, bc v7h 0a6
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Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates *(approximate center of observation area)*	Daily Start Time *(24hr clock)*	Daily End Time *(24hr clock)*
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	12:50	14:30
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	08:30	10:45
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	10:55	12:45

Daily form #	1	of	2

If more space is needed in the below table, please fill out additional daily forms and indicate total number of forms above.

Observation Site *(indicate if location other than OBS site)*	Time *(use 24hr clock)*	UTM Coordinates or Waypoint *(10U)*	Species Observed *(indicate Mountain Goat or other species)*	Observations *(be specific - visual sign, track, other sign)*	Total # of Animals	Age/Sex *(if unknown - refer to attached info sheet)*	Description of Activities *(feeding, moving, etc.)*	Comments *(habitat, snow conditions, etc.)*	Photo #s
MG - OBS02	9:10	10U 466769 5613967	MG	Visual	4	Kid Sex u/k Adult, nanny Subadult (2) Sex u/n,(1)nanny?	Sleeping. After 15min nanny stood up chased kid and another subadult off of their bedding area.	Usual Bedding under tree near bottom to the right of slide area. They rested for an hr and moved away out of site @10:15 Did see "patch" no picture.	441-475
MG - OBS02	10:35	10U 466760 5613967	MG	Visual	4	Kid Sex u/k Adult, nanny Subadult (2) Sex u/n,(1)nanny?	Feeding and Moving up into forest away from observation site.	Forested ridges. Picture of location they went up into is 483. They kept looking back in this direction.	476-482
MG - OBS03	11:45	10U 469155 5614960	None	Tracks	3 sets of Tracks	Unknown age and sex	Going over the mountain in the snow.	Top of mountain in snow top far right of rock face.	484
MG - OBS01	13:15	10U 467898 5612845	None	N/A	0	N/A	N/A	N/A	N/A

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Danita Abraham

Date (YYYY-MM-DD): 2015-05- 11

Weather (*cloud cover*, precipitation *and temperature*): Sunny 20% cloud cover, hot

sartori environmental services

106-185 forester street, north vancouver, bc v7h 0a6
office tel 987.5588 fax 987.7740

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Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates *(approximate center of observation area)*	Daily Start Time *(24hr clock)*	Daily End Time *(24hr clock)*
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845		
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	15:30	16:45
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960		

Daily form #	2	of	2

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Observation Site *(indicate if location other than OBS site)*	Time *(use 24hr clock)*	UTM Coordinates or Waypoint *(10U)*	Species Observed *(indicate Mountain Goat or other species)*	Observations *(be specific - visual sign, track, other sign)*	Total # of Animals	Age/Sex *(if unknown - refer to attached info sheet)*	Description of Activities *(feeding, moving, etc.)*	Comments *(habitat, snow conditions, etc.)*	Photo #s
MG - OBS02	16:00	10U 466760 5613967	None	N/A	0	N/A	N/A	There is a blast at 16:30., happened at 16:45 Able to hear blast from monitoring location.	-

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Danita Abraham

Date (YYYY-MM-DD): 2015-05-12

Weather (*cloud cover*, precipitation *and temperature*): Sunny, clear, hot. Hazy

sartori environmental services

106-185 forester street, north vancouver, bc v7h 0a6
office tel 987.5588 fax 987.7740

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Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates *(approximate center of observation area)*	Daily Start Time *(24hr clock)*	Daily End Time *(24hr clock)*
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	12:00	14:30
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	08:45	11:15
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	14:35	16:45

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MG -OBS02	09:00	10U 466760 5613967	None	N/A	0	N/A	N/A	09:00 and really hot already. Will Try earlier tomorrow.	-
MG - OBS01	12:15	10U 467898 5612845	None	N/A	0	N/A	N/A	No sightings. Very busy here, behind me and up at by the portal. Loud construction.	-
MG - OBS03	16:25	10U 469155 5614960	MG	visual	4	Adults(3) Subadult (1)? Sex u/k? Billy?	3 resting, 1 feeding	Rocky bluff in the snow line. Way up top to the left.	490-496

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Danita Abraham

Date (YYYY-MM-DD): 2015-05-13

Weather (*cloud cover,* precipitation *and temperature*): Overcast, chilly, light sunshine.

sartori environmental services

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MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845		
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	08:00	10:15
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	13:30	14:30

Daily form #	1	of	2

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MG - OBS02	08:10	10U 466760 5613967	MG	Visual	1	Adult Nanny	Resting, she seems very sleepy.	Bottom bedding area beside mineral slide. Haven't seen any others in 2 hrs. Will be back this afternoon for 2 blasts. Forgot camera battery. Will get ASAP.	Pics on cell. Will email
MG - OBS02	11:40	10U 466760 5613967	MG	Visual	4	1 nanny 2 subadults, sex u/k 1 yearling, sex u/k	Resting, sleeping	Same bedding area near the bottom. They rested the whole time through the blast. I recorded it. #509. Patch is there.	497-525
MG - OBS02	12:22	10U 466760 5613967	MG	Visual	4	1 nanny 2 subadults, sex u/k 1 yearling, sex u/k	Moving away and feeding. They were startled by a rock slide right beside them on the mineral slide @12:22	Moved up and away into the forest above.	526-563
MG - OBS03	13:36	10U 469155 5614960	MG	Visual	2	Adults Billy's?	Feeding	One was on the upper rock face. One was one the rock bluffs up far left.	564-567

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Danita Abraham

Date (YYYY-MM-DD): 2015-05-13

Weather (*cloud cover*, precipitation *and temperature*): 60% cloud cover, warm, sunny

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MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	14:40	15:30
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967		
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960		

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MG - OBS01	13:45	10U 467898 5612845	None	N/A	0	N/A	N/A	No sightings.	-

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Danita Abraham

Date (YYYY-MM-DD): 2015-05-14

Weather (*cloud cover,* precipitation *and temperature*): Overcast, mild.

sartori environmental services

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Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates *(approximate center of observation area)*	Daily Start Time *(24hr clock)*	Daily End Time *(24hr clock)*
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	09:00	11:10
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	14:00	16:00
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	11:30	13:25

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MG - OBS01	10:51	10U 467898 5612845	MG	Visual	1	Adult Billy	Standing on top of ridge.	Across on the south side on a Rocky ridge beside creek gully Clouds getting lower. No visibility.	576:57 8
MG - OBS03	11:30	10U 469155 5614960	MG	Visual	2	Adult Billy	Sleeping	On top of rocky bluffs near the top. Spoke with owner of pumice mine, he had seen a grizzly up there yesterday may 13.	582-58 3
MG - OBS02	14:20	10U 466760 5613967	MG	Visual	3	1nanny 1 subadult, sex u/k 1 yearling sex u/k	Feeding on shrubbery, moved out of site behind ridge	By the same bedding area near the bottom.	584-60 4

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Anne Sutherland and Danita Abraham

Date (YYYY-MM-DD): 2015-05-15

Weather (*cloud cover*, precipitation *and temperature*): Cool 10C, wind 0-5 km

sartori environmental services

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Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates *(approximate center of observation area)*	Daily Start Time *(24hr clock)*	Daily End Time *(24hr clock)*
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845		
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	11h45	12h45
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	08h15	09h35

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MG - OBS03	08h20	469155 5613967	Mg	Visual	1	Adult Nanny Broken horn	Lying down resting, occasionally stretching, laying head done for few minutes, then head up. Looked at her side once.	Centrally located on the rock face. After an hour she got up and walked slowly upslope into the forest.	Dscn 2904
MG - OBS03	08h30	466704 5614247	Tracks Mg	A number of tracks on pumice road edge	U/k	U/k Adult	Tracks show goat walking along the road edge	Tracks going down pumice road to FSR GPS MG-2015-05-15	
Tracking site lower side at 47km	10h30	466704 5614247	Track Mg	Tracks On lower 47 km	U/k	U/ k	Found tracks about halfway down spur road. They may have been feeding because tracks went up the bank.	GPS MG-2015-05-15 Have seen lots of deer tracks and deer.	Dance 2910-2917
MG - OBS02	11h45	466760 5613967	N/a	N/a	N/a	N/a	N/a	No goats visible. Blast at 12h03 could not hear or feel the blast, but did hear the warning horn.	

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Anne Sutherland and Danita Abraham

Date (YYYY-MM-DD): 2015-05-15

Weather (*cloud cover*, precipitation *and temperature*): Sunny, winds up to 10 km

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MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	14h50	15h35
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967		
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	13h05	13h30

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Pumice Tracking Site	13h15	467199 5613975	Moose	Tracks	1	U/k	Walking	Bear was in the area with cub Brown bear with 2 cubs. Feeding We left before we had checked the whole transect.	619,620 Dscn 2919
Truckwash Tracking Site	13h50	n/a	n/a	n/a	n/a	n/a	n/a	Lots of deer tracks No mg	N/a
MG - OBS01	14h50	467898 5612845	n/a	n/a	n/a	n/a	n/a	Saw 2 goats at 08h05 from 43.5 km on the far side left of water fall up on the mountain. No goats when we came in the afternoon.	n/a
MG-OBS01	14h30	4677984 5612849	MG scat	Scat	1	Adult	Walking on trail?	Scat was found close to animal trail.	IMG 3354

Mountain Goat Daily Observation Form

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Anne Sutherland

Date (YYYY-MM-DD): 2015-05-16

Weather (*cloud cover*, precipitation *and temperature*): Sunny, 14C, no wind in am.

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MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	08h45	11h30
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	13h35	16h00

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MG-OBS02	08h45	466760 5613967	Mg	Visual	1	Yearling Born 2014 U/k sex	Resting when I first arrived. Later got up stretched and walked to the next ridge started feeding.	Same yearling we've been seeing at keyhole this month.	Img3355
MG-OBS02	10h30	466760 5613967	Mg	Visual	2	Adult "patch" U/k sex Yearling U/k sex	Spotted almost to farthest ridge. First saw "patch" and then yearling followed. Disappeared heading upslope.	Patch and yearling staying close together.	
MG-OBS01	11h45	467898 5612845	N/a	N/a	N/a	N/a	N/a	N/a	
MG-OBS03	13h35	469155 5614960	N/a	N/a	N/a	N/a	N/a	N/a	