


Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #33

Reporting Period: August 3rd – August 9th, 2014

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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Owner Construction Permits and Approvals

Environmental Assessment Certificate No.E13-01 (Amendment 1, 2, 3 & 4)
Fisheries Act Subsection 35(2)(b) Authorization No. 09-HPAC-PA2-000303 (Amendment 1)
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) No. L49717
Occupant Licence to Cut (BDRHEF – km 38 laydown) No. L49698
Occupant Licence to Cut (BDRHEF Amendments 1, 2) No. L49816
Occupant Licence to Cut (TX Line Amendment 1, 2, 3) 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
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

Contractor Construction Permits and Approvals

Magazine Licence File No. UL76018

*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*

Wildlife Act Permits – Pacific Tailed Frog Salvage Permit # SU14-95304 &SU13-90538, Fish Salvage Permit # SU14-95329

*Section 52 of the Fisheries (General) Regulations – Fish Salvage Licence #XR 139 2014
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

ACRONYMS:

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

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	Monitoring Locations & Key On-site Environmental Information
Sunday August 3	TH	Sun and Cloud	<p>Construction Camp</p> <ul style="list-style-type: none"> Constructing stairways Constructing walking paths <p>BDRHEF Tunnel Portal</p> <ul style="list-style-type: none"> Drilling, blasting and stabilization of the tunnel Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p>BDRHEF Powerhouse</p> <ul style="list-style-type: none"> Powerhouse excavation <p>BDRHEF Intake Access Road</p> <ul style="list-style-type: none"> Existing road – grubbing and stripping of Spoil 3 and applying road capping material New road – closed due to Stop Work order, no construction activities <p>ULRHEF Downstream Portal</p> <ul style="list-style-type: none"> Tunnel portal construction works, grouting and drilling for rock bolts Slope and rock stabilization <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> Powerhouse excavation Drilling and blasting boulders Dewatering <p>ULRHEF Intake Diversion Channel</p> <ul style="list-style-type: none"> Closed due to landslide risk – no construction activities <p>TX-Line</p> <ul style="list-style-type: none"> No activities
Monday August 4	TH	Sun and Cloud	<p>Construction Camp</p> <ul style="list-style-type: none"> Constructing roofs for stairways Constructing walking paths <p>BDRHEF Tunnel Portal</p> <ul style="list-style-type: none"> Drilling, blasting and stabilization of the tunnel Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p>BDRHEF Powerhouse</p> <ul style="list-style-type: none"> Powerhouse excavation <p>BDRHEF Intake Access Road</p> <ul style="list-style-type: none"> Existing road – grubbing and stripping of Spoil 3 and applying road capping material New road – closed due to Stop Work order, no construction activities <p>ULRHEF Downstream Portal</p> <ul style="list-style-type: none"> Tunnel portal construction works, grouting and drilling for rock bolts Slope and rock stabilization <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> Powerhouse excavation Drilling and blasting large boulders Dewatering <p>ULRHEF Intake Diversion Channel</p> <ul style="list-style-type: none"> Closed due to landslide risk – no construction activities <p>TX-Line</p> <ul style="list-style-type: none"> Segment 4 – installing pole liners and poles Segment 5 – Spider hoe preparing pole foundations

Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Tuesday August 5	MS, TH, VD	Sun and Cloud	<p>Construction Camp</p> <ul style="list-style-type: none"> • Constructing roofs for stairways • Constructing walking paths <p>BDRHEF Tunnel Portal</p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p>BDRHEF Powerhouse</p> <ul style="list-style-type: none"> • Powerhouse excavation • Drilling and blasting for powerhouse foundation <p>BDRHEF Intake Access Road</p> <ul style="list-style-type: none"> • Existing road – grubbing and stripping of Spoil 3 and applying road capping material • New road – closed due to Stop Work order, no construction activities <p>ULRHEF Downstream Portal</p> <ul style="list-style-type: none"> • Tunnel portal construction works • Drilling and blasting for tunnel face <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Powerhouse excavation • Drilling and blasting large boulders • Dewatering <p>ULRHEF Intake Diversion Channel</p> <ul style="list-style-type: none"> • Closed due to landslide risk – no construction activities <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 4 – Line crews working from structure 63-61 and standing poles from structures 69-72, monitors present as this area is within 150m of wetland habitat • Segment 5 – Mumleqs hand falling and associated road closures from KM 25 – 26.5 along Lillooet FSR • Segment 7 – Half day of slashing work above Branch 200 off South Lillooet FSR, near structure 178 • Segment 10 – Drilling, blasting and cleanup near Ryan River bridge site, IEM present for blast to monitor with hydrophone
Wednesda y August 6	MS, VD	Sun and cloud	<p>Construction Camp</p> <ul style="list-style-type: none"> • Very minor works to make sure camp is ready for move in <p>BDRHEF Tunnel Portal</p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p>BDRHEF Powerhouse</p> <ul style="list-style-type: none"> • Powerhouse excavation <p>BDRHEF Intake Access Road</p> <ul style="list-style-type: none"> • Existing road – grubbing and stripping of Spoil 3, completed road capping up to new road. • New road – closed due to Stop Work order, no construction activities <p>ULRHEF Downstream Portal</p> <ul style="list-style-type: none"> • Tunnel portal construction works • Drilling and blasting for tunnel face <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Powerhouse excavation • Drilling and blasting large boulders • Dewatering <p>ULRHEF Intake Diversion Channel</p> <ul style="list-style-type: none"> • Closed due to landslide risk – no construction activities <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 4 – Line crews installing poles • Segment 5 – Mumleqs hand falling and associated road closures from KM 25 – 26.5 along Lillooet FSR • Segment 6 – Mumleqs hand falling and helipad construction

Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Thursday August 7	MS, TH, VD	Sun and cloud	<p>Construction Camp</p> <ul style="list-style-type: none"> • Camp is occupied • Moving more trailers up to Pad #4 <p>BDRHEF Tunnel Portal</p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p>BDRHEF Powerhouse</p> <ul style="list-style-type: none"> • Powerhouse excavation <p>BDRHEF Intake Access Road</p> <ul style="list-style-type: none"> • Existing road – grubbing and stripping of Spoil 3 • New road – closed due to Stop Work order, no construction activities <p>ULRHEF Downstream Portal</p> <ul style="list-style-type: none"> • Tunnel portal construction works • Grading road at 44km <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Powerhouse excavation • Dewatering – installed sump and culverts to improve outlet water quality <p>ULRHEF Intake Diversion Channel</p> <ul style="list-style-type: none"> • Closed due to landslide risk – no construction activities <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 5 – Mumleqs hand falling between KM 25 -26.5 along Lillooet FSR • Segment 6 – Hand falling and helipad construction by Mumleqs • Segment 10 – Mumleqs continued road works for construction of new Ryan River Bridge
Friday August 8	MS, TH, VD	Sunshine	<p>Construction Camp</p> <ul style="list-style-type: none"> • Occupied • Moving more trailers up to Pad #4 <p>BDRHEF Tunnel Portal</p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p>BDRHEF Powerhouse</p> <ul style="list-style-type: none"> • Powerhouse excavation <p>BDRHEF Intake Access Road</p> <ul style="list-style-type: none"> • Existing road – no construction activities • New road – closed due to Stop Work order, no construction activities <p>ULRHEF Downstream Portal</p> <ul style="list-style-type: none"> • Tunnel portal construction works • Installing rock bolts for slope and tunnel stabilization <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Dewatering – no construction activities <p>ULRHEF Intake Diversion Channel</p> <ul style="list-style-type: none"> • Closed due to landslide risk – no construction activities <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 5 – Mumleqs hand falling between KM 25 -26.5 along Lillooet FSR • Segment 6 – Hand falling and helipad construction by Mumleqs

Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Saturday August 9	DA,MS,SS	Sun and cloud	<p>Construction Camp</p> <ul style="list-style-type: none"> • Occupied <p>BDRHEF Tunnel Portal</p> <ul style="list-style-type: none"> • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds <p>BDRHEF Powerhouse</p> <ul style="list-style-type: none"> • Powerhouse excavation <p>BDRHEF Intake Access Road</p> <ul style="list-style-type: none"> • Existing road – no construction activities • New road – closed due to Stop Work order, no construction activities <p>ULRHEF Downstream Portal</p> <ul style="list-style-type: none"> • Tunnel portal construction works • Installing rock bolts for slope and tunnel stabilization <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Dewatering – no construction activities <p>ULRHEF Intake Diversion Channel</p> <ul style="list-style-type: none"> • Closed due to landslide risk – no construction activities <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 5 – O'Brien Bros started ground works at structure 114 – 121 • Segment 6 – Hand falling and helipad construction by Mumleqs and GNS • Segment 10 – Wet crossing with bio-oil excavator at Ryan River Bridge, Formula commenced bridgeworks

IEM Team Personnel: DA – Danita Abraham; MS – Mandala Smulders; TH – Tom Hicks; SS – Stephen Sims; VD – Vanessa Dan

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.
August 4	<i>Email</i>	<i>SES, CRT-ebc Innergex,</i>	The IEM received confirmation from CRT-ebc and Innergex that the electric fence was fully operational and in accordance with the conditions of the Human-Bear Conflict Management Plan.	N/A
August 6	<i>Site Inspection, phone call</i>	<i>SES, Mumleqs, WEL, Innergex,</i>	An instream acoustic overpressure was recorded during a blast within 30m of the Ryan River. Blast mats were used and charges were minimized however a peak reading of 78.3kPa was recorded. No fish mortality was observed following the blast. All future blasts at this location will need to employ fewer holes per blast.	N/A

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
August 7	<i>Pre-work meeting</i>	<i>SES, Mumleqs, WEL, Innergex,</i>	Pre-activity meeting to review the Segment 6 clearing plan and transmission line construction requirements. Discussion focused on helicopter access and steep terrain safety requirements.	N/A
	<i>Pre-work meeting</i>	<i>SES, Mumleqs, WEL, Innergex, Formula,</i>	Pre-activity meeting to discuss wet crossing of the Ryan River and review the Ryan River Bridge construction work plan. Discussions focused on safety of the wet crossing, requirements for bio degradable hydraulic oil, emergency response procedures, and minimizing disturbance of the channel bed and the banks during the crossing.	N/A
August 8	<i>Pre-work meeting</i>	<i>SES, Mumleqs, WEL, Innergex,</i>	Pre-activity meeting to discuss the South Lillooet FSR upgrades required to repair flooded sections of the FSR between beaver dam impounded wetlands. Flooded sections of the FSR are pre-existing and are currently being used daily by the forest licensee (primary road user). Flooded sections were confirmed to be fish bearing during the site meeting.	N/A
August 9	<i>Pre-work meeting</i>	<i>SES, CRT-ebc, Mumleqs, Innergex,</i>	Pre-activity meeting to discuss the 8.5km snow mobile parking area work plan and review falling boundaries. Discussions focused on the requirement for IEM presence when clearing within Grizzly Bear WHA 2-399	N/A

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
<i>Tx-Line</i>	<i>Segments 1 – 7, & 9-10</i>	<i>Suitable Raptor Nesting Habitat</i>	<i>IEM presence is required when clearing within suitable Northern Goshawk (NOGO), Spotted Owl (SPOW), and Western Screech-Owl (WESO) nesting habitat during the breeding period. A nest survey is required by WEL QPs prior to clearing within 600m of suitable Peregrine Falcon (PEFA) nesting habitat.</i>
		<i>Within 150m of wetlands or 100m of Coastal Tailed-Frog Streams</i>	<i>IEM presence is required when clearing within 150m of wetlands or 100m of Coastal Tailed-Frog Streams, to ensure clearing area is minimized.</i>
		<i>Old Growth Management Areas (OGMAs)</i>	<i>IEM monitoring is required when clearing within legally designated OGMAs, to ensure clearing area is minimized.</i>
		<i>Ungulate Winter Range (UWR)</i>	<i>IEM monitoring is required when clearing within identified deer and moose UWR, to ensure clearing area is minimized.</i>
		<i>Suitable Class 1 & 2 Grizzly Bear forage habitat</i>	<i>IEM monitoring is required when clearing within identified Class 1 & 2 Grizzly Bear forage habitat, to ensure clearing area is minimized.</i>
<i>Lillooet River FSR Snowmobile parking area</i>	<i>8.5km of the Lillooet River FSR</i>	<i>Grizzly Bear WHA 2-399</i>	<i>IEM monitoring is required when clearing within the WHA polygon at any time of year, to ensure clearing boundaries are respected and minimized to the extent possible.</i>
<i>ULRHEF powerhouse, and Intake diversion channel</i>	<i>Within 50m of identified archeologically significant area</i>	<i>Archaeologically significant site EdRu-3</i>	<i>The ASMP recommends that an archaeological technician from the Lil'wat Nation be present to monitor initial ground-disturbance activities within 50 m of the EdRu-3 site boundaries.</i>
	<i>Within 30m of the Upper Lillooet River</i>	<i>Riparian area and fish bearing streams</i>	<i>IEM presence is required when working within 30m of the Upper Lillooet River. Instream acoustic pressure monitoring required when blasting within 30m of the Upper Lillooet River.</i>

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
Lillooet River FSR; ULRHEF intake access; FSR realignment at Truckwash Creek	Access roads above the lower limit of the 200m buffer Truckwash Creek Migration Corridor to the ULRHEF intake; including FSR realignment at Truckwash Creek	Mountain Goat UWR	If a goat is observed within 500 m of construction operations, construction must cease for at least 48 hours. The IEM must record and submit all goat observations to FLNR within 48 hours.

4.0 Hydroelectric Facilities

4.1 Ancillary Components – Monitoring Results

Construction Camp

- Camp facility, electric fence and utility installation was completed on August 6th and the camp was fully commissioned and occupied on August 7th. Confirmation that the electric fence is fully operational and installed according to the conditions of the Human-Bear Conflict Management Plan was received on August 4th.

38km Laydown

- Material crushing and screening plant operation continued this week. A watering hose was used effectively for dust control at the screening plant. No environmental concerns were noted.

Lillooet River FSR (8.5 km) Snowmobile Parking Area

- Clearing began on August 9th, within the Grizzly Bear WHA 2-399 polygon, following a pre-work meeting and confirmation of flagging boundaries. The IEM was present to ensure clearing boundaries were respected and verify that clearing was minimized to the extent possible.

4.2 Boulder Creek Hydroelectric Facility – Monitoring Results

BDRHEF Downstream Portal and Powerhouse

- Tunneling activities (including: drilling, blasting, excavation, rock bolts and shotcrete/mesh installation) continued.
- The settling ponds were effectively used to manage water from seepages encountered during tunnelling activities and to manage excess process water this

week. No discharge from the sediment ponds occurred this week, therefore no water quality samples were collected.

- The powerhouse excavation continued this week. Seepage water from the excavation seepage is being directed to a central sump and pumped to the sediment ponds currently being used to manage seepage/process water from the tunneling operations (Photo 2).

BDRHEF Intake Access Road & Crane Pad

- A Stop Work Order was issued by the Owner on July 25th, 2014 and by the IE (True North Energy), on July 26th, 2014 for all activities at the Boulder Creek Intake New Access Road and Crane Pad (*ULR#18*). No activities occurred within the new access road and crane pad work area.
- Road capping, ditching, stripping and grubbing of spoil area BDR-3, and re-contouring of BDR-4 spoil area to create a temporary PAG stockpile area for material generated during the Boulder Intake Access Road and Crane Pad construction (Photo 1). These works were permitted under a separate LTC from the new access road and crane pad LTC and were therefore permitted to proceed following confirmation from the IE and IEM.

Environmental Summary:

- The IE and Owner issued Stop Work Order for all activities at the Boulder Creek Intake New Access Road and Crane Pad will remain in effect until all action items outlined by the IE are address to the satisfaction of the IE as outline in *ULR#18*.
- Seepage flowing out of the tunnel continues to be collected at the portal tunnel entrance in a sump and this water is then pumped from the sump to the oil/water separator, pH adjustment holding tank, and settlement ponds for treatment. The pH was monitored daily by the contractor and a CO₂ diffuser was used as necessary to ensure pH was within acceptable surface water quality guidelines (pH 6.5 – 9). No discharge from the treatment ponds occurred during this reporting period; therefore the IEM did not collect water quality results.
- Hydro-seeding of exposed slopes at the downstream tunnel portal face has not resulted in vegetation growth that will help to stabilize the slope. Additional hydro-seeding applications during appropriate weather conditions or other slope stabilization measures (e.g. poly sheeting, coco matting, etc.) may be required to ensure slopes are protected prior to fall rain events.
- Water from the Boulder Creek water withdrawal site authorized in the Short Term Water Use Approval (*No.A2006123*) was used effectively for dust suppression above 37.5km of the Lillooet River FSR and on active construction site access roads.
- The gravity fed water diversion system was used in tunneling and shotcrete process works in accordance with Short Term Water Use Approval (*No.A2006123*). No water quality or environmental concerns were noted.

Photos:



Photo 1. Preparing BDR-4 as a temporary storage area for PAG generated from the Boulder Intake access road construction. This area will be used once works resume following the removal of the Stop Work Order (August 6, 2014).



Photo 2. Dewatering of seepage from within the powerhouse excavation was pumped to the sediment ponds. Water has not yet reached the second treatment pond (August 9, 2014).

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 (µS)	Temp (°C)
ROUTINE WQ LOCATIONS						
August 7	N/A	BDR Background – BRDHEF upstream of intake *not currently accessible*	N/A	N/A	N/A	N/A
August 7	N/A	BDR #1 – Downstream of BDRHEF intake *not currently accessible*	N/A	N/A	N/A	N/A
August 7	13:08	BDR #2 – Upstream of BDRHEF Powerhouse	8.0	36.0	36	14.9
August 7	13:18	BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	7.8	22.4	32	15.1

4.3 Upper Lillooet River Hydroelectric Facility – Monitoring

Results

ULRHEF Powerhouse and Access Road

- Excavation at the ULRHEF powerhouse continued this week. The excavated material was dumped within the limits of the powerhouse spoil area and suitable material was separated and hauled to the crushing/screening plant located near 38km of the Lillooet River FSR.
- Sediment ponds were used to treat seepage water from within the powerhouse excavation and a permanent sump was installed (Photo 3). Water from the ponds discharged to vegetation prior to reaching the Lillooet River. Water quality was taken upstream and downstream of the discharge point (within the mixing zone) daily when water reached the Lillooet River. No water quality concerns were noted (see Water Quality Results)

ULRHEF Intake and Access Roads

- The area was closed due to landslide risk throughout the week.

ULRHEF Downstream Portal

- Excavation of the ULRHEF portal continued throughout the week. Once bedrock was exposed drilling & blasting was completed to expose the portal face. Hand scaling, and the installation of chain link mesh was completed to protect workers from falling rock. Blast rock was hauled to the lower spoil area and managed according to the ARD management plan. No environmental concerns were noted.

Environmental Summary:

- Once work resumes at the intake diversion channel the IEM will have a monitor onsite full time for all future blasts and excavation activities to document that all efforts to prevent rocks from entering the Lillooet River are made and to record approximate quantities when rocks to enter the River. The IEM recognizes that large rocks are not a deleterious substance and that rock entering the river at this location is unlikely to cause serious harm to fish given the marginal fish habitat present at this location due to the water velocity within the rock canyon.
- A gravity feed water extraction system was used for drilling activities according to the conditions of the Short Term Water Use Approval (No.A2006123) (Photo 4).
- Dewatering of the powerhouse excavation into the sediment ponds will be monitored daily and water quality will be recorded daily when the discharge to vegetation reaches the Lillooet River.

Photos:



Photo 3. Installing sumps within the ULR powerhouse excavation. Water is running as clean as the Lillooet River but will continue to be directed to the treatment ponds (August 7, 2014).



Photo 4. Drilling activities at the ULR downstream portal. (August 6, 2014).

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 (µS)	Temp (°C)
ROUTINE WQ LOCATIONS						
August 7	N/A	ULR Background – ULRHEF Intake	Closed due to landslide risk			
August 7	11:45	ULR #1 – Upstream of ULHEF Powerhouse	8.6	69.5	47	13.4
August 7	11:36	ULR #2 – Downstream of ULRHEF Powerhouse between 40.5k and 41k	8.5	56.6	46	13.0
August 7	11:20	ULR #3 – Upper Lillooet FSR 38km Laydown - D/S of Boulder confluence	8.2	39.9	35	14.5
August 7	15:20	ULR #4 – Upper Lillooet FSR 24km - D/S of all works and Meager confluence	7.9	80.6*	50	14.7

SITE-SPECIFIC WQ LOCATIONS						
August 3	12:40	Lillooet River – Upstream of powerhouse dewatering input	8.8	72.9	46	-
August 3	11:40	Lillooet River – Downstream of powerhouse dewatering input	8.7	62.8	45	-
August 4	11:29	Lillooet River – Upstream of powerhouse dewatering input	8.6	100	38	-
August 4	11:34	Lillooet River – Downstream of powerhouse dewatering input	8.7	94	40	-
August 5	14:31	Lillooet River – Upstream of powerhouse dewatering input	8.2	115	33	16.1
August 5	14:35	Lillooet River – Downstream of powerhouse dewatering input	8.4	90	36	15.8
August 6	14:29	Lillooet River – Upstream of powerhouse dewatering input	8.6	132	39	14.8
August 6	14:34	Lillooet River – Downstream of powerhouse dewatering input	8.2	128	35	15.9
August 7	14:01	Lillooet River – Upstream of powerhouse dewatering input	7.9	72	41	14.6
August 7	13:50	Lillooet River – Downstream of powerhouse dewatering input	7.8	70.9	39	14.6
August 8	11:02	Lillooet River – Upstream of powerhouse dewatering input	8.1	72.5	38	10.2
August 8	11:05	Lillooet River – Downstream of powerhouse dewatering input	8.2	66	47	11.1
August 9	13:51	Lillooet River – Upstream of powerhouse dewatering input	7.9	52.9	46	14.6
August 9	13:55	Lillooet River – Downstream of powerhouse dewatering input	7.8	51.2	42	15.4

4.4 Hydroelectric Facilities – Recommendations

All items of the IE issued Stop Work Order for the Boulder Creek intake access road and crane pad construction must be addressed in a timely manner to the satisfaction of the IE prior to resuming works.

4.5 Hydroelectric Facilities – Upcoming Works

CRT-ebc has confirmed that the failed crossing at 39.7km (*ULR#8 – mistakenly referred to as ULR#4 in WEMR #32*) will be repaired and/or replaced, and the failed culvert at 47km (*ULR#4*) will be remediated by removing debris from within the stream. This work will be completed during the 2014 instream work window following the preparation of a work plan and approval by MFLNRO.

Excavation of the intake diversion channel is scheduled to continue next week at the ULRHEF intake provided the landslide hazard rating is at suitable levels to permit works to continue. Excavation of ULRHEF downstream tunnel portal will continue for the next two weeks. Bench excavation at the ULRHEF powerhouse and capping of the old sections of the BDRHEF intake access road will continue next week.

5.0 Transmission Line

5.1 Monitoring Results

Segment 1-7 & 9-10

- Pole installation and foundation works continued in Segment 4 & 5 this week.
- Hand clearing occurred in Segments 5, 6 & 7, (Photo 6).
- Access roads were upgraded/constructed in Segments 7 & 10 this week. Works in Segment 10 included widening of the approach to the Ryan River Bridge, which involved drilling and blasting within 30m of the Ryan River (Photo 5). The IEM was onsite and conducted instream acoustic pressure monitoring during blasting activities on August 5th. An instream acoustic overpressure of 78.3kPa was recorded during the blast; crews were advised that future blasts at the location would require increased mitigation measure to prevent additional instream over pressures. No fish mortality was observed as a result of the blast and no serious harm to fish to suspected to have occurred.
- The wet crossing of an excavator across the Ryan River was completed following review of the work plan and an according to BMPs during the instream works window. The excavator operator successfully minimized impacts to the channel substrates by not altering his direction of travel while crossing the wetted portions of the channel. Water quality was monitored full time during the wet crossing and no measureable exceedances were observed (See WQ results below).

Environmental Summary:

- The IEM was present as required when clearing activities occurred within 150m of wetlands, 30m of a stream, 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 NOGO, SPOW, and WESO, suitable nesting habitat. All flagged boundaries were respected during clearing activities. No environmental issues were observed.

Photos:



Photo 5. Wet crossing of the Ryan River. (August 9, 2014).



Photo 6. Results of hand clearing in Segment 5 (August 6, 2014).

Water Quality Results

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (µS)	Temp (°C)
SITE-SPECIFIC WQ LOCATIONS						
August 9	7:22	Ryan River – Upstream of wet crossing	8.0	39.1	31	10.9
August 9		Ryan River – Downstream of wet crossing	8.0	29.8	28	10.7
August 9	9:45	Ryan River – Downstream of wet crossing	-	27.2	-	-
August 9	10:54	Ryan River – Downstream of wet crossing	-	27.2	-	-

5.2 Transmission Line – Recommendations

No recommendations are provided for this reporting period.

5.3 Transmission Line – Upcoming Works

Pole installation and dressing is scheduled to continue in Segment 4 & 5 next week. Clearing is scheduled to continue in Segment 4, 5 & 7 and in Segment 9 and 10. Upcoming transmission line works will be focused on road construction and the Ryan River Bridge installation, pole installation, and completing the clearing within the Segments 3-10.

6.0 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) and will submitted to the IEM on a weekly basis. Wildlife Observation forms will be summarized on a monthly basis and appended to the first WEMR of the following month. 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

7.0 Mountain Goat Monitoring Program

The critical early summer forage period for Mountain Goats has now ended; therefore Mountain Goat Monitoring has been temporarily suspended until the fall monitoring period as outlined in the Mountain Goat Management Plan.

No Mountain Goats were observed within 500m line of sight of construction activities during this reporting period; therefore no work stoppages were required.

8.0 Environmental Issues Tracking Matrix (ITM)

8.1 Hydroelectric Facilities (ULRHEF & BDRHEF)

Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Completed
ULR#4	Open	47km – Lillooet River FSR	A log box structure failed while being crossed by an excavator (EIR002).	1. CRT-ebc to prepare an EIR detailing the cause, description and actions items related to the incident.	May 23, 2014	May 26, 2014.	
				2. IEM to review and approved the EIR.			
				3. CRT-ebc employees will be reminded of spill response procedures and how to use the spill kits in a potential future event.			
				4. CRT-ebc to confirm that load ratings of equipment adhere to maximum crossing structure load ratings.			
				5. Complete FSR and temporary access road crossing assessment by a Qualified Professional.		June 26, 2014	
				6. Determine the requirements for crossing structure remediation or replacement			
				7. Develop a work plan to remediate the failed log box structure and execute the approved plan during the 2014 instream works window. On July 19 th , 2014 CRT-ebc confirmed that the failed crossing structure [at 47km of the Lillooet River FSR; a fish bearing stream] will be remediated by cleaning debris and material from the stream and banks. A work plan will be submitted and mitigation measures prescribed by a QP will be implemented. This work must occur during the instream works window.		September 15, 2014	

Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Issue Closed
ULR#8	Open	39.7km – Lillooet River FSR	Stream 9 – log box structure failure (<i>EIR004</i>).	1. Develop a work plan to remediate the failed log box structure and execute during the 2014 instream works window. On July 19 th , 2014 CRT-ebc confirmed that this crossing structure will be repaired or replaced during the 2014 instream works window following MFLNRO approval.	May 28, 2014	September 15, 2014	
ULR#10	Open	Lillooet River FSR	Innergex issued stop work order for heavy hauling on Lillooet River FSR	Recommendations have been submitted to MFLNRO for review and approval. Work plan submission and repairs to be completed prior to September 15 for crossing structures at 39.7km and 47km of the Lillooet River FSR.	May 28, 2014	September 15, 2014	-
ULR#16	Closed	BDR Intake Access Road	Culvert installed without IEM presence or notification	1. Prepare and submit EIR#010 outlining the root cause of the incident and how it will be avoided in future.	July 23, 2014	July 28, 2014	July 31, 2014
				2. A Communication Plan will be submitted and enacted to prevent a reoccurrence.	July 26, 2014	August 4, 2014	August 4
ULR#17	Open	BDR Intake Access Road	Damage to standing timber and impacts outside of minimized clearing boundary & approved OLTC	1. Prepare and submit EIR#011 outlining the root cause of the incident and how it will be avoided in future.	July 25 th , 2014	July 30, 2014	August 1, 2014
				2. Assess damage to standing timber and impacts outside of the minimized clearing boundaries and approved OLTC. This will be performed once slope stabilization works are completed to protect worker safety.	Confirmed in Hedberg report July 25 th , 2014	Once slope stabilization is complete	-
ULR#18	Open	BDR Intake Access Road	STOP WORK ORDER for Boulder Creek Intake Access Road and Crane Pad	Based on the recommendations by Hedberg Associates and the lack of following Work Plans the IE requests the following prior to re-authorizing the commencement of work on the Boulder Creek intake access: 1. Complete an Environmental Incident Report (“EIR”) within 48 hours. The EIR should describe/quantify both the damage to standing merchantable and the impacts to the area outside the Occupant Licence to Cut (“OLTC”).	July 26, 2014	July 30, 2014	August 1, 2014

Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Issue Closed
ULR#18 <i>(continued)</i>				2. Submit to the IE a new/updated Work Plan prior to the IE removing the Stop Work Order and reissuing the Leave to Construct Authorization the following: <ul style="list-style-type: none"> a. encompasses the repair/remediation of the works completed to date; b. implements the recommendations by Hedberg Associates; and c. includes methods to execute to ensure that the road construction meets the approved "Issued for Construction" design. 	July 26, 2014	<i>August 10, 2014</i>	-
				3. A qualified professional be on site 2 to 3 times a week to assist with the direction and inspection of the road construction.	July 26, 2014		
				4. Provide as-built drawings of the clearing and impacted boundaries to date for both the access road and crane pad area.	July 26, 2014		
				5. Submission to the IE all site wide ARD rock testing results complete volumes, tracking records and a summary of mitigation where results were positive.	July 26, 2014	<i>August 9, 2014</i>	<i>August 9, 2014</i>
				6. Provide a work plan communication plan that ensures all staff are aware of the approved work plans and adhere to hold points.	July 26, 2014	<i>August 4, 2014</i>	<i>August 4, 2014</i>
				<i>next ITM – ULR#19</i>			

8.2 Transmission Line

ITM Tracking Legend:	<i>Work Item Open</i>
	<i>Work Item Complete</i>
	<i>Issue Closed</i>

Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Issue Closed
<i>No outstanding environmental issues (next ITM – Tx#2)</i>							