Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #67

Reporting Period: June 21 – June 27, 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
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) dated March 18, 2015
SLRD Building Permit for Boulder Powerhouse Foundations and Stage 2 (10865) dated June 15, 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	**Stringer Line**	Temporary Backfeed Transmission Line
Ecofish	Ecofish Research Ltd.	**TX Line**	Transmission Line
Ecologic	Ecologic Consulting	**ULRHEF**	Upper Lillooet Hydroelectric Facility
EIR	Environmental Incident Report	**UWR**	Ungulate Winter Range
ESC	Erosion and Sediment Control	**VC**	Valued Component
FAM	Field Advice Memorandum	**WEL**	Westpark Electric Ltd.
FSR	Forest Service Road	**WEMR**	Weekly Environmental Monitoring Report
GWR	Mountain Goat Winter Range	**WHA**	Wildlife Habitat Area
Hedberg	Hedberg and Associates Ltd.	**WQ**	Water Quality
HWM	High water mark		
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
Sunday, June 21	SE	Sunny	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Dust suppression on Lillooet River FSR from KM 37.5 to KM 47 ***ULRHEF Intake*** • Rebar installation and form work for the intake structure • Drilling in preparation for blasting at the upstream tunnel portal ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***ULRHEF Penstock*** • No activity ***ULRHEF Powerhouse*** • Rebar installation and formwork • Concrete pour • Manifold installation ***BDRHEF Intake, Crane Pad and Access Road*** • Drilling and blasting at the crane pad • Crane pad stabilization works ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Superstructure construction ***TX-Line*** • Segment 3 ➢ Tensioning and clipping conductors
Monday, June 22	SE, VD	Sunny	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Dust suppression on Lillooet River FSR from KM 37.5 to KM 47 • Temporary power cable installed from the ULRHEF downstream portal to the ULRHEF intake along the edge of the Lillooet River FSR ***ULRHEF Intake*** • Rebar installation and form work for the intake structure • Drilling in preparation for blasting at the upstream tunnel portal ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***ULRHEF Penstock*** • Trench excavation at 3 + 350 ***ULRHEF Powerhouse*** • Rebar installation and formwork • Manifold installation ***BDRHEF Intake, Crane Pad and Access Road*** • Crane pad stabilization works ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Superstructure construction works

Date	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities
			TX-Line • Segment 4 ➢ Tensioning and clipping conductors • Segment 9a ➢ Ground works at structure 204 • Segment 11 ➢ Vans creek bridge works (water line protection & site mobilization)
Tuesday, June 23	TH, SE, VD	Sunny	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Dust suppression on Lillooet River FSR from KM 37.5 to KM 47 • Temporary power cable installed from the ULRHEF downstream portal to the ULRHEF intake along the edge of the Lillooet River FSR ***ULRHEF Intake*** • Rebar installation and form work for the intake structure • Drilling, blasting and tunnel stabilization at the upstream tunnel portal ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***ULRHEF Penstock*** • Trench excavation at 3 + 350 ***ULRHEF Powerhouse*** • Rebar installation and formwork • Manifold installation ***BDRHEF Intake, Crane Pad and Access Road*** • Crane pad stabilization works ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Superstructure construction works ***TX-Line*** • Segment 3 ➢ Pole structure framing and conductor stringing • Segment 8 ➢ Slashing and clearing debris along ROW • Segment 9b ➢ Helipad construction • Segment 11 ➢ Hand falling from structure locations 276 - 281 ➢ Preparation for Vans creek bridge old bridge removal
Wednesday, June 24	TH, SE, VD	Cloud cover and light rain	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Dust suppression on Lillooet River FSR from KM 37.5 to KM 47 • Temporary power cable installed from the ULRHEF downstream portal to the ULRHEF intake along the edge of the Lillooet River FSR ***ULRHEF Intake*** • Concrete pour of intake structure foundations • Drilling, blasting and tunnel stabilization at the upstream tunnel portal ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization

Date	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities
			ULRHEF Penstock • Bedding installation for penstock at 3+800 • Trench excavation ***ULRHEF Powerhouse*** • Rebar installation and formwork • Manifold installation ***BDRHEF Intake, Crane Pad and Access Road*** • Crane pad stabilization works ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Superstructure construction works ***TX-Line*** • Segment 3 ➢ Pole structure framing and conductor stringing • Segment 8 ➢ Slashing and clearing debris along ROW • Segment 9b ➢ Helipad construction • Segment 11 ➢ Hand falling from structure locations 276 - 281 ➢ Vans creek bridge old bridge removal and new bridge footing preparation
Thursday, June 25	SE, VD	Overcast, cool	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Dust suppression on Lillooet River FSR from KM 37.5 to KM 47 ***ULRHEF Intake*** • Concrete pour of mud slab at the intake structure • Drilling, blasting and tunnel stabilization at the upstream tunnel portal • Treatment pond maintenance ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***ULRHEF Penstock*** • Bedding installation for penstock at 3+800 • Penstock placement on bedding in preparation for welding • Trench excavation ***ULRHEF Powerhouse*** • Rebar installation and formwork • Manifold installation ***BDRHEF Intake, Crane Pad and Access Road*** • Crane pad stabilization works ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Superstructure construction works ***TX-Line*** • Segment 2 – 5 ➢ Hand clearing in area with identified deficiencies or revised prescriptions • Segment 3 ➢ Pole structure framing and conductor stringing

Date	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities

			• Segment 9b
			  ➢ Helipad construction
			• Segment 11
			  ➢ Hand falling from structure locations 276 - 281
			  ➢ Vans creek bridge footing installation and backfill

Friday, June 26	SE, AA	Hot and Sunny	***Construction Camp, Laydown Areas and the Lillooet River FSR***
			• Dust suppression on Lillooet River FSR from KM 37.5 to KM 47
			ULRHEF Intake
			• Concrete pour for intake structure foundations
			• Drilling, blasting and tunnel stabilization at the upstream tunnel portal
			• Treatment pond maintenance
			ULRHEF Downstream Tunnel Portal
			• Drilling, blasting and tunnel stabilization
			ULRHEF Penstock
			• Bedding installation for penstock at 3+800
			• Penstock placement on bedding in preparation for welding
			• Trench excavation
			ULRHEF Powerhouse
			• Rebar installation and formwork
			• Manifold installation
			BDRHEF Intake, Crane Pad and Access Road
			• Crane pad stabilization works
			• Blast at KM 4 of Intake access road to restore access to spur road
			BDRHEF Downstream Tunnel Portal
			• Drilling, blasting and tunnel stabilization
			BDRHEF Powerhouse
			• Superstructure construction works
			TX-Line
			• Segment 2 – 5
			  ➢ Hand clearing in area with identified deficiencies or revised prescriptions
			• Segment 3
			  ➢ Pole structure framing and conductor stringing
			• Segment 9b
			  ➢ Helipad construction
			• Segment 11
			  ➢ Hand falling from structure locations 276 - 281
			  ➢ Vans creek bridge construction works

Saturday, June 27	SE, AA	Hot and Sunny, ~35°C	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Dust suppression on Lillooet River FSR from KM 37.5 to KM 45 • Mechanic Shop, Carpentry Shop, Crusher Pad and Batch Plant closed due to extreme landslide risk ***ULRHEF Intake*** • Site closed due to extreme landslide risk ***ULRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***ULRHEF Penstock*** • Bedding installation for penstock at 3+800 • Penstock placement on bedding in preparation for welding • Trench excavation

Date	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities
			ULRHEF Powerhouse • Site closed due to extreme landslide risk ***BDRHEF Intake, Crane Pad and Access Road*** • Crane pad stabilization works • Blast at KM 4 of Intake access road to restore access to spur road ***BDRHEF Downstream Tunnel Portal*** • Drilling, blasting and tunnel stabilization ***BDRHEF Powerhouse*** • Superstructure construction ***TX-Line*** • No activities

IEM Team Personnel: *TH – Tom Hicks; SS – Stephen Sims; BA – Blake Aleksich; VD – Vanessa Dan; AA – Anthony Andrews; 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.
June 21, 2015	*Email*	CE, INX, SES	CE informed the Project team that ANFO usage and the storage blast rock (generated with ANFO use) will be tracked, and records will be communicated on a weekly basis.	-
June 22, 2015	*Email*	SES, CO	SES contacted the Sea to Sky Zone Conservation Officer (CO) for advice regarding a newly born fawn laying in a roadside ditch beside the BDRHEF intake access road. The CO advised SES to rub gloved hands in the dirt prior to moving the fawn a short distance away from the road to a more suitable location. SES relocated the fawn to a shady area away from the vehicle traffic. A follow-up visit found that the fawn had vacated the area.	-
June 23, 2015	*Email*	INX, CE, SES	INX informed the Project team that a sign depicting the campfire regulations was posted at the Lillooet River Trial kiosk to help increase public awareness about the current extreme fire risk.	-
June 24, 2015	*Email*	SES, INX, WEL	SES submitted a report outlining the results of the Segment 1 – 9 RVMA assessment, identifying minor deficiencies in clearing prescriptions and identifying locations where standing timber may encroach on the conductor clearance limits. These deficiencies are to be corrected prior to completing works in these Segments.	-
June 26, 2015	*Email*	CE, SES, INX	CE notified the IEM that a doe gave birth to a fawn on the construction camp access road. As a precautionary measure and to prevent disturbing the deer, CE closed the access road in both directions and informed the CO. The fawn and mother moved off the road and the situation	-

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
			resolved itself after approximately 1.5 hours.	
June 26, 2015	*Email*	SES, CE, INX	INX distributed the second phase SLRD building permit for the BDRHEF Powerhouse.	-

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
All Project Areas	TX Line, ULRHEF, & BDRHEF	Active Migratory Bird Nesting Period	AMBNS must occur prior to clearing vegetation in all Project areas according to the survey schedule and methods outlined in the Project's Active Migratory Bird Nest Survey Plan during the nesting period (May 1 – July 31). All nests identified as active must be protected by a minimum 30m no disturbance buffer until the nest is no longer deemed to be active by a QP (buffer distances vary by species; further details are provided in the AMBNS Plan).
TX Line	Segments 8 – 15	Within 150m of wetlands or 100m of Coastal Tailed Frog Streams	IEM presence is required when clearing within 150m of wetlands or 100m of CTF Streams, to ensure clearing areas are minimized.
		Riparian Vegetation Management Areas (RVMA)	IEM monitoring is required during clearing within RVMAs.
		Surface Water Quality	IEM monitoring is required during culvert installation activities in non-fish bearing waters to document adherence to the Surface Water Quality Protection Plan objectives.
		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.

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
		Wildlife Habitat Area (WHA) 2-399	Construction of the transmission line within the Grizzly Bear WHA 2-399 must be constructed outside of April 1 to June 15 and October 15 to December 31 to minimize disturbance to Grizzly Bears expected to use the WHA during spring and fall.
		Ryan River Drainage	Construction of the TX Line into and across the Ryan River drainage will occur during the less critical Grizzly Bear summer foraging period (June 1 – September 1).
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 Upper Lillooet River HEF – Monitoring Results

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

Activities:

- Water trucks applied water for dust suppression along active project access roads and the Lillooet River FSR from KM 37.5 to KM 47, throughout the reporting period.
- Routine maintenance of construction equipment within the mechanic shop and fuel management continued at the KM 38 laydown.
- The electric fences were maintained and operational throughout this reporting period.
- CE installed temporary power cable along the edge of the Lillooet River FSR from the ULRHEF downstream portal to the ULRHEF intake during this reporting period (Photo 1).

Environmental Summary:

- The mechanic shop, carpentry shop, crusher pad, batch plant, and laydown areas at KM 38 were closed due to extreme landslide risk on June 27.
- Two separate deer birthing events occurred on project access roads during this reporting period. On both occasions, the local CO was notified and CE restricted vehicle travel in the area to prevent impacts to the fawns. A fawn along the edge of the BDRHEF intake access road was relocated under advice from the CO Service to a nearby shaded area (Photo 2), where it is assumed to have reconnected with its mother. The fawn along the construction camp access road moved off the road with its mother under its own power.

Photos:

Photo 1 – Installation of temporary power cable along the Lillooet River FSR near KM 47 (June 22, 2015).

Photo 2 – Young fawn along the edge of the BDRHEF intake access road was relocated under direction of the CO on (June 22, 2015).

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

Construction Activities:

- Drilling, blasting, excavation and stabilization of the upstream tunnel excavation (Photo 3).
- Rebar and form work (Photo 4), two concrete pours (June 24 & 26; Photo 5) and a mud slab pour (June 25).
- Dewatering of portal excavation to the intake dewatering and wastewater treatment system (Photo 5 and Photo 6).

Environmental Summary:

- Drill and blast works continued within the ULRHEF tunnel during this reporting period. All seepage water at the portal face was pumped to the water treatment system.
- A dedicated CE crewmember is present on day shift and night shift to monitor 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. During concrete pours, all water in contact with uncured concrete was pumped to water treatment ponds to ensure water quality meet BCWQGs prior to being discharged to the Lillooet River.
- The IEM was onsite to monitor all blasts, concrete pours and construction activities within 30m of the Lillooet River.
- No activities occurred at the ULRHEF intake on June 27, 2015 due to elevated landslide risk according to the conditions of the Landslide Risk Management Plan.

Photos:

Photo 3 – Condtions within the ULRHEF upstream tunnel during excavation of blast rock (June 24, 2015).

Photo 4 – Completed form work and rebar immediately prior to the first concrete pour for the intake structure (June 24, 2015).

Photo 5 – Concrete pour for the intake structure (June 26, 2015).

Photo 6 – Maintenance activities at ULRHEF sediment basins (June 25, 2015).

4.3 *Downstream Tunnel Portal*

Construction Activities:

- Drilling, blasting, mucking and stabilization works within the tunnel (Photo 7).
- Dewatering to downstream portal settling ponds (Photo 8).

Environmental Summary:

- Tunnelling works and dewatering to the downstream portal settling ponds continued during this reporting period. The settling pond water infiltrated to ground in the second cell with no discharge to the surrounding environment (Photo 8).

Photos:

Photo 7 – Current conditions at the ULRHEF downstream tunnel portal (June 26, 2015).

Photo 8 – ULRHEF downstream portal infiltration ponds. Water has not yet discharged from the second pond (June 26, 2015).

4.4 *Penstock*

Construction Activities:

- Access to the penstock work area continues to be blocked with barriers and flagging tape to protect the public by preventing access to the work site from the Lillooet River Trail (Photo 9).
- Bulk excavation for penstock trench, installation of bedding material within the trench, and penstock placement on the bedding in preparation for welding (Photo 10).

Environmental Summary:

- A 300m no clearing buffer remains flagged around the active sharp-shinned hawk (SSHA) nest will remain in place until fledging has been confirmed. Construction activities (with the exception of clearing vegetation) will continue along the penstock alignment (within 300m of the active nest) during the nesting period as previously outlined by Ecofish.
- Recommend that CE review the gradient and elevations of the new infiltration ponds under construction at penstock chainage 2+800. Water velocity through the ponds should be minimized to the extent possible to improve suspended particulate settling ability and to promote infiltration. The IEM notified CE's environmental management team who will review the recommendation prior to the commissioning of the ponds.

Photos:

Photo 9 – Barriers installed to discourage the public from entering the penstock work area from the Lillooet River Trail (June 25, 2015).

Photo 10 – Penstock installation on prepared bedding (June 26, 2015).

4.5 *Powerhouse & Access Road*

Construction Activities:

- Continued rebar installation and formwork for the powerhouse structure (Photo 11).
- A structural concrete pour occurred on June 21 (Photo 12).
- Dewatering from the powerhouse sump to the Lillooet River continued.
- Installation of the manifold structure continued during this reporting period (Photo 13).

Environmental Summary:

- On June 21, the IEM was onsite to inspect the ULRHEF powerhouse and verify WQ within the dewatering sump during a concrete pour (Photo 12). The IEM inspected the sump and confirmed that concrete did not come in contact with seepage water. At 12:00, the pH within the sump was measured at 6.5 and was suitable for discharge to the surrounding environment as per the Surface Water Quality Protection Plan.
- Dewatering of the ULRHEF powerhouse continued without environmental concern throughout the reporting period. The IEM will continue to monitor the works area to confirm that future concrete pours are adequately isolated from flowing water and protected from precipitation during curing.

Photos:

Photo 11 – Rebar installation and formwork at the ULRHEF powerhouse (June 26, 2015).

Photo 12 – Concrete pour at ULRHEF powerhouse (June 21, 2015).

Photo 13 – ULRHEF powerhouse manifold installation works (June 26, 2015)

4.6 *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 (*u*S)	Temp (°C)
Routine Water Quality						
June 26, 2015	16:26	ULR Background – ULRHEF Intake	6.7	43.4	30	13.9
	16:52	ULR #0.5 – Downstream of ULRHEF intake at Keyhole Bridge	6.9	45.3	31	14.3
	15:25	ULR # 1 – Upstream of ULRHEF Powerhouse	6.7	52.5	29	11.7
	14:59	ULR #2 – Downstream of ULRHEF Powerhouse between KM 40.5 and KM 41	6.5	50.8	30	11.8
	9:54	ULR #3 – Lillooet River FSR KM 38 Laydown – D/S of Boulder confluence	7.1	34.6	23	9.6
	14:30	ULR #4 – Lillooet River FSR KM 24 – D/S of all works and Meager confluence	6.0	37.7	35	12.5

4.7 *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.
- The ULRHEF powerhouse sump water should be monitored regularly. Alkaline or turbid water should be pumped to the remaining settling ponds for treatment.

4.8 *Upcoming Works*

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

- Drilling and blasting will continue at the ULRHEF intake.
- Dewatering of the upstream portal excavation will continue.
- Tunneling activities will continue at the ULRHEF downstream tunnel portal.
- Penstock installation will begin following work plan approval and a pre-work meeting.
- Rebar installation, formwork and concrete pours will continue at the ULRHEF powerhouse.

5.0 Boulder Creek Hydroelectric Facility – Monitoring Results

5.1 *Intake Access Road & Crane Pad*

Construction Activities:

- Slope stabilization works continued at the BDRHEF intake (Photo 14).
- Blasting at KM 4 of the BDRHEF intake access road was completed to restore access to a spur road (Photo 15).

Environmental Summary:

- Blasting and consolidation at the crane pad resulted in rock falling adjacent to and within Boulder Creek. WQ remained visually unaffected by the rock inputs and all material will be removed from Boulder Creek during construction of the intake structure.

Photos:

Photo 14 – Crane and man basket used for slope stabilization works (June 21, 2015).

Photo 15 – Conditons following the blast at KM 4 of the BRDHEF intake acces road (June 26, 2015).

5.2 *Downstream Tunnel Portal and Powerhouse*

Construction Activities:

- Erection of the superstructure continued (Photo 16).
- Drilling, blasting, mucking and stabilization works continued within the tunnel (Photo 17).
- Dewatering of the tunnel and powerhouse to the oil water separator and settling ponds continued (Photo 18).

Environmental Summary:

- All water emanating from the tunnel continues to be pumped to the treatment system and has yet to discharge from the fourth cell.

Photos:

Photo 16 – Current conditions at the BDRHEF powerhouse (June 22, 2015).

Photo 17 – Conditons within the BDRHEF downstream tunnel (June 21, 2015).

Photo 18 – BDRHEF powerhouse settling ponds (June 26, 2015).

5.3 *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						
June 26, 2015	-	**BDR BG** – Upstream of BDRHEF intake *not currently accessible*	-	-	-	-
	-	**BDR #1** – Downstream of BDRHEF intake *not currently accessible*	-	-	-	-
	10:42	BDR #2 – Upstream of BDRHEF Powerhouse	6.9	21.0	24	8.3
	10:18	BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	7.0	25.0	24	8.3

5.4 *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.
- CE should continue to exercise caution when working at the BDRHEF crane pad and on slope consolidation to prevent excessive rock fall into Boulder Creek.

5.5 *Upcoming Works*

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

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

6.0 Transmission Line – Monitoring Results

6.1 *Transmission Line Construction Activities*

Right-of-Way Clearing:

- Hand falling in Segments 8, 9b, & 11.
- Target hand falling along the ROW within Segments 2 – 5 was completed to address areas requiring additional conductor clearance and in RVMA requiring debris management.

Existing Road Upgrades and Access Road Construction

- Vans creek waterline protection and bridge installation works in Segment 11 (Photo 19, Photo 20, & Photo 21).
- Helipad construction in Segment 9b.

Transmission Line Pole Installation, Line Stringing and Clipping

- Stringing, pulling and clipping conductors in Segment 3 (Photo 22).

Environmental Summary:

- The IEM was onsite to monitor the removal of the old Vans Creek log bridge structure and excavation of the new bridge footings. The water level in Vans Creek permitted the works to be completed above the high water mark, and extra caution on behalf of the excavator operators resulted in the works being completed without exceedance of the BCWQGs (See Section 21 for water quality monitoring results).
- 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 19 – Old Vans Creek log bridge removal (June 24, 2015).

Photo 20 – Preparing footing for the new bridge following competion of the old bridge removal (June 24, 2015).

Photo 21 – Placement of the Vans Creek bridge deck (June 27, 2015).

Photo 22 – Conductor stringing in Segment 3 (June 24, 2015).

6.2 *Water Quality Results*

The following table presents the results of WQ sampling conducted during the removal of the Vans Creek log bridge and excavation of the bridge footings for the new structure. The majority of the works were completed in the dry and did not result in any exceedances of the BCWQGs. The IEM will continue to perform full time monitoring and WQ sampling during works that have the potential to impact surface WQ, according to the conditions outlined in the Surface Water Quality Protection Plan.

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (uS)	Temp (°C)
Vans Creek – old log bridge removal						
June 24	7:50	Background above bridge	7.0	1.23	16	9.0
	8:03	20m downstream of bridge	6.95	8.62	16	8.9
	8:19	20m downstream of bridge	7.0	3.17	15	8.9
	8:34	20m downstream of bridge	6.89	3.24	16	8.9
	8:49	20m downstream of bridge	6.92	3.62	16	8.9
	9:04	20m downstream of bridge	6.93	4.13	18	8.9
	9:45	20m downstream of bridge	6.89	2.18	16	9.1
	10:10	20m downstream of bridge	6.9	3.23	16	9.2

6.3 *Recommendations*

- The IEM has no recommendations at this time.

6.4 *Upcoming Works*

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

- Framing and stringing poles in Segment 3 & 4.
- Tensioning and clipping in Segment 7.
- Groundworks for pole foundations in Segment 9a.
- Slashing in Segment 9a and 12.
- Hand falling in Segment 9a, 11 and 13.
- Road construction in Segment 11, 13 and Segment 14.

7.0 Wildlife Sightings

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

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

8.0 Mountain Goat Monitoring Program

The 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.

9.0 Environmental Issues Tracking Matrix (ITM)

9.1 *Hydroelectric Facilities (ULRHEF & BDRHEF)*

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

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

9.2 *Transmission Line*

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

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