


Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #70

Reporting Period: August 2 – August 29, 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)

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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
 Works Permit for Construction within FSR Right-of-Way No. 7977-15-01
 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; Fish Salvage Permit # SU15-174722
 Fisheries and Oceans Canada – Anadromous Fish Salvage Permit #XR 178 2015
 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) March 18, 2015
 SLRD Building Permit - Boulder Powerhouse Foundations, Stage 2, & Septic System Installation (10865) July 20, 2015
 SLRD Building Permit – Upper Lillooet Powerhouse Foundations & Septic System Installation (10864) July 20, 2015

ACRONYMS:

AMBNS	Active Migratory Bird Nesting Survey	INX	Innergex Renewable Energy Inc.
Andritz	Andritz Hydro Canada Inc.	ISW	Instream Works
ANFO	Ammonia nitrate fuel oil (industrial explosive)	ITM	Environmental Issue Tracking Matrix
ASMP	Archaeological Sites Management Plan	JEM	JEM Energy Ltd. (Delegate Independent Engineer)
ARD M/L	Acid Rock Drainage and Metal Leaching	LTC	Leave to Construct
BCEAO	British Columbia Environmental Assessment Office	MFLNRO	Ministry of Forests, Lands and Natural Resource Operations
BCWQG	British Columbia Water Quality Guidelines	MOE	Ministry of Environment
BDRHEF	Boulder Creek Hydroelectric Facility	MOTI	Ministry of Transportation and Infrastructure
BG	Background	NCD	Non Classified Drainage
BKL	BKL Consultants Ltd.	OLTC	Occupational License to Cut
CE	CRT-ebc Construction Inc.	PAG	Potentially Acid Generating
DFO	Fisheries and Oceans Canada	ROW	Right of Way
DS	Downstream	RVMA	Riparian Vegetation Management Area
EAC	Environmental Assessment Certificate	SES	Sartori Environmental Services
EAO	Environmental Assessment Office	SLRD	Squamish-Lillooet Regional District
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
HWM	High water mark	WQ	Water Quality
IE	Independent Engineer (True North Energy)		
IEM	Independent Environmental Monitor		

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
August 2 - 8	No onsite presence	Active wildfire	<p>All ULRHEF and BDHEF Project areas</p> <ul style="list-style-type: none"> • Closed due to active wildfire <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 10 <ul style="list-style-type: none"> ➢ Structure 230 preparations ➢ Setting poles via helicopter & structure backfilling and framing • Segment 11 <ul style="list-style-type: none"> ➢ Branch A road construction ➢ Hand falling from 260 – 262 • Segment 13 <ul style="list-style-type: none"> ➢ Heli-yarding felled timber from structures 314 – 326 • Segment 14 <ul style="list-style-type: none"> ➢ Road construction
August 9 - 15	TH	Sunny	<p>All ULRHEF and BDHEF Project areas</p> <ul style="list-style-type: none"> • Danger tree assessment and falling along; Boulder Intake Access road (Athel Main road); Stream 9a Crossing; Blast Magazine Access Road; ULRHEF and BDRHEF Powerhouse work sites; ULRHEF Penstock Alignment; and, Lillooet River FSR between 37.5 – 45 km. <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 10 <ul style="list-style-type: none"> ➢ Setting poles via helicopter & structure backfilling and framing • Segment 13 <ul style="list-style-type: none"> ➢ Heli-yarding felled timber from structures 314 – 326 • Segment 14 <ul style="list-style-type: none"> ➢ Road construction
August 16 - 22	SE		<p>All ULRHEF and BDHEF Project areas</p> <ul style="list-style-type: none"> • Preparation for remobilization to the Construction Camp including cleaning; air quality testing; utility repairs; and camp kitchen re-opening <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 9b <ul style="list-style-type: none"> ➢ Hand falling inactive Common Nighthawk nest buffer between structures 220 & 221 ➢ Heli-yarding felled timber ➢ Structure foundation construction from 219 - 220 • Segment 10 <ul style="list-style-type: none"> ➢ Structure 230 foundation construction • Segment 11 <ul style="list-style-type: none"> ➢ Heli-yarding felled timber • Segment 13 <ul style="list-style-type: none"> ➢ Hand falling in the vicinity of structure 306 ➢ Heli-yarding felled timber • Segment 14 <ul style="list-style-type: none"> ➢ Road construction ➢ Heli-yarding felled timber • Segment 15 <ul style="list-style-type: none"> ➢ Hand falling throughout and within the class 2 grizzly bear summer forage polygon near structure 376. See Section 7.1

Date	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities
August 23 - 29	SE	Active wildfire	<p>All ULRHEF and BDHEF Project areas</p> <ul style="list-style-type: none"> • Remobilization to site began this week. Site reactivation works resumed at both powerhouses, BDRHEF downstream tunnel heading; and at the ULRHEF intake and penstock work areas. <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 9b <ul style="list-style-type: none"> ➢ Structure foundation construction throughout • Segment 10 <ul style="list-style-type: none"> ➢ WEL demobilizing • Segment 11 <ul style="list-style-type: none"> ➢ Road construction of South Ryan FSR (4km) ➢ Widening Ryan River bridge approach within 30m of Ryan River (acoustic pressure monitoring performed during blasting works) • Segment 14 <ul style="list-style-type: none"> ➢ Road construction ➢ Foundation construction at structure 339 • Segment 15 <ul style="list-style-type: none"> ➢ Hand falling throughout including RVMA 381a

IEM Team Personnel: TH – Tom Hicks; SS – Stephen Sims; BA – Blake Aleksich; VD – Vanessa Dan; AA – Anthony Andrews; 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.
August 2, 2015	Email	INX, SES, CE	CE notified the IEM and INX that that equipment impacted by flooding of the ULRHEF upstream tunnel were electrical (fan motors, electrical boxes); therefore there was no hydrocarbon spills or water contamination risk caused by the flooding of the tunnel work area.	-
August 4, 2015	Email	INX, SES, JEM	INX provided an update to the IE and IEM teams regarding the status of the Boulder Creek Wildlife and the BC Wildlife Services fire suppression activities. The BC Wildfire Service used excavators and a feller buncher to widen the TX Line ROW, Lillooet River FSR, and access roads and remove potential fuels as part of their firefighting activities.	-
August 12, 2015	Email	INX, SES	SES was granted permission to enter the ULHP area under an exemption to the Boulder Creek Fire Area Restriction Order issued by the BC Wildfire Service.	-
	Pre-work meeting	Raye Shier Enterprises Ltd., SES, CE	SES met with the logging sub-contractor (Raye Shier Enterprises Ltd.) to review the results of the danger tree assessment and to review the work plan and schedule. Mitigation strategies to be undertaken during the removal of danger trees from within the stream 9A RVMA were outlined during the meeting and were overseen by the IEM during the works.	-

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
	<i>Email</i>	WEL, INX, SES	WEL provided an updated RVMA clearing prescription table that now includes prescriptions for all RVMAs within Segment 6 – 16.	-
August 13, 2015	<i>Email</i>	INX, SES, JEM	INX distributed the updated SLRD building permits for foundation construction and septic system installation at both the BDRHEF and ULRHEF powerhouses.	-
	<i>Email</i>	INX, SES, JEM, CE, WEL	INX distributed an amendment to the BC Wildfire Service Area Restriction Order for the Boulder Creek Fire. The amended Order restricts access beyond 9km of the Lillooet River FSR and beyond South Creek on the South Lillooet FSR. Access to Segment 6 and 7 of the TX Line is no longer restricted under the amended Order.	-
August 14, 2015	<i>Onsite communications, Email</i>	SES, CE	CE and SES discussed the results of an assessment of the previously identified sharp-shinned hawk nest located adjacent to the ULRHEF penstock alignment. Ecofish completed call playback surveys and a ground search for sign indicative of an active nest. Based on the results of their surveys Ecofish deemed that the nest was no longer active.	-
August 18, 2015	<i>Email</i>	INX, SES, JEM	INX distributed an addendum to the Landslide Risk Management Plan to the IE and IEM team. The addendum includes additional mitigation measures and changes to the rainfall shutdown guideline criteria to reflect the site conditions post Boulder Creek Wildfire.	-
August 20, 2015	<i>Email</i>	INX, SES, JEM	INX distributed an addendum to the Avalanche Safety Plan to the IE and IEM team that reflects the site conditions post Boulder Creek Wildfire.	-
August 24, 2015	<i>Email</i>	CE, SES, INX	CE provided laboratory results of water sampling conducted within the flooded foundations of the ULRHEF powerhouse. SES requested the testing to confirm that water quality was acceptable for discharge to the Lillooet River since a portable toilet was tipped and spilled as a result of the powerhouse foundation flooding. The laboratory results confirmed that the fecal coliform and E.coli concentration levels were below the BCWQGs for recreational use limits. No hydrocarbon spills occurred due to the flooding.	-

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.

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
		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.
		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.
		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).
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	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.

4.0 Update - Boulder Creek Wildfire Complex (V30241)

On July 4, 2015, the Squamish Lillooet Regional District (SLRD) at the recommendation of the BC Wildfire Services issued an Evacuation Order due to the “Boulder Creek” fire (V30241) that was ignited by lightning on June 30, 2015 (i.e. ~ 3km upstream of our Boulder Creek Intake area). All personnel were safely evacuated from the ULHP construction site on July 4, prior to the fire sweeping through the Project area on July 5, 2015.

On July 22, 2015 the SLRD Evacuation Order was rescinded and a BC Wildfire Services Area Restriction Order issued for the Lillooet River FSR and South Lillooet River took effect on July 23, 2015. Due to elevated fire risk, the Exemption Approval allowing project personnel temporary access to the project site under the Area Restriction Order was rescinded on July 30, 2015.

On August 11, 2015, the BC Wildfire Service amended the Area Restriction Order restricting access beyond the 9km gate on the Lillooet River FSR and beyond the South Creek Bridge along the South Lillooet FSR. Coastal Fire Service issued an Exemption Approval to the Order on August 12, 2015 allowing project work to resume while the Area Restriction Order remained in effect. On August 21, 2015, the BC Wildfire Services amended the Area Restriction Order restricting access beyond the KM 37.5 check-in attendant booth on the Lillooet River FSR and beyond. The ULRHEF and BDRHEF remained restricted to the public throughout the monitoring

period; however, Project personnel were granted permission to enter the Restricted Area under written authorization from the BC Wildfire Service. Unrestricted access to Segments 6 & 7 of the TX Line was restored as part of the amended Area Restriction Order.

5.0 Upper Lillooet River HEF – Monitoring Results

5.1 Construction Camp, KM 38 Laydown, Access Roads & Lillooet River FSR

Activities:

- A danger tree assessment of all access road and work areas was performed on August 12, 2015. A feller buncher cleared danger trees caused by the wildfire from within 1.5 tree lengths of access roads and work areas. The IEM was onsite to oversee hand clearing within riparian areas and was present at a kickoff meeting held on August 12, 2015 with the falling crew (Photo 1).
- Water trucks applied water for dust suppression along active project access roads and the Lillooet River FSR from KM 37.5 to KM 47, once crews returned to site beginning on August 26, 2015.
- Cleaning and maintenance of construction equipment within the mechanic shop resumed post wildfire at the KM 38 laydown.
- Upon return to site, CE staff inspected the electric fences and returned them to operational status prior to remobilizing crews to the Construction Camp.
- Silt fences damaged by the wildfire were replaced at the stream 9A, ASTR03, and ASTR04 watercourse crossings during this reporting period (Photo 2).

Environmental Summary:

- Clearing danger trees within the stream 9A RVMA crossing along the magazine access road was performed under IEM supervision on August 12, 2015. The feller buncher was able to reach all danger trees from outside of the 15m buffer and by reaching in from the access road. No environmental concerns were noted.

Photos:



Photo 1 – Stream 9A RVMA downstream of the magazine access road crossing following the removal of danger trees. (August 12, 2015).



Photo 2 – Replacement of silt fencing protection at the ASTR03 road culvert crossing. (August 27, 2015).

5.2 Intake (North & South Sides), and Upstream Tunnel Portal

Construction Activities:

- Site reactivation activities at the intake and upstream tunnel portal resumed on August 27, 2015 with the commencement of dewatering of the flooded tunnel excavation and intake structure (Photo 3, Photo 4, Photo 5, and Photo 6). All water was directed to the wastewater treatment system initially until water quality was confirmed to meet pH and turbidity BCWQG criteria (Photo 6). Once dewatering was completed, crews began cleaning the concrete forms/rebar of the intake structure and began repairs to the electrical and ventilation systems damaged by the flooding of the tunnel.

Environmental Summary:

- Drill and blast works will resume within the ULRHEF tunnel during the next reporting period.
- A dedicated CE crewmember is responsible for monitoring the pumps within the intake structure and tunnel portal excavation at all times. This person has the responsibility of directing all turbid water to the sediment ponds and must verify with CE environmental staff or the IEM prior to directing any water to the Lillooet River. All water used to clean the concrete forms/rebar at the intake was pumped to the water treatment ponds. The water treatment ponds did not discharge to the Lillooet River during this reporting period.
- The IEM was onsite for the start-up of cleaning and construction activities within 30m of the Lillooet River.

Photos:



Photo 3 – Flooded conditions within the ULRHEF upstream tunnel and intake structure prior to dewatering (August 27, 2015).



Photo 4 – Conditions of the form work and rebar for the intake structure following dewatering (August 27, 2015).



Photo 5 – Clean water discharging to the Lillooet River from the flooded tunnel and intake work area following confirmation that water met BCWQGs (August 27, 2015).



Photo 6 – Discharge of the initial pulse of sediment laden water was directed to water treatment ponds (August 27, 2015).

5.3 *Downstream Tunnel Portal*

Construction Activities:

- Prior to starting the dewatering of the flooded downstream tunnel portal, the sediment accumulations within the dewatering infiltration ponds were removed, the oil/water separator was maintained and the baffles were repaired (Photo 7 & Photo 8). On August 28, CE buried the dewatering pipes and moved the oil/water to create more space at the tunnel entrance (Photo 9 & Photo 10).

Environmental Summary:

- Dewatering to the downstream portal infiltration ponds resumed on August 12, 2015 following an IEM inspection of the repairs to the ponds and maintenance of the oil/water separator. The water infiltrated to ground in the second cell of the infiltration ponds with

no surface discharge to the surrounding environment.

- On August 28, 2015 CE crews began making changes to the location of the dewatering system components to gain more work space at the entrance to the downstream tunnel portal.

Photos:



Photo 7 – Repairs underway in the downstream infiltration ponds (August 12, 2015).



Photo 8 – Replacement of the oil absorbent booms in the oil/water separator (August 12, 2015).



Photo 9 – Burying the dewatering pipes at the ULRHEF downstream tunnel portal (August 28, 2015).



Photo 10 – The oil/water separator was moved to create more space at the downstream tunnel portal entrance (August 28, 2015).

5.4 Penstock

Construction Activities:

- Public access to the Lillooet River Trail is closed due to the BC Wildfire Service Area Restriction Order. Safe access across the penstock work area will be restored once the Area Restriction order is lifted.
- On August 28, 2015 CE commenced with breaking up the large rock within the penstock excavation at 3+900 with a hydraulic rock hammer attachment on an excavator (Photo

11); however penstock installation activities remain on hold (Photo 12).

Environmental Summary:

- o Ecofish assessed the previously identified sharp-shinned hawk nest located adjacent to the ULRHEF penstock alignment on August 13, 2015. Call playback surveys and a ground search for sign indicative of an active nest was completed. Based on the results of their surveys Ecofish concluded that the nest was no longer active and falling of danger trees within the old buffer zone was authorized and completed.

Photos:



Photo 11 – Breaking up the large rock at 3+900 of the penstock alignment (August 28, 2015).



Photo 12 – Penstock installation currently on hold. (August 28, 2015).

5.5 Powerhouse & Access Road

Construction Activities:

- o CE provided laboratory results of water sampling conducted within the flooded foundations of the ULRHEF powerhouse on August 24 confirming that the fecal coliform and E.coli concentration levels were below the BCWQGs for recreational use limits. No hydrocarbon spills occurred due to the flooding. Dewatering of the flooded powerhouse work area began on August 26, 2015 (Photo 13).
- o Following dewatering of the powerhouse foundations CE began cleaning form works and rebar and will resume with the foundation construction during the next reporting period.
- o Installation of the manifold structure remained on hold during this reporting period.
- o CE constructed a berm to protect the access road from landslide and falling debris risk (Photo 14).

Environmental Summary:

- o On August 26, the IEM was onsite to inspect the ULRHEF powerhouse and verify WQ within the dewatering sump confirming that water was suitable for discharge to the surrounding environment as per the Surface Water Quality Protection Plan.

Photos:



Photo 13 – Dewatering of the ULRHEF powerhouse (August 26, 2015).



Photo 14 – Construction of a berm to protect the ULRHEF powerhouse access road from landslide and falling material risks (August 26, 2015).

5.6 Water Quality Results

The following table presents the results of the routine WQ 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 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* WQ (turbidity and/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 Water Quality						
August 27, 2015	11:05	ULR Background – ULRHEF Intake	-	26.9	29	7.1
	11:28	ULR #0.5 – Downstream of ULRHEF intake at Keyhole Bridge	-	27.1	27	7.4
	15:00	ULR # 1 – Upstream of ULRHEF Powerhouse	-	38.0*	27	10.4
	10:07	ULR #2 – Downstream of ULRHEF Powerhouse between KM 40.5 and KM 41	-	31.7	29	7.3
	9:40	ULR #3 – Lillooet River FSR KM 38 Laydown – D/S of Boulder confluence	-	29.6	26	6.3
	13:15	ULR #4 – Lillooet River FSR KM 24 – D/S of all works and Meager confluence	-	33.0	37	10.3

5.7 Recommendations

IEM recommendations for the ULRHEF are as follows:

- 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 or CE environmental manager.
- The IEM recommends that the access roads and tributaries on the penstock alignment be monitored regularly to ensure that no ESC issues develop with the continued excavation/fill works and rock truck traffic.
- Prior to commissioning the newly constructed infiltration ponds built to be used for dewatering of the ULRHEF downstream portal, the IEM recommends that CE review the gradient and elevations of the ponds and the integrity of the berms separating the cells. Water velocity through the ponds should be minimized to the extent possible to improve suspended particulate settling ability and to promote infiltration.
- The ULRHEF powerhouse sump water should be monitored regularly. Alkaline or turbid water should be pumped to the remaining settling ponds for treatment.

5.8 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 resume at the ULRHEF intake.
- Dewatering of the downstream portal excavation will continue and tunneling activities will resume at the ULRHEF downstream tunnel portal.
- Penstock installation including excavation, bedding material placement, welding and coating will resume.
- Rebar installation, formwork and concrete pours will continue at the ULRHEF powerhouse and intake structure.

6.0 Boulder Creek Hydroelectric Facility – Monitoring Results

6.1 Intake Access Road & Crane Pad

Construction Activities:

- Works at the BDRHEF intake are currently on hold until road repairs and slope stabilization along the access road is completed (Photo 15).

Environmental Summary:

- Work at the Boulder Intake crane pad is currently on hold until scaling and slope stabilization of the intake access road is complete.

Photos:



Photo 15 – Works on hold at the BDRHEF intake (August 26, 2015).

6.2 *Downstream Tunnel Portal and Powerhouse*

Construction Activities:

- Erection of the superstructure remained on hold (Photo 16).
- The pumping of tunnel seepage water and water from the flooded powerhouse foundation was directed to the oil/water separator and settling ponds (Photo 17).

Environmental Summary:

- All water emanating from the tunnel and from the flooded foundations of the powerhouse were pumped to the treatment system, which has yet to discharge from the fourth cell.

Photos:



Photo 16 – Works remain on hold at the BDRHEF powerhouse (August 26, 2015).



Photo 17 – Conditions within the BDRHEF powerhouse setting ponds. (August 27, 2015).

6.3 Water Quality Results

The following table presents the results of the routine WQ 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* WQ (turbidity and/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						
August 27, 2015	-	BDR BG – Upstream of BDRHEF intake *not currently accessible*	-	-	-	-
	-	BDR #1 – Downstream of BDRHEF intake *not currently accessible*	-	-	-	-
	9:03	BDR #2 – Upstream of BDRHEF Powerhouse	-	16.4	28	8.5
	9:17	BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	-	16.5	23	6.9

6.4 Recommendations

IEM recommendations for the BDRHEF are as follows:

- All wastewater related to the BDRHEF tunnelling works should continue to be contained and conveyed to the downstream portal settling ponds for treatment. Regular inspections of the treatment ponds should be performed to ensure the necessary maintenance activities outlined in the work plan are performed.

6.5 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 access road will continue.
- An assessment of the excavated rock slopes will be performed and scaling/stabilization works will proceed as directed by a QP.
- Demobilization of the large crane will proceed as CE has revised their access plan to include a ramp to reach the intake and tunnel portal work areas, rather than access the site using the crane pad.
- BDRHEF downstream tunnelling works and powerhouse superstructure erection will resume.

7.0 Transmission Line – Monitoring Results

7.1 Transmission Line Construction Activities

Right-of-Way Clearing:

- Hand falling in Segment 11 from 260-262, including within the stream 261A RVMA, following the confirmation that the previously identified Red-breasted Sapsucker nest was inactive.
- Helicopter supported hand falling in Segment 15 including the 381a RVMA, and within the class 2 grizzly bear summer forage habitat polygon near structure 376 (Photo 19). Work was conducted during the approved timing window and was monitored full time by the IEM.
- Helicopter supported timber hauling in Segments 9b, 11, 13, and 14.

Existing Road Upgrades and Access Road Construction

- Road construction in Segments 11 (Branch A road) and 14.
- Widening of the Ryan River bridge approach in Segment 11 involving drilling and blasting on August 28, 2015 (Photo 18).

Transmission Line Pole Installation, Line Stringing and Clipping

- Pole structure foundation construction and stringing conductors in Segment 10. Demobilization was completed prior to September 1 timing restriction.
- Groundworks for pole foundations and setting pole via helicopter in Segment 9b, 10, and 14.

Environmental Summary:

- Instream acoustic monitoring (via hydrophone) was completed by the IEM during blasting at the Ryan River bridge approach (Photo 1 and 2). The instream acoustic pressure measured within the Ryan River during the blast did not exceed the 15 kPa set trigger level and therefore maintained compliance with the 30 kPa maximum threshold outlined in the CEMP. No water quality concerns or impacts to fish were observed as a result of the single blast event.
- 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 18 – Blast preparations at the Ryan River bridge approach. A hydrophone and seismograph was installed to monitor in-stream acoustic pressure during the blast (August 28, 2015).



Photo 19 – Hand falling in the class 2 grizzly bear summer forage habitat polygon near structure 376 during the approved project work window (August 17, 2015)

7.2 Water Quality Results

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (uS)	Temp (°C)
No construction activities involving water management were conducted during this reporting period.						

7.3 Recommendations

- The IEM has no recommendations at this time.

7.4 Upcoming Works

WEL will continue to work on road construction in Segments 11, 12, and 14, and will continue with clearing and TX Line construction activities in Segments 11 and 15. Potential damages to the TX Line as a result of the Boulder Creek Wildfire will be assessed once conditions permit. The Area Restriction Order issued by the BC Wildfire Service continues to affect work in Segments 1 – 5.

8.0 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

The Owner, Contractors, and IEM team reported the following wildlife sightings in August 2015.

Upper Lillooet Hydro Project - Wildlife Observation Form					
Date	Time	Observer (Company)	Species or Description	Location	Comments
8/27/2015	14:30	Greg Davis	Black Bear	46.5 km	travelling
8/28/2015	08:30	J M Pelletier	Coyote	37.8 km FSR	travelling
8/31/2015	10:30	Stephanie Ellis	Black Bear	32 km Lillooet River FSR	travelling

9.0 Mountain Goat Monitoring Program

The spring 2015 Mountain Goat Monitoring Program is complete as of June 15, 2015 according to conditions of the Mountain Goat Management Plan. Noise monitoring and daily mountain goat monitoring will resume in November 2015.

To mitigate potential impacts to mountain goats during the summer months, Construction activities will cease if a mountain goat(s) is (are) observed moving towards the ULRHEF intake and/or if a mountain goat(s) are observed within a 500m line of site of a construction activity. No mountain goats were observed within 500m line of sight of construction activities and no work stoppages were required during this monitoring period.

10.0 Environmental Issues Tracking Matrix (ITM)

10.1 Hydroelectric Facilities (ULRHEF & BDRHEF)

ITM Tracking Legend:		Work Item Open		Mitigation Measures			
		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
<i>No outstanding environmental issues (next ITM – ULR#25)</i>							

10.2 Transmission Line

ITM Tracking Legend:		Work Item Open		Mitigation Measures			
		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
<i>No outstanding environmental issues (next ITM – Tx#3)</i>							