Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #104

Reporting Period: September 25 – October 8, 2016

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
Name	**Organization**	
Brian Naito	Fisheries and Oceans Canada	 **J. Alex Sartori, RPBio** *Independent Environmental Monitor (IEM)*  **J. Stephen Sims, RPBio** *Delegate IEM*
James Davies	MFLNRO – Water Allocation	
Danielle Cunningham	MFLNRO – Land and Resources	
Frank DeGagne	MFLNRO – Land and Resources	
Monica Perry	BC Environmental Assessment Office	
Sheldon Foote	BC Environmental Assessment Office	
George Steeves	True North Energy – Independent Engineer	
Jennifer McCash	JEM Energy Ltd. – Independent Engineer	
Thomas Hicks	Sartori Environmental Services	
Peter Ramsden	Innergex Renewable Energy Inc.	
Oliver Robson	Innergex Renewable Energy Inc.	
Grant Lindemulder	Innergex Renewable Energy Inc.	
Joshua Zandbergen	Innergex Renewable Energy Inc.	
Julia Mancinelli	Innergex Renewable Energy Inc.	
Liz Scroggins	Innergex Renewable Energy Inc.	
Colleen Giroux-Schmidt	Innergex Renewable Energy Inc.	
Matt Kennedy	Innergex Renewable Energy Inc.	
Renaud DeBatz	Innergex Renewable Energy Inc.	
Richard Blanchet	Innergex Renewable Energy Inc.	
Alex Yung	Innergex Renewable Energy Inc.	
Sarah Taschuk	Innergex Renewable Energy Inc.	
Serge Moalli	CRT-ebc Construction Inc.	
Jonathan Drapeau	CRT-ebc Construction Inc.	
Jean Pelletier	CRT-ebc Construction Inc.	
D'Arcy Soutar	Westpark Electric Ltd.	
Pontus Lindgren	Westpark Electric Ltd.	**Date Prepared:** February 21, 2017
Harriet VanWart	Lil'wat Nation	**Date Submitted:** August 14, 2017
Carrie Lester	Lil'wat Nation	

sartori environmental services
106-185 forester street, north vancouver, bc v7h 2m9 tel 987.5588 fax 987.7740 email info@sartorienv.com

Owner Construction Permits and Approvals

Environmental Assessment Certificate No. E13-01 (Amendment 1, 2, 3, 4, 5, 6, 7)
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 & Modification Agreement (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) No. L49717(Amendments 1, 2, 3, 4, 5, 6, 7)
Occupant Licence to Cut (BDRHEF – KM 38 laydown) No. L49698
Occupant Licence to Cut (BDRHEF) No. L49816 (Amendments 1, 2, 3)
Occupant Licence to Cut (TX Line) No. L49697 (Amendments 1, 2, 3, 4, 5, 6, 7, 8, 9)
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
Magazine Licence File No. UL76018 (Renewal 1)
Section 8 Approval – Short Term Use of Water File (Lillooet River and Tributaries) No. A2006123 (Amendment 1)
Section 8 - Special Use Permit issued for the operation of an avalanche weather station on Crown land (File No. S25988)

Contractor Construction Permits and Approvals

Waste Discharge under the Code of Practice for the Concrete and Concrete Products Industry under the Environmental Management Act (Authorization No. 107204) Tracking No. 349424 (Renewal 2)
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 Stages 1 - 4 – Boulder Powerhouse Architectural, Electrical and Mechanical (10865) October 8, 2015
SLRD Building Permit Stages 1 - 4 – Upper Lillooet Powerhouse Architectural and Mechanical (10864) October 6, 2015
Water Sustainability Act Section 10(1) Use Approval dated March 24, 2016
Section 7 Explosives Act – Magazine Licence (U76018) Renewal April 30, 2016

ACRONYMS:

AMBNS	Active Migratory Bird Nesting Survey
Andritz	Andritz Hydro Canada Inc.
ANFO	Ammonia nitrate fuel oil (industrial explosive)
ARD M/L	Acid Rock Drainage and Metal Leaching
BCEAO	British Columbia Environmental Assessment Office
BCCOS	British Columbia Conservation Officer Service
BCWQG	British Columbia Water Quality Guidelines
BDRHEF	Boulder Creek Hydroelectric Facility
BEBO	ULRHEF Intake Concrete Arch & Foundation Wall
BG	Background
BKL	BKL Consultants Ltd.
CE	CRT-ebc Construction Inc.
CEMP	Construction Environmental Management Plan
CTF	Coastal Tailed Frog
DFO	Fisheries and Oceans Canada
DS	Downstream
EPP	Environmental Protection Plan
EAC	Environmental Assessment Certificate
EAO	Environmental Assessment Office
Ecofish	Ecofish Research Ltd.
Ecologic	Ecologic Consulting
EIR	Environmental Incident Report
ESC	Erosion and Sediment Control
FAM	Field Advice Memorandum
FSR	Forest Service Road
Golder	Golder Associates
GWR	Mountain Goat Winter Range
Hedberg	Hedberg and Associates Ltd.
HWM	High water mark
IE	Independent Engineer (True North Energy)
IEM	Independent Environmental Monitor
INX	Innergex Renewable Energy Inc.
ISW	Instream Works
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
MOTI	Ministry of Transportation and Infrastructure
OGMA	Old Growth Management Area
OLTC	Occupational License to Cut
PAG	Potentially Acid Generating
QP	Qualified Professional
ROW	Right of Way
RVMA	Riparian Vegetation Management Area
SES	Sartori Environmental Services
SLRD	Squamish-Lillooet Regional District
TX Line	Transmission Line
ULRHEF	Upper Lillooet Hydroelectric Facility
UWR	Ungulate Winter Range
VC	Valued Component
WEL	Westpark Electric Ltd.
WEMR	Weekly Environmental Monitoring Report
WHA	Wildlife Habitat Area

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	Key Monitoring Locations & Activities
September 25 – October 1, 2016	SE, MC, TH, SS, DA	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Road maintenance on the Lillooet River FSR • Spoil pile reclamation at KM49.5 ***ULRHEF Intake & Upstream Tunnel Portal*** • Final lining and rock support (including shotcrete) • BEBO tunnel rebar, formwork and concrete works • Obermeyer concrete demolition ***ULRHEF Downstream Tunnel Portal*** • Rocktrap concrete works and formwork stripping • Tunnel plug grouting program • Sediment removal from Stormtec water treatment system • Conduit installation along downstream tunnel access road • Delivery of plants for Truckwash Creek over drain reclamation works ***ULRHEF Penstock*** • Sandblasting and coating ***ULRHEF Powerhouse*** • Andritz mechanical and electrical works • Westpark switchyard works and oil injection of transformer ***BDRHEF Intake & Upstream Tunnel Portal*** • Downstream cofferdam excavation works; excavation, followed by membrane and riprap placement • Ramp construction for upstream cofferdam access • Excavation of upstream cofferdam in the dry • Riprap placement and grouting upstream of the Coanda • Removal of downstream cofferdam ***BDRHEF Downstream Tunnel Portal*** • Mesh and invert cleaning • Final lining and rock support (including shotcrete) ***BDRHEF Powerhouse*** • Westpark switchyard works • Westpark oil injection of transformer ***TX-Line*** Segment 1 • Installation of fiber optic cable • Machine ground preparations Segment 2 • Installation of fiber optic cable Segment 11 • Tensioning and clipping structures Segment 12 • Tensioning and clipping structures Segment 13 • Framing and pole setting with helicopter • Brush piling and ditching • Hand digging anchors Segment 14 • Machine and hand ground preparation, framing structures

		Segment 15 • Framing • Preparing to string • Pole setting with helicopter Segment 16 • Altitude ground preparation • Blasting • Hand digging anchors
October 2 – 8, 2016	SE, MC, TH, DA	***Construction Camp, Laydown Areas and the Lillooet River FSR*** • Road maintenance on the Lillooet River FSR ***ULRHEF Intake & Upstream Tunnel Portal*** • Final tunnel lining and rock support (including shotcrete) • BEBO tunnel arch installation and grouting • Obermeyer repair works • Installing buried conduits to control building • Diversion channel slope re-excavation • Drainage works on the intake access road directing runoff to the concrete lined sump. • Installation of ultrasonic flowmeter ***ULRHEF Downstream Tunnel Portal*** • Rocktrap concrete works and formwork stripping • Tunnel plug grouting program • Flushing pipe installation • Conduit installation along downstream tunnel access road ***ULRHEF Penstock*** • Sandblasting and coating • Reclamation of penstock (planting on east side of Truckwash) ***ULRHEF Powerhouse*** • Andritz mechanical and electrical works • Westpark switchyard works • Cable tray footings – excavation and formwork • Top soil placement on north and south sides of the tailrace ***BDRHEF Intake & Upstream Tunnel Portal*** • Excavation of upstream cofferdam – instream works • Rock consolidation – retaining wall • Installation of temporary foot bridge over Boulder Creek; installation of temporary heavy machinery bridge over Boulder Creek; constructing berm to prevent water from entering the diversion channel; dewatering via 6” sump (pump directed to the active water treatment system) • Ditching and road grading along the intake access road • Begin installing wire mesh at the downstream end of the diversion tunnel • Diversion tunnel plug rebar, formwork and concrete works • Excavation for conduit and the control room building slab ***BDRHEF Downstream Tunnel Portal*** • Mesh and invert cleaning • Final tunnel lining and rock support (including shotcrete) ***BDRHEF Powerhouse*** • Westpark switchyard works • Westpark oil injection of transformer • Bifurcation installation • Andritz mechanical and electrical works ***TX-Line*** Segment 1 & 2 • Installation of fiber optic cable

		Segment 11 • Ground preparation by hand Segment 12 • Clipping structures • Ground preparation by hand Segment 13 • Framing and pole setting via helicopter • Brush piling and ditching • Hand digging anchors and ground preparation Segment 14 • Machine and hand ground preparation • Framing and pole setting with helicopter • Backfill and straightening poles Segment 15 • Pole setting with helicopter • Backfill and straightening poles Segment 16 • Ground preparation • Timber and debris management • Hand digging anchors

IEM Team Personnel: *TH – Tom Hicks; SS – Stephen Sims; SE – Stephanie Ellis; MC – Mike Champion; DA – Danita Abraham*

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.
September 26	*Email*	CE, SES, INX	CE provided the IEM and INX with Ecofish's recommendation for CTF salvages associated with the removal of both the upstream and downstream cofferdams at the BDRHEF intake. Ecofish informed CE that a CTF salvage below the downstream cofferdam was not possible due to safety concerns, and that they recommended the workplan be followed to minimize the amount of sediment released downstream. Ecofish recommended that a CTF salvage be conducted on the left bank of Boulder Creek above the upstream cofferdam once the temporary bridge was installed.	-
September 27	*Email*	CE, SES, INX	RE: Non-bio excavator in diversion channel for Obermeyer repairs – CE requested the use of an excavator not equipped with biodegradable hydraulic oil to complete the Obermeyer repairs at ULRHEF intake structure. The following mitigation measures would be implemented: • The machine would be cleaned and inspected prior to being mobilized to the intake. • The operator would inspect the excavator prior to operating the machine at the beginning of shift and following any breaks in the work. • If any leaks in the equipment were detected during inspection, work with that machine must cease until the leak was repaired. • A spill kit would be placed in close proximity to the operating excavator within the diversion channel. • A monitor would observe the excavator while in operation to ensure immediate identification of any leaks or signs of failure on the equipment. The IEM approved the use of the excavator and added that the crane must be available to extract the excavator should water levels in the Lillooet River begin to rise.	-
September 27 & 29	*Email*	SES, CE, INX	RE: Waste management and the electric fence surrounding camp – The IEM requested that CE provide the most recent electric fence inspection logs as a black bear had been observed near pad 1 of the construction camp. The IEM also noted that waste management inspections continued to occur around site and no instances of non-compliance had been observed recently. CE informed the IEM that a thorough inspection of the electric fence (both physical and electrical) revealed no breaches. CE committed to providing the IEM with the electric fence inspection logs	-

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
			as soon as possible. CE provide the IEM with the inspection log on September 29.	
September 28	*Pre-work meeting*	CE, SES, INX	A pre-work meeting was held for the removal of BDRHEF downstream coffer dam. All attending reviewed the work plan and discussed safety, environmental, and construction concerns.	
	Email	SES, CE, INX	RE: Open burning of construction waste – The IEM requested that CE provide their burn permit registration number and notify the IEM prior to open burning commencing. CE provided their permit number (R15V0898). However, CE informed the IEM that they would not provide the IEM with notification because burning could only occur if the ventilation index was good and this information was updated daily by the province. The IEM indicated that they were aware of the regulation and requested that they be notified when burning was occurring onsite.	-
	Email	CE, SES, INX	RE: Dead deer at KM28.5 – CE informed INX that the IEM had observed a dead dear at KM28.5 of the Lillooet River FSR. The dear had been shot in the neck and left on the road, likely by poachers. CE notified the RAPP line, file number ERS-16-3750.	*ERS-16-3750*
	Email	CE, SES, INX	RE: Spill report 2016-36 – CE provided INX and the IEM with a report for the spill of 10 L of antifreeze that occurred when a pickup truck was involved in an accident with a pumice truck on September 28, 2016.	*Spill report #36*
September 29	*Email*	CE, SES, INX	CE provided INX and the IEM with the meeting minutes from the bi-weekly environmental conference call held on September 29, 2016.	
September 30	*Email*	SES, CE, INX	The IEM provided CE and INX with an updated ITM and FAM#13 outlining sediment and erosion control issues on site.	*FAM #13*
October 2	*Email*	CE, SES, INX	RE: Environmental issues – Sunday Oct.2 – CE provided the IEM with mitigation measures to address environmental issues identified on October 2: 1. Non-bio excavator excavated the Boulder U/S cofferdam – CE informed the IEM that an excavator equipped with biodegradable hydraulic oil would replace the non-bio machine as soon as possible. 2. Pump in the Boulder Tailrace without a protective mesh – CE committed to fixing the problem by the end of the day. 3. Pumping water from the intake pool at Upper Lillooet River Intake without notification and presence of the IEM – CE confirmed that the water was pumped into the active water treatment system at the ULRHEF intake, and apologized for their failure to notify the IEM prior to commencing the works.	-
October 5	*Email*	CE, SES	RE: Pour this morning at Boulder Intake – CE provided the IEM with 15-minutes notification that a concrete pour would occur within 30-meters of Boulder Creek.	-
	Email	INX, CE, SES	INX informed CE that they were required to provide a signed affidavit stating that licenses of occupations that they were returning to the province and for areas that	-

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
			INX would be keeping as permeant land tenure were free of Hazardous Substances. INX informed CE that they would require an acceptable testing program and confirmation that all project areas were clear of hazardous substances. INX requested that CE provide a plan outlining the testing program and location where samples would be taken throughout the site. Further, INX suggested that CE retain a QP to ensure that all sampling was conducted properly.	
October 6	*Email*	CE, INX, SES	RE: Dead deer on the road at KM33.5 – CE informed INX and the IEM that a dear was hit and killed at KM33.5 of the Lillooet River FSR. The SUV involved in the accident was a tourist vehicle, and was not project related. CE buried the dear and reported the incident to RAPP.	-
October 7	*Email*	SES, CE, INX	The IEM informed CE that high pH and sediment laden water was discharging to Boulder Creek. Once identified CE preformed corrective measures to direct road runoff to the active water treatment system. CE environmental staff informed the IEM that the following corrective measures had been or were in the process of being implemented at the BDRHEF intake: 1. The pump hoses and fitting that were leaking were replaced. 2. Turbid road runoff and curing water was being directed to the sump at the pull box and was being pumped to the Stormtec system. 3. A larger more powerful pump had been installed to ensure it could handle all of the water conveyed into the sump. 4. A Green Box treating for elevated pH was being utilized in the pool downstream of the Coanda and was to be left in place until the slab was sufficiently cured and was to be on standby for any future pours that may impact water at the intake. CE also committed to the following improvement: 1. The 600mm drain pipe would be permanently filled with concrete. 2. A berm would be created around the sump to direct water into the tunnel should the sump/pump fail.	-

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	ULRHEF intake & tailrace, BDRHEF tailrace, and fish accessible tributaries of the Lillooet River	Reduced Risk Project Specific Instream work windows for the protection of Bull Trout, Cutthroat Trout and Pacific Salmon (Coho, Sockeye), during sensitive life stages	All instream work would be conducted within Project specific timing windows. They are as follows: ULRHEF intake: August 1 – October 31 ULRHEF and BDRHEF powerhouses: July 15 – September 15
Lillooet River FSR, ULRHEF, & BDRHEF intake	Access roads above the lower limit of the 200m buffer to the Truckwash Creek Migration Corridor to the ULRHEF intake, as well as a portion of BDRHEF intake access road and intake structure within UWR u-2-002 UL 12	Mountain Goat UWRs & Migration Corridor	If a mountain goat is observed within 500m line of sight of construction operations, construction must cease for at least 48 hours. Approval from the IEM must be obtained prior to recommencing construction activities, and the IEM must record and submit all goat observations to MFLNRO within 48 hours.
TX Line	All Segments	Mountain Goat UWRs SO-04 & SO-08	If a mountain goat is observed within 500m line of sight of construction operations, construction must cease for at least 48 hours. Approval from the IEM must be obtained prior to recommencing construction activities, and the IEM must record and submit all goat observations to MFLNRO within 48 hours.
		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).
		Riparian Vegetation Management Areas (RVMA)	IEM monitoring is required during clearing within RVMAs.
		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.

4.0 Upper Lillooet River HEF – Monitoring Results

4.1 *Construction Camp, KM38 Laydown, Access Roads & Lillooet River FSR*

Construction Activities:

- CE continued routine fuel management and maintenance of construction equipment within the mechanic shop at the KM38 laydown. CE temporarily stored all hazardous substance materials (waste oil, contaminated soil, used oil/hydraulic fluid containers, etc.) in a designated area at the laydown prior to off-site disposal. The materials were all well contained and protected from the weather.
- CE continued reshaping and reclaiming the ULRHEF Intake spoil pile at KM49.5 on the Lillooet River FSR (Photo 1).
- CE continued ditch installation and clean out along the Lillooet River FSR.

Environmental Summary:

- On October 7, the IEM observed sediment laden water entering the Lillooet River at Keyhole bridge (Photo 2). The IEM notified CE of the issue and asked for the water on the bridge to be pumped to vegetation, and for ditching to be improved to prevent the accumulation of water on the bridge in the future. The discharge of sediment laden water did not result in an exceedance of BCWQG.

Photos:

Photo 1 – Reclamation of the KM49.5 spoil pile (October 1, 2016)

Photo 2 – Sediment laden water accumulating on Keyhole bridge (October 7, 2016).

4.2 *Intake, Concrete Arch Foundation Walls, and Upstream Tunnel*

Construction Activities:

- BEBO tunnel anchor grouting, rebar, formwork, and arch installation (Photo 3).
- Final tunnel lining and rock support in the upper portions of the tunnel.

- Obermeyer repairs including concrete demolition, rebar, formwork, and concrete (Photo 4 - Photo 5).
- Excavation of the final slope above the right bank of the ULRHEF intake structure (Photo 6).

Environmental Summary:

- During the upper-tunnel lining and rock support, CE directed all seepage water to the ULRHEF intake sediment basins for treatment (Photo 7). CE's environmental management team ensured that the active water treatment system was functioning and well maintained. Additional water quality sampling results are available upon request.
- On September 27, CE began demolishing the concrete around the damaged Obermeyer structure (Photo 4 - Photo 5). The IEM monitored these construction activities and ensured that all concrete powder was cleaned up and that any high pH water was either neutralized on site or pumped to the active water treatment system prior to discharge to the Lillooet River.
- On October 8, The IEM documented high pH water discharging to the Lillooet River from the Obermeyer diversion channel. The high pH water originated from an infiltration pond upstream of the Obermeyer structure that was used to contain and treat concrete cure water. CE crews were dewatering this pond to complete construction activities in the area, however they failed to communicate their plan with either CE's environmental staff or the IEM and were unaware that the water could not be discharged to the Lillooet River. The IEM directed crews to remove the pump, relocate it downstream to intercept the high pH water, and redirect it back to the infiltration pond for treatment (Photo 8). CE's environmental staff reminded all crews that permission must be given by either a CE environmental staff member or the IEM prior to pumping water into any watercourse on site.

Photos:

Photo 3 – BEBO tunnel arch installation (October 8, 2016).

Photo 4 – Concrete demolition for the Obermeyer repair works (September 30, 2016).

Photo 5 – Cleanup of demolished concrete at the ULRHEF Obermeyer structure (October 1, 2016).

Photo 6 – Excavation of the final slope on the right bank of the ULRHEF intake structure (October 4, 2016).

Photo 7 - ULRHEF water treatment system, pond No. 7 (September 25, 2016).

Photo 8 – Installation of a 2-inch pump to prevent high pH water from entering the Lillooet River (October 8, 2016).

4.3 *Downstream Tunnel Portal*

Construction Activities:

- CE continued with rebar, formwork, and concrete works for the rock trap (Photo 9).
- CE continued with the grouting program for the tunnel plug and installation of the steel flushing pipe.
- Maintenance of the active water treatment system (Photo 10).
- Conduit installation along the lower tunnel access road.

Environmental Summary:

- The IEM monitored the discharge from the active water treatment system for compliance with BCWQG. Water discharged to ASTR-03 did not exceed > 8 NTU above background

turbidity during the reporting period. Additional water quality sampling results are available upon request.

Photos:

Photo 9 – Rebar, formwork, and concrete works on the lower-tunnel portal rock trap (September 30, 2016).

Photo 10 – Sediment removal and maintenance on the lower tunnel portal active water treatment system (September 30, 2016).

4.4 *Penstock and Truckwash Creek Penstock Crossing*

Construction Activities:

- Crews wielded shear rings onto the tunnel plug.
- CE sandblasted and sprayed the final coating in the ULRHEF penstock.
- Reclamation of the penstock alignment east of Truckwash Creek (Photo 11).

Environmental Summary:

- The IEM did not observe any environmental issues during the monitoring period.

Photos:

Photo 11 – Riparian planting on the east side of Truckwash Creek (October 4, 2016).

4.5 *Powerhouse, Tailrace & Access Road*

Construction Activities:

- Westpark injected oil into the transformers.
- Westpark continued with construction of the ULRHEF switchyard (Photo 12).
- Andritz mechanical works in the ULRHEF powerhouse (Photo 13).
- Top soil placement on the north and south sides of the ULRHEF tailrace (Photo 14).

Environmental Summary:

- The IEM monitored construction activities throughout the monitoring period and observed no environmental issues.

Photos:

Photo 12 – ULRHEF powerhouse and switch yard (September 28, 2016).

Photo 13 – ULRHEF powerhouse generators and turbines (September 30, 2016).

Photo 14 – Topsoil placement on the North and South sides of the ULRHEF tailrace (October 8, 2016).

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 IEM selected the regular monitoring 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 fluctuations in snowmelt. In the event of an exceedance of *in-situ* WQ (turbidity and/or pH) because of 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, an asterisk (*) will be used to denote it.

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (µS)	Temp (°C)
Routine Water Quality						
September 30, 2016	14:45	ULR Background – ULRHEF Intake	6.8	28.2	82	6.7
	14:25	ULR #0.5 – Downstream of ULRHEF intake at Keyhole Bridge	7.6	32.8	88	6.4
	15:45	ULR # 1 – Upstream of ULRHEF Powerhouse	7.1	35.1	90	6.7
	15:10	ULR #2 – Downstream of ULRHEF Powerhouse between KM40.5 and KM41	7.1	31.3	91	6.6
	13:45	ULR #3 – Lillooet River FSR KM38 Laydown – D/S of Boulder confluence	7.2	24.7	90	6.7
	8:37	ULR #4 – Lillooet River FSR KM24 – D/S of all works and Meager confluence	7.2	37.0*	87	6.7
October 8, 2016	11:30	ULR Background – ULRHEF Intake	8.0	25.7	-	4.1
	12:10	ULR #0.5 – Downstream of ULRHEF intake at Keyhole Bridge	8.1	27.5	-	4.1
	13:45	ULR # 1 – Upstream of ULRHEF Powerhouse	8.0	18.3	-	5.0
	14:00	ULR #2 – Downstream of ULRHEF Powerhouse between KM40.5 and KM41	8.0	19.2	-	5.0
	18:00	ULR #3 – Lillooet River FSR KM38 Laydown – D/S of Boulder confluence	8.0	15.7	-	5.4
	18:36	ULR #4 – Lillooet River FSR KM24 – D/S of all works and Meager confluence	7.9	16.6	-	6.1

4.7 *Recommendations*

IEM recommendations for the ULRHEF are as follows:

- CE should continue to convey all water from the ULRHEF upstream tunnel heading to the sediment basins for treatment. CE should perform regular monitoring to ensure that the water treatment system is functioning as intended and that discharge to the Lillooet River continues to meet BCWQGs.
- CE should remove material deposited on the downslope of the Lillooet River FSR between KM46.5 – 48 and hydroseed exposed areas to prevent erosion during fall rains (*ULR#60*).
- CE should perform regular inspections at all parking areas and ensure all spilled fuel and/or oil is cleaned up and disposed of in the proper disposal container, as per the Human-Bear Conflict Management Plan, and Hazardous Materials Management Plan.
- CE should continue to remind crews of proper food and wildlife attractant management, as per the Human – Bear and Human – Wildlife Interaction Management Plans.

4.8 *Upcoming Works*

New and/or environmentally sensitive construction activities scheduled to occur at the ULRHEF:

- Final tunnel lining, rock support and concrete floor slab of the ULRHEF tunnel.
- Completion of the Obermeyer structure repairs.

- Conduit installation for the ULRHEF control building.
- BEBO tunnel arch installation and grouting.
- Completion of the audiovisual barrier on the right bank of Truckwash Creek.
- Andritz electrical works in the ULRHEF powerhouse.

5.0 Boulder Creek Hydroelectric Facility – Monitoring Results

5.1 *Access Road & Intake*

Construction Activities:

- Rip rap placement and grouting upstream of the BDRHEF intake structure (Photo 15).
- Removal of the downstream cofferdam at the BDRHEF intake (Photo 16 - Photo 18).
- Removal of the upstream cofferdam and diversion of Boulder Creek through the sluice way channel (Photo 19 - Photo 22).
- Construction of the diversion tunnel plug (Photo 23 - Photo 24).

Environmental Summary:

- The IEM monitored the discharge from the active water treatment system for compliance with BCWQG. Water discharged to Boulder Creek did not exceed > 8 NTU above background turbidity during the reporting period. Additional water quality sampling results are available upon request.
- On September 25, CE removed a portion of the BDRHEF downstream cofferdam to complete the final portion of the concrete slab downstream of the Coanda spillway (Photo 16). CE completed all excavation above the HWM. The IEM monitored all excavation activities and no environmental issues were observed during the excavation.
- On September 29, CE removed the downstream cofferdam at the BDRHEF intake and completed the rip rap scour protection. Because of low water levels crews were able to fully excavate the downstream cofferdam and place rip rap to design specifications without working instream, resulting in no water quality impacts to Boulder Creek (Photo 17 - Photo 18). The IEM monitored all construction activities and collected water quality downstream of the diversion tunnel and from ~300m upstream of the BDRHEF powerhouse and no exceedances of BCWQGs were noted. Additional water quality sampling results are available upon request.
- On October 3, CE excavated a portion of the upstream cofferdam, in the dry, and constructed a rip-rap armoured channel to the sluice gate (Photo 19 - Photo 20). Once the channel was complete crews diverted the creek into the newly constructed channel and through the sluice way. The IEM monitored all instream activities and recorded water quality downstream of the sluice way and approximately 300m upstream of the BDRHEF powerhouse. The IEM detected slight elevations in turbidity downstream of the cofferdam removal throughout instream excavation, however, water quality returned to within

BCWQG shortly after instream excavation stopped. Additional WQ results are available upon request.

- Crews installed a temporary bridge over Boulder Creek to allow access to the diversion tunnel (Photo 21). Ecofish completed a coastal tailed frog salvage on the left bank of the diversion and no individuals were found. Crews then excavated a sump upstream of the diversion tunnel to capture all seepage and ground water, fully drying the tunnel (Photo 22). CE installed chain linked mesh at the downstream end of the tunnel to prevent wildlife from entering the tunnel. A concrete plug was constructed at the upstream end of the diversion tunnel to prevent water and debris from entering the tunnel during high flow events, concrete works occurred from October 5 - 8 (Photo 23). To prevent high pH water from entering Boulder Creek a 2-inch pump was installed behind the concrete works, directing water to the active water treatment system (Photo 24). The IEM monitored water quality during all concrete pours and did not observe any elevated pH water entering Boulder Creek. Completion of the diversion tunnel plug and removal of the upstream cofferdam were not completed during this monitoring period.
- On the evening of October 6 crews poured the foundation of the BDRHEF control building. Because of forecast rain, the IEM advised the site foreman to ensure that all turbid and high pH road runoff was captured and pumped to the active water treatment system. On the morning of October 7, the IEM observed water with elevated turbidity and pH entering Boulder Creek, downstream of the coanda spillway, through drainage pipes in the intake structure (Photo 25). Crews had installed a pump to capture runoff, but the discharge hose had multiple holes and was leaking through the connection points allowing turbid and high pH water to enter Boulder Creek. The IEM requested that crews replace the hoses and temporarily seal the drainage pipes to prevent further discharge to Boulder Creek. Crews also installed a CO_2 diffuser hose downstream of the coanda spillway as a precaution (Photo 26). Downstream water quality did not exceed BCWQGs.

Photos:

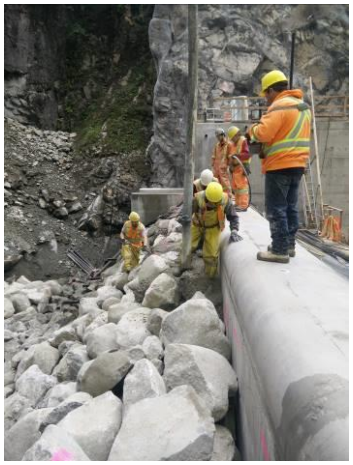

Photo 15 – Grouting rip rap upstream of the BDRHEF intake structure (September 26, 2016).

Photo 16 – Lowering the height of the downstream coffer dam to allow for rip rap placement (September 25, 2016).

Photo 17 – Removal of the downstream coffer dam, all excavation occurred in the dry (September 29, 2016).

Photo 18 – Rip rap placement downstream of the BERHEF intake structure (September 29, 2016).

Photo 19 – Excavation and rip rap placement of the upstream coffer dam (October 3, 2016).

Photo 20 – Diversion of Boulder Creek though the sluice way (October 3, 2016).

Photo 21 – Installation of a temporary bridge to access the diversion tunnel upstream of the BDRHEF intake structure (October 4, 2016).

Photo 22 – Installation of sump to remove construction waste water to the active water treatment system (October 4, 2016).

Photo 23 – Concrete pour for the upstream diversion tunnel plug (October 8, 2016).

Photo 24 – pump installed in the diversion tunnel to capture construction waste water (October 5, 2016).

Photo 25 – Water with elevated turbidity and pH discharged to Boulder Creek (October 7, 2016).

Photo 26 – CO_2 bubbler treating high pH water downstream of the Coanda spillway (October 7, 2016).

5.2 *Downstream Tunnel Portal and Powerhouse*

Construction Activities:

- Final lining and rock support in the BDRHEF tunnel.
- Excavation and mudslab pour for the BDRHEF bifurcation (Photo 27).
- Westpark injected oil into the BDRHEF transformers.
- Westpark continued with construction of the BDRHEF switchyard.

Environmental Summary:

- CE conveyed all wastewater related to the BDRHEF tunnelling works to the downstream settling ponds for treatment throughout the monitoring period.
- Crews continue to remove minor oils spills from the designated parking area at the BDRHEF powerhouse (Photo 28). CE temporarily stored all contaminated materials in a designated area at the laydown prior to off-site disposal at the mechanics' shop at KM38.5. The materials were all well contained and protected from the weather.

Photos:

Photo 27 – Excavation and mubslab pour for the BDRHEF bifurcation (September 25, 2016).

Photo 28 – Crews cleaning up spilled oil at the designated parking area of the BDRHEF powerhouse (October 6, 2016).

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 IEM selected the regular monitoring to quantify WQ conditions within Boulder Creek 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 of an exceedance of *in-situ* WQ (turbidity and/or pH) because of 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, an asterisk (*) will be used to denote it.

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (µS)	Temp (°C)
Routine Water Quality						
September 30, 2016	16:20	BDR BG – Upstream of BDRHEF intake	7.4	40.7	61	9.5
	13:33	BDR #1 – Downstream of BDRHEF intake	7.6	32.5	59	8.7
	11:58	BDR #2 – Upstream of BDRHEF Powerhouse	7.4	37.9	64	7.1
	16:54	BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	7.4	34.7	63	10.0
October 8, 2016	17:15	BDR BG – Upstream of BDRHEF intake	8.0	4.5	-	4.4
		BDR #1 – Downstream of BDRHEF intake	Inaccessible			
	17:45	BDR #2 – Upstream of BDRHEF Powerhouse	8.0	4.2	-	5.1
	17:58	BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	8.0	4.2	-	5.1

5.4 *Recommendations*

IEM recommendations for the BDRHEF are as follows:

- CE should continue to direct all construction related wastewater to the active water treatment systems/settling ponds. CE should continue to monitor the newly constructed settling/infiltration pond to ensure that it remains in good working condition, and perform all maintenance activities as outlined in the work plan. If water begins to discharge from the newly constructed channel, CE should conduct regular inspections to ensure that it meets BCWQG prior to infiltration near or connection with the Boulder Creek side channel.
- CE should regularly monitor the BDRHEF intake active water treatment system to ensure the system is functioning as intended and that discharge into Boulder Creek is within BCWQGs. The water treatment system capacity should be regularly assessed to ensure the system can handle the necessary volumes of water.
- CE should continue to ensure that road runoff entering the BDRHEF intake area is contained and pumped to the active water treatment system.

5.5 *Upcoming Works*

New and/or environmentally sensitive construction activities scheduled to occur at the BDRHEF:

- BDRHEF tunnel lining and rock stabilization.
- Completion of the upstream diversion tunnel concrete plug.
- Complete the removal of the upstream cofferdam.
- Electrical component installation will continue at the BDRHEF powerhouse.
- Construction of the control room building.

- Switch yard installation will continue.

6.0 Transmission Line – Monitoring Results

6.1 *Transmission Line Construction Activities*

Construction Activities:

Segment 1 & 2

- Installation of fiber optic cable

Segment 11 & 12

- Tensioning and clipping

Segment 13

- Ditching, road works and vegetation maintenance
- Framing structures
- Setting poles using helicopter

Segment 14

- Framing structures
- Ground preparation for anchors
- Backfill and straightening towers

Segment 15

- Framing and preparing to sting towers
- Setting poles using helicopter

Segment 16

- Blasting for tower placement
- Ground preparation

Environmental Summary:

- The IEM conducted spot monitoring of construction activities throughout this monitoring period and did not observe any environmental issues.

Photos:

Photo 29 – Fiber optic cable installation in Segment 1 (October 1, 2016).

6.2 *Recommendations*

IEM recommendations for the Transmission Line are as follows:

- WEL's Environmental Manager continues to provide regular scheduling updates that permits the IEM to assess environmental risks and coordinate monitoring requirements. WEL should continue to provide the IEM with a minimum of 48 hours' notice if IEMs presence is required or expected for construction activities.

6.3 *Upcoming Works*

New and/or environmentally sensitive construction activities scheduled to occur along the Transmission Line alignment:

Segment 1 – 5

- Pulling fiber optic cable
- Hand clearing and slashing

Segment 11

- Ground preparation by hand for anchor installation

Segment 12

- Ground preparation by hand for anchor installation
- Clipping lines throughout the segment

Segment 13

- Ground preparation by hand for anchor installation

- Piling brush
- Ditching and road works
- Framing poles

Segment 14

- Framing poles and backfill/straightening pole structures

Segment 15

- Backfill/straightening poles structures

Segment 16

- Ground preparation by hand for anchor installation
- Removal of timber from recently felled areas

7.0 Wildlife Sightings

As per the CEMP, the IEM implemented a wildlife sightings record. Project Personal are required to regularly update the record and it is mandatory for all personnel to report wildlife sightings including, but not limited to bears, cougars, mountain goats and deer. 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 September 2016:

Upper Lillooet Hydro Project - Wildlife Observation Form					
Date	**Time**	**Observer (Company)**	**Species or Description**	**Location**	**Comments**
09/02/2016	10:00	Fanny Seminaro	Coyote	KM38	-
09/02/2016	11:52	Ryan Preston	Black Bear	KM48	Juvenile
09/08/2016	17:45	Stephanie Ellis	Black Bear	KM 6	Juvenile eating buses on the road
09/10/2016	2:00	Mario Chartrand	Porcupine	KM41	Walking along road near silt fence
09/11/2016	14:30	Lianne Leblond	Black Bear	KM48.5	Crossed Roadway
09/11/2016	14:45	Sam Talbot	Black Bear	KM48.5	Swimming in sediment pond
09/14/2016	22:00	Gary Archer	Wolf	KM26	-
09/21/2016	17:22	Sheena Wallace	Black Bear	KM48.5	-
09/21/2016	14:45	Angel Orejas	Black Bear	KM48	-

Upper Lillooet Hydro Project - Wildlife Observation Form					
Date	**Time**	**Observer (Company)**	**Species or Description**	**Location**	**Comments**
09/22/2016	9:45	Angel Orejas	Black Bear	KM46	Mother and cub
09/23/2016	12:25	Angel Orejas	Black Bear	Pad 1	-
09/23/2016	14:00	J F Couture	Black Bear	KM38.5	-
09/24/2016	13:30	Sheena Wallace	Black Bear	Camp Road	-
9/24/2016	17:05	Chase Reid	Moose	KM38.5	Bull with antlers
9/27/2016	14:50	Martin Côté	Black Bear	Camp Road	-
9/28/2016	6:15	Ian McKeachie	Moose	KM15	-
9/28/2016	6:45	Daniel Paquet	Cougar	KM46.5	-
9/29/2016	7:38	Angel Orejas	Black Bear	KM46	-
9/29/2016	8:02	Angel Orejas	Black Bear	KM43.5	-
9/30/2016	8:30	Josh Zandergerben	Moose	KM25	Bull with antlers
9/29/2016	12:45	D'Arcy Soutar, Westpark	Moose	KM18	-
9/29/2016	14:00	Eric Coderre	Black Bear	KM46	-
9/30/2016	17:00	Joe Duval	Cougar	KM29	-
10/1/2016	10:00	Stephanie Ellis (Sartori)	Black Bear	46.8	Juvenile
10/3/2016	11:30	Gilles Labrecque	Black Bear	KM47.9	-
10/3/2016	15:15	Jeremy Knox	Black Bear	KM43	-
10/05/2016	14:20	Cindi McPherson	Black Bear	KM46.5	Mother and two cubs

8.0 Mountain Goat Monitoring Program

The spring 2016 Mountain Goat Monitoring Program is complete as of June 15, 2016 according to conditions of the Mountain Goat Management Plan. The mountain goat monitoring program will resume in November 2016.

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) is (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**
ULR#58	OPEN	All work areas	Conservation Officer and BCEAO Compliance and Enforcement Officer Inspection noted non-compliance with regard to wildlife attractant management.	1. *Develop, implement and document internal waste and attractant management auditing tool. Tool will be available for use by the IEM and CE's EM Team. Records of inspections and noted non-compliances should be tracked internally with clean-up documented in each report. This tracking tool will be available to agencies upon request. This tool should be used similarly to the Spill Reporting tool currently being employed onsite.*	*July 6, 2016*	*July 9, 2016*	*July 8, 2016*
				2. *Repair and adjust the electric fences and charged entrance mats at the construction camp (perimeter fence, camp kitchen fence, and waste compactor fence) and surrounding the septic field.*			*July 21, 2016*
				3. *Install self-closing door hinges in all site lunchrooms and anywhere food is being stored temporarily (lunch rooms, kitchen storage area) OR adjust how food is transported, stored and consumed onsite to eliminate the possibility of food and food waste attractants onsite.* 4. *Perform maintenance to clean-up grease and liquid waste around and underneath the garbage compactor*			*July 21, 2016* *July 21, 2016*
				5. *Install berms surrounding parking areas that are lined with impermeable fabric in areas where tunneling equipment is parked. All leaks could be considered wildlife attractants; therefore all leaky equipment should be repaired and leaks or spills to ground in parking areas must be cleaned up daily and be disposed of in appropriate contaminated soil bins.* *Update September 30: CE continues to demobilize tunneling equipment, which remains parked within the lined parking areas. Leaks on the pad continue to be observed and should be removed on a regular basis as required.*			-

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#60	OPEN	Lillooet River FSR from 46 – 48 Km	*The road fill slope of the Lillooet River FSR between KM46 – 48 requires ESC measures to ensure slope stability and prevent rill erosion from transporting material into the forested area below.*	*1. Assess the road fill slope conditions following conduit installation in the Lillooet River FSR in this section. Update September 30, 2016: CE and the IEM have assessed areas of concern and have discussed ESC stabilization/reclamation of the slopes by hydro-seeding with alder and hydro-mulch of appropriate strength (BFM) and at sufficient application rate.*	*August 8, 2016*	*August 16, 2016*	*September 30, 2016*
				2. *Provide and implement an agreed upon plan to protect the slope from an erosion and sediment transport perspective and/or a plan to initiate reclamation of the impacted area.* *Update September 30, 2016: A plan has been agreed upon, however the implementation remains outstanding.*			
ULR#61	*OPEN*	*Asses roads and general ESC measures*	*ESC improvements are required to ensure the site performs well during the imminent fall rain events, and to maintain adherence to conditions of the CEMP, Ditch Management Plan, Erosion Prevention and Sediment Control Plan, and Surface Water Quality Protection Plan*	*The IEM has prepared FAM13 which describes ESC and ditch management improvements, some of which have been in discussion since August 18, 2016. Individual items are outlined in FAM13, which was provided to the contractor on September 30.*	*September 30, 2016*	*October 7, 2016*	
				a) Ditches and checks dams between KM48.5 and Keyhole Bridge are in need of maintenance. CE should ensure these ditches are continuous, armored against erosion (appropriately spaced check dams/armor), and able to receive and convey runoff. Update: CE has installed pumps to temporarily divert sediment laden water to a vegetated area for infiltration until final road capping and drainage structures can be installed.			
				b) The Lillooet River FSR drainage from KM47-48 must adequately convey runoff away from the stream at KM48. Update: CE has installed a pump to direct water away from the bridge deck and the fish bearing stream as a temporary measure to protect the watercourse. A temporary culvert has also been placed in the FSR to collect water flowing down the road surface and direct it away from the fish bearing stream.			
				c) The temporary ULRHEF intake access road has no ditch installed and the upstream side of the laydown adjacent to the intake structure is likely to pool water or result in unmitigated runoff to the Lillooet River. Provide and implement a temporary drainage solution until this area is reclaimed. Cross ditches and berms have been installed to prevent turbid water from entering the Lillooet River,			
				d) Ditching along the ULRHEF lower portal access road requires maintenance and the drainage pattern at the base of the road has changed since the installation of the Truckwash Creek penstock crossing. Provide temporary repairs to the ditch to			

				ensure it can receive and convey road drainage and/or install final drainage (note: sediment laden water should not be directed to the UWR replacement area). Update: Water ponding in the work area has saturated the haul road; however sediment laden water is contained within the work area and is not flowing offsite. Final drainage solutions will be installed at a later date, *e) The access road at ASTR-04 crossing pools road runoff and discharges sediment laden water to ASTR-04 during rain events. CE has indicated that they are aware of this concern and are working on developing and implementing a final solution for road drainage.*			
				f) The steep penstock access road leading down towards the powerhouse from PI-12 (~3+950) requires measures to protect the running surface. The IEM suggest implementing seasonal deactivation measures or installing a combination of cross ditching and ditch line check dams to prevent transporting sediment laden water to the base of the slope. *g) The ULRHEF powerhouse access road ditch is not continuous, specifically the section along the toe of the spoil area. Install the appropriate drainage solution. This ditch is not yet installed, however ESC has not yet been a concern in this area* *h) The BDRHEF intake access road requires ditch maintenance, especially where ditches have been impacted by conduit installation. The access road also requires repair/grading where wheel ruts have resulted in water channelizing along the road alignment. Update October 25: While some ditch line improvements and road grading has been completed, the stretch of road between KM3.5-5 of the intake access road remains a concerns as turbid road runoff continues to flow offsite during rain events. CE is in the process of installing conduit and finalizing the ditches and road grades in this area.*			

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)							

FIELD ADVICE MEMO (FAM)

Project:	Upper Lillooet Hydro Project	**FAM Number:** *(yyyy-mm-dd_FAM##)*	2016-09-30_FAM#13
FAM Author:	Tom Hicks, Lead Monitor Sartori Environmental Services	**Date of FAM Issuance:**	September 30, 2016
Distribution List: *(Name - Company)*	To: Jean Pellitier, Ian McKeachie, Lianne Leblond - CRT-ebc CC: Julia Mancinelli - Innergex, Stephen Sims - Sartori Environmental Services		
Environmental Incident Reports (EIR): *(If applicable)*	This FAM is not associated with an environmental incident; however, ESC and ditch management concerns and recommendation below are needed to maintain compliance with Project commitments outlined in the CEMP, Ditch Management Plan, Erosion Prevention and Sediment Control Plan, and the Surface Water Quality Protection Plan		

Identified Environmental Issue(s):

1. Ditches and checks dams between KM48.5 and the Keyhole Bridge are in need of maintenance. CE should ensure these ditches are continuous, armored against erosion (appropriately spaced check dams/armor), and able to receive and convey runoff.
2. The Lillooet River FSR drainage from KM47-48 must adequately convey runoff away from the stream at KM48.
3. The temporary ULRHEF intake access road has no ditch installed and the upstream side of the laydown adjacent to the intake structure is likely to pool water or result in unmitigated runoff to the Lillooet River. Provide and implement a temporary drainage solution until this area is reclaimed.
4. Ditching along the ULRHEF lower portal access road requires maintenance and the drainage pattern at the base of the road has changed since the installation of the Truckwash Creek penstock crossing. Provide temporary repairs to the ditch to ensure it can receive and convey road drainage and/or install final drainage (note: sediment laden water should not be directed to the UWR replacement area).
5. The access road at ASTR-04 crossing pools road runoff and discharges sediment laden water to ASTR-04 during rain events. CE has indicated that they are aware of this concern and are working on developing and implementing a final solution for road drainage.
6. The steep penstock access road leading down towards the powerhouse from PI-12 (~3+950) requires measures to protect the running surface. The IEM suggest implementing seasonal deactivation measures or installing a combination of cross ditching and ditch line check dams to prevent transporting sediment laden water to the base of the slope.
7. The ULRHEF powerhouse access road ditch is not continuous, specifically the section along the toe of the spoil area. Install the appropriate drainage solution.
8. The BDRHEF intake access road requires ditch maintenance, especially where ditches have been impacted by conduit installation. The access road also requires repair/grading where wheel ruts have resulted in water channelizing along the road alignment.

Requested Outcome(s)

The IEM requests that the recommendations above be assessed by CE, prioritized, and implemented in the field prior to the next forecasted rain event. These eight (8) concerns/recommendations will be tracked in the weekly environmental monitoring report as ULR#61. The tracked issue will be closed once all of the numbered items listed above are completed to the satisfaction of the IEM.