Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #31

Reporting Period: July 20th – July 26th, 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
ASMP	Archaeological Sites Management Plan
ARD/ML	Acid Rock Drainage and Metal Leaching
BCEAO	British Columbia Environmental Assessment Office
BCWQG	British Columbia Water Quality Guidelines
BDRHEF	Boulder Creek Hydroelectric Facility
BG	Background
BKL	BKL Consultants Ltd.
CRT-ebc	CRT-ebc Construction Inc.
DFO	Fisheries and Oceans Canada
DS	Downstream
Ecofish	Ecofish Research Ltd.
Ecologic	Ecologic Consulting
EDI	Environmental Dynamics Inc.
EIR	Environmental Incident Report
ESC	Erosion and Sediment Control
FAM	Field Advice Memorandum
FSR	Forest Service Road
GWR	Mountain Goat Winter Range
Hedberg	Hedberg and Associates Ltd.
IE	Independent Engineer (True North Energy)
IEM	Independent Environmental Monitor
Innergex	Innergex Renewable Energy Inc.
ITM	Environmental Issue Tracking Matrix
JEM	JEM Energy Ltd. (Delegate Independent Engineer)
LTC	Leave to Construct
MFLNRO	Ministry of Forests, Lands and Natural Resource Operations
MOE	Ministry of Environment
NCD	Non Classified Drainage
PAG	Potentially Acid Generating
RVMA	Riparian Vegetation Management Area
SES	Sartori Environmental Services
TX Line	Transmission Line
ULRHEF	Upper Lillooet River Hydroelectric Facility
UWR	Ungulate Winter Range
VC	Valued Component
WQ	Water Quality
WEL	Westpark Electric Ltd.
WEMR	Weekly Environmental Monitoring Report

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 July 20	-	-	-
Monday July 21	MS,VD	Sun and Cloud	***Construction Camp*** • Camp facility installation ***BDRHEF Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds **BDRHEF Intake Access Road** • Excavation, drilling and blasting of the new section of the access road ***ULRHEF Intake Diversion Channel*** • Drilling and blasting; Material hauling via new access to spoil area ***ULRHEF Downstream Portal*** • Tunnel portal overburden excavation, and mesh installation for protection against falling rocks. ***ULRHEF Powerhouse*** • Seepage water encountered in excavation • Drilling and blasting of large boulders ***TX-Line*** • No activities
Tuesday July 22	MS,VD	Sun and Cloud	***Construction Camp*** • Camp facility installation ***BDRHEF Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds **BDRHEF Intake Access Road** • Excavation, drilling and blasting of the new section of the access road ***ULRHEF Intake Diversion Channel*** • Drilling and blasting; Material hauling via new access to spoil area ***ULRHEF Downstream Portal*** • Tunnel portal overburden excavation, and mesh installation for protection against falling rocks. ***ULRHEF Powerhouse*** • Seepage water encountered in excavation • Drilling and blasting of large boulders ***TX-Line*** • Segment 5 – framing pole structures • Segment 7 – road works; clearing within CTF buffer for Stream 174A • Segment 10 – timber management and road works

Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Wednesday July 23	TH,MS,VD	Sun and Cloud	***Construction Camp*** • Camp facility installation ***BDRHEF Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds **BDRHEF Intake Access Road** • Excavation, drilling and blasting of the new section of the access road ***ULRHEF Intake Diversion Channel*** • Drilling and blasting with revised mitigation measures; Material hauling via new access to spoil area ***ULRHEF Downstream Portal*** • Tunnel portal overburden excavation, and mesh installation for protection against falling rocks. ***ULRHEF Powerhouse*** • Seepage water encountered in excavation • Drilling and blasting of large boulders ***TX-Line*** • Segment 4 – hand clearing in Stream 80A RVMA • Segment 7 – road works • Segment 10 – timber management and road works
Thursday July 24	MS,TH,TJ, VD	Sun and Cloud	***Construction Camp*** • Camp facility installation ***BDRHEF Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds **BDRHEF Intake Access Road** • Excavation, drilling and blasting of the new section of the access road ***ULRHEF Intake Diversion Channel*** • Drilling and blasting with revised mitigation measures; Material hauling via new access to spoil area ***ULRHEF Downstream Portal*** • Tunnel portal overburden excavation, and mesh installation for protection against falling rocks. ***ULRHEF Powerhouse*** • Seepage water encountered in excavation • Drilling and blasting of large boulders ***TX-Line*** • Segment 4 – hand clearing in Stream 80A RVMA, pole installation works • Segment 5 – pole foundation works • Segment 7 – road works • Segment 10 – timber management and road works

Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Friday July 25	MS,TJ,VD	Overcast	***Construction Camp*** • Camp facility installation • Hydro-seeding slopes between pad #3 & pad#4, and along access road ***BDRHEF Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds **BDRHEF Intake Access Road** • Excavation, drilling and blasting of the new section of the access road • Hand-falling at the crane pad location ***ULRHEF Intake Diversion Channel*** • Drilling and blasting with revised mitigation measures; Material hauling via new access to spoil area ***ULRHEF Downstream Portal*** • Tunnel portal overburden excavation, and mesh installation for protection against falling rocks. • Drilling and blasting of portal rock face ***ULRHEF Powerhouse*** • Seepage water encountered in excavation • Drilling and blasting of large boulders • Constructing sediment ponds ***TX-Line*** • Segment 7 – hand falling, road works • Segment 10 – timber management and road works
Saturday July 26	ML,TJ	Overcast, light rain	***Construction Camp*** • Camp facility installation • Application of dust suppression (LIgnosulfonate) ***BDRHEF Tunnel Portal*** • Drilling, blasting and stabilization of the tunnel • Seepage from tunnel pumped from sump at portal entrance into sediment ponds **BDRHEF Intake Access Road** • No activities; IE issued Stop Work Order in effect ***ULRHEF Intake Diversion Channel*** • Drilling and blasting with revised mitigation measures; Material hauling via new access to spoil area ***ULRHEF Downstream Portal*** • Tunnel portal overburden excavation, and mesh installation for protection against falling rocks. ***ULRHEF Powerhouse*** • Seepage water encountered in excavation • Drilling and blasting of large boulders • Sediment ponds construction complete; began dewatering ***TX-Line*** • No activities

IEM Team Personnel: *MS – Mandala Smulders; TH – Tom Hicks; 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.
July 22	*Email correspondence*	*SES, CRT-ebc, Innergex,*	The IEM requested that prior to clearing, CRT-ebc provide a plan for the crane pad and identify clearing area required to ensure clearing within the UWR is minimized to the extent possible within the existing OLTC.	*N/A*
	Phone Calls and Email correspondence	*SES, CRT-ebc, Innergex, JEM*	The IEM raised concerns regarding construction activities and lack of adherence to work plan procedures for works at the BDR HEF intake access road (new section). Concerns were raised based on field observations recorded on July 21st and 22nd. A site visit was planned on July 23rd with CRT-ebc, SES, and Innergex to review the IEM's concerns.	*N/A*
July 23	*Site inspection and emails*	*SES, CRT-ebc, Innergex,*	The following concerns regarding works at the BDR HEF intake access road were discussed and CRT-ebc committed to addressing the concerns as outlined: 1. Culvert installation identified as a (Hold Point in the work plan) was completed without IEM notification or presence. An EIR is being prepared by CRT-ebc (*ULR#16; EIR#010*). 2. Damage to standing timber, impacts outside of the clearing boundary, and use of felled timber in the base of road fill was visually confirmed in the field. CRT-ebc will assess the impacts outside of the clearing boundary and commission a road stability and slope stability assessment of the current road conditions by the road design engineer (Hedberg) (*ULR#17; EIR#011*). 3. Blast rock has been used in the road fill and has not been hauled pending the results of ARD sampling. CRT-ebc has indicated at this material will remain in place until sampling results confirm if the rock is PAG or non-PAG.	*ULR#16, & 17*
July 23	*Site inspection, Phone Calls*	*SES, CRT-ebc, Innergex*	Blasting activities at the ULR diversion channel were revised by CRT-ebc and communicated to the IEM. Changes were made due to concerns of the rock type within the diversion channel. Air Deck Blasting was employed to further reduce charge weights in attempt to fracture rock into larger pieces and minimize the amount of rock entering the Lillooet River.	*N/A*

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
July 24	*Email correspondence*	*SES, CRT-ebc, Innergex*	A clearing plan for the BDR intake crane pad outlining the minimized clearing boundaries was submitted and approved by the IEM. The minimized clearing boundary was flagged in the field and confirmed prior to clearing.	*N/A*
July 25	*Email correspondence*	*SES, CRT-ebc, Innergex, JEM*	Submission of the BDR intake access road stability assessment report completed by Hedberg the design engineer.	*N/A*
	Email Correspondence	*Innergex, CRT-EBC, SES, JEM*	The Owner issued a Stop Work Order for works related to the BDR HEF Intake Access Road and Crane Pad construction. All conditions of the Order and the pending IE Stop Work Order must be met before works in the area can resume	*ULR#18*
July 26	*Email correspondence*	*JEM, Innergex, SES, MFLNRO*	The IE issued a Stop Work Order for works related to the Boulder Creek Intake Access Road and Crane Pad construction. All conditions of the Order must be met before works in the area can resume.	*ULR#18*

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
ULRHEF, BDRHEF, and Tx Line	*All ULRHEF BDRHEF, and Tx Line areas*	*Nesting Birds*	*Vegetation clearing must take place outside of the breeding bird season (May 1 – July 31) to prevent disturbance of bird nests. If not feasible, nest surveys must be conducted by qualified professionals following the Active Migratory Bird Nest Surveys prior to clearing and protective buffers surrounding discovered nests will be maintained until young are fledged and approval has been obtained from the IEM or designate.*

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
Tx-Line	*Segments 1 – 7, & 9-10*	*Suitable Raptor Nesting Habitat*	*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.*
		Within 150m of wetlands or 100m of Coastal Tailed-Frog Streams	*IEM presence is required when clearing within 150m of wetlands or 100m of Coastal Tailed-Frog Streams, to ensure clearing area is minimized.*
		Old Growth Management Areas (OGMAs)	*IEM monitoring is required when clearing within legally designated OGMAs, to ensure clearing area is minimized.*
		Ungulate Winter Range (UWR)	*IEM monitoring is required when clearing within identified deer and moose UWR, to ensure clearing area is minimized.*
		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 area is minimized.*
ULRHEF powerhouse, and Intake diversion channel	*Within 50m of identified archeologically significant area*	*Archaeologically significant site EdRu-3*	*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.*
	Within 30m of the Upper Lillooet River	*Riparian area and fish bearing streams*	*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.*

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 continued. No environmental concerns were noted.
- The slopes between pad #3 & pad #4 and the slopes along the access road were hydro-seeded during this reporting period.

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

- The application of Lignosulfonate as a dust suppression measure began this week and was complete from 26km – 47.5km of the Lillooet River FSR. Once the application is completed next week *ULR#12* will be considered closed.

4.2 Boulder Creek Hydroelectric Facility – Monitoring Results

BDRHEF Downstream Portal and Powerhouse Access Road

- 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. Once the powerhouse excavation begins these ponds will also be used to manage seepage from the base of the excavation in

addition to the seepage/process water from the tunneling operations. The LTC for Powerhouse Excavation was issued on July 23, 2014.

BDRHEF Intake Access Road & Crane Pad

- The construction activities along the new section of the access road continued and blasting of bedrock within the road alignment was completed using revised blasting mitigations as the use of blast mats was not feasible due to the steepness of the terrain (Photo 1).
- Hand falling trees within the approved minimized clearing boundary at the crane pad location began on July 25th, 2014, once the minimize clearing boundaries were reviewed with the fallers and the boundary flagging was confirmed in the field by CRT-ebc's environmental supervisor and the IEM.
- 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*).

Environmental Summary:

- The following environmental concerns regarding works at the BDR HEF intake access road were discussed on July 22nd, 2014 and CRT-ebc committed to addressing the concerns as outlined:
    1. Culvert installation (identified as a Hold Point in the work plan) was completed without IEM notification or presence. An EIR is being prepared by CRT-ebc (*ULR#16; EIR#010*).
    2. Damage to standing timber, impacts outside of the clearing boundary, and use of felled timber in the base of road fill was visually confirmed in the field. CRT-ebc will assess the impacts outside of the clearing boundary and commission a road stability and slope stability assessment of the current road conditions by the road design engineer (Hedberg) (*ULR#17; EIR#011*).
    3. Blast rock has been used in the road fill and has not been hauled pending the results of ARD sampling. CRT-ebc has indicated at this material will remain in place until sampling results confirm if the rock is PAG or non-PAG.
- Tunneling activities encountered seepage water during this monitoring period. The water flowed out of the tunnel, and was collected at the portal tunnel entrance in a sump. The water was then pumped form 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 CO_2 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 (Photo 2).
- 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. Boulder Intake Access road construction practices that did not conform to the work plan and resulted in a Stop Work Order by the Owner and IE. (July 21, 2014).

Photo 2. Dewatering of seepage from the tunneling activities was performed this week but the water has not yet reached the second treatment pond (July 19, 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 (*u*S)	Temp (°C)
July 22	**N/A**	BDR Background - BRDHEF upstream of intake *not currently accessible*	**N/A**	**N/A**	**N/A**	**N/A**
July 22	**N/A**	BDR #1 - Downstream of BDRHEF intake *not currently accessible*	**N/A**	**N/A**	**N/A**	**N/A**
July 22	13:51	BDR #2 - Upstream of BDRHEF Powerhouse	8.1	41.8	59	14.9
July 22	14:10	BDR #3 - Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	7.8	35.5	42	15.2
July 24	9:20	BDR #2 - Upstream of BDRHEF Powerhouse	8.1	126	35	8.9
July 24	9:30	BDR #3 - Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	8.4	133	45	9.3

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 constructed to treat seepage water from within the powerhouse excavation (Photo 3).

ULRHEF Intake and Access Roads

- Drilling, blasting and excavation at the ULR intake diversion channel resumed this week. All excavated material was hauled to the south side spoil area.

ULRHEF Downstream Portal

- Excavation of the ULRHEF portal continued throughout the week. Once bedrock was exposed, hand scaling and the installation of chain link mesh was completed to protect workers from falling rock. Overburden spoil material was hauled to the lower spoil area. No environmental concerns were noted.

Environmental Summary:

- On July 23rd, 2014 the IEM observed some rock fall entering the Lillooet River during excavation of a blast completed that morning (Photo 4). In discussion with CRT-ebc and Innergex, the IEM confirmed that they observed that all attempts to minimize rocks from entering the Upper Lillooet River were made during excavation works. The IEM will have a monitor onsite full time for all future blasts and excavation activities at ULR intake diversion channel to ensure all efforts to prevent rocks from entering the Lillooet River are made and to document 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.

- Dewatering of the powerhouse excavation into the sediment ponds will be monitored daily and water quality will be recorded should the discharge to vegetation reach the Lillooet River.
- The IEM collected water quality samples of run-off emanating from the PAG stockpile located at the Truckwash west heading and submitted water quality samples for lab analysis on July 24th. Once sampling results are received from the lab they will be appended to the weekly report. Sampling will continue on a monthly basis according to the ARD/ML management plan.

Photos:

Photo 3. Sediment ponds constructed to for the treatment of dewatering the ULRHEF powerhouse excavation (July 25, 2014).

Photo 4. Excavation of blasted rock at the ULR intake diversion channel. Minor amounts of rock fell into the Lillooet River during monitoring of the works. (July 23, 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 (*u*S)	Temp (°C)
July 22	12:10	ULR Background - ULRHEF Intake	8.4	88.9	59	16.0
July 22	12:30	ULR # 1 - Upstream of ULHEF Powerhouse	8.3	83.3	43	16.3
July 22	12:45	ULR #2 - Downstream of ULRHEF Powerhouse between 40.5k and 41k	8.0	77.1	45	16.1
July 22	13:08	ULR #3 - Upper Lillooet FSR 38km Laydown - D/S of Boulder confluence	8.0	48.5	44	16.1
July 22	16:31	ULR #4 - Upper Lillooet FSR 24km - D/S of all works and Meager confluence	8.3	101.8*	65	15.1
July 24	**11:30**	**ULR Background - ULRHEF Intake**	**7.9**	**103.3**	**36**	**7.9**
July 24	**11:05**	**ULR # 1 - Upstream of ULHEF Powerhouse**	**7.7**	**99.2**	**35**	**9.3**
July 24	**10:50**	**ULR #2 - Downstream of ULRHEF Powerhouse between 40.5k and 41k**	**7.8**	**100**	**34**	**10.1**
July 24	**10:35**	**ULR #3 - Upper Lillooet FSR 38km Laydown - D/S of Boulder confluence**	**7.8**	**152***	**32**	**10.2**
July 24	**16:40**	**ULR #4 - Upper Lillooet FSR 24km - D/S of all works and Meager confluence**	**8.3**	**656***	**56**	**10.1**

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 will be repaired and/or replaced, and the failed culvert at 47km 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.

The application of dust control product (Lignosulfonate) on Lillooet River FSR will be completed next week; once the application is complete *ULR#12* will be closed. 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 dressing continued in Segment 4 & 5 this week (Photo 6).

- Clearing occurred in Segment 4, within the Stream 80A RVMA and within CTF 100m buffer area in Segment 7, following the completion of AMBNS.
- Access roads were upgraded/constructed in Segments 7 & 10 this week (Photo 5).

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 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.
- AMBNS were completed prior to all vegetation clearing along the TX-Line alignment during this reporting period.

Photos:

Photo 5. Road construction in Segment 7 (July 22, 2014).

Photo 6. Poles installation in Segment 4 (July 19, 2014).

Water Quality Results

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Temperature (°C)
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.					

5.2 Transmission Line – Recommendations

No recommendations are provided for this reporting period.

5.3 Transmission Line – Upcoming Works

Transmission line access road upgrades will continue next week and pole installation and dressing is scheduled to resume in Segment 4 & 5 next week beginning on July 22nd. Clearing is scheduled to continue in Segment 3, 4, & 7 and in Segment 9 and 10

following the results of AMBNS. Upcoming transmission line works will be focused on road construction, 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)

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**
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. 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.	May 23, 2014	May 26, 2014.	-
				5. Complete FSR and temporary access road crossing assessment by a Qualified Professional. 6. Determine the requirements for crossing structure remediation or replacement		June 26, 2014 Transmitted to IEM on July 15, 2014	
				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 19th, 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.		*August 1 – September 15*	

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 (***EIR004***).	1. CRT-ebc to prepare an EIR detailing the cause, description and actions items related to the incident. 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.	*May 28, 2014*	*June 3, 2014*	
				5. Complete FSR and temporary access road crossing assessment by a Qualified Professional. 6. Determine the requirements for crossing structure remediation or replacement and execute according to the appropriate work planning protocols and construction procedures.		June 26, 2014 Transmitted to IEM on July 15, 2014	
				7. Develop a work plan to remediate the failed log box structure and execute during the 2014 instream works window. On July 19th, 2014 CRT-ebc confirmed that this crossing structure will be repaired or replaced during the 2014 instream works window following MFLNRO approval.		*2014 instream work window (August 1 – September 15)*	

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#10	**Open**	Lillooet River FSR	Innergex issued stop work order for heavy hauling on Lillooet River FSR	1. CRT-ebc to confirm load ratings of equipment adhere to maximum crossing structure load ratings.	*May 28, 2014*	*May 30, 2014*	-
				2. Conditional Rescission of the Stop Work Order for Heavy Hauling on the Lillooet River FSR was issued on June 1st, 2014 subject to the following:		*June 1, 2014*	
				a. CRT-ebc obtaining approval from MFLNRO for the temporary steel plates		*June 4, 2014*	
				b. Crossing assessments completed by a QP.		June 26, 2014 Transmitted to IEM on July 15, 2014	
				c. 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.		*September 15, 2014*	
				d. Hauling above 38km of the Lillooet River FSR to be restricted to BCL-625 until modifications are approved by MFLNRO.		May 31, 2014 Transmitted to IEM on July 15, 2014	
ULR#12	**Open**	Lillooet River FSR	Inadequate dust suppression between 0-37.5km of the Lillooet River FSR	1. CRT-ebc has confirmed that dust control product (Lignosulfonate) will be applied to the Lillooet River FSR beginning on July 22nd, 2014, and will be completed by July 25th, 2014.	*May 31, 2014*	*July 25, 2014*	-
ULR#16	**Open**	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*	

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#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. 2. Assess damage to standing timber and impacts outside of the minimized clearing boundaries and approved OLTC.	*Confirmed in Hedberg report July 25th, 2014*	*July 30, 2014*	-
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 workplans 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"). 2. Submit to the IE a new/updated workplan prior to the IE removing the Stop Work Order and reissuing the Leave to Construct Authorization the following: 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. 3. A qualified professional be on site 2 to 3 times a week to assist with the direction and inspection of the road construction. 4. Provide as-built drawings of the clearing and impacted boundaries to date for both the access road and crane pad area. 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. 6. Provide a work plan communication plan that ensures all staff are aware of the approved work plans and adhere to hold points.	July 26th, 2014	*To be determined*	-
							next ITM – ULR#19

8.2 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 Issue Closed
No outstanding environmental issues (next ITM – Tx#2)							